Natural Heritage – Locality Liaison/Habitat Restoration

Final Report for FY2016 VCZMP Grant No. NA16NOS4190171 Task #5

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Virginia Department of Conservation and Recreation – Division of Natural Heritage

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Executive Summary

During the FY2016 grant year, the Locality Liaison reviewed 983 projects for impacts to natural heritage resources in the coastal zone (42% of the projects reviewed statewide). Projects for renewable energy this year, included sixteen different solar projects. DCR has continued to work with Environmental Resources Management to assure that the WB – Express project in Fairfax County will not impact documented natural heritage resources. DCR has also been coordinating with the Virginia Department of Game and Inland Fisheries (VDGIF) to find solutions to mitigate the impacts of two projects on natural heritage resources; Forest Hills Estates in Stafford County and Independence Boulevard in the City of Newport News.

Coastal localities and other conservation partners participated in six training sessions for the Natural Heritage Data Explorer (NHDE) website (https://vanhde.org) including 22 from state agencies, 2 from local governments, and 8 from consulting companies. At the end of FY216, there were twenty-six coastal counties and fifteen coastal cities, eight Planning District Commissions and nineteen land trusts within the Coastal Zone with access to natural heritage data through NHDE, digital shapefile data, and/or a combination of these tools. This equates to 93% of Coastal Zone counties or cities having Natural Heritage data, 100% of the Planning District Commissions and 76% of the Land Trusts within the coastal zone.

Presentations included an overview of DCR's Natural Heritage Program, the Locality Assistance Program, and the Natural Heritage Data Explorer (NHDE) website highlighting the Virginia ConservationVision models, and the Virginia Species and Community Database Search. In addition, other online conservation tools were presented including the Virginia Wetlands Catalog, the Coastal Ecological Value Assessment (Coastal VEVA) which is part of the Virginia DEQ's Coastal GEMS and the Virginia Potential Land Conservation Treasures layers. Natural Heritage information was updated quarterly on the NHDE website and shapefiles including the updated information are also distributed to licensed users. During FY16, 495 coastal projects were submitted through the NHDE, 50% of all the projects submitted in the coastal zone. 72 of these projects were "No Comment" projects for which NHDE users received reports within 10 minutes of project submittal.

The locality liaison participated in the Chesapeake Bay Comprehensive Water Resource and Restoration Plan helping to assure the US Army Corps of Engineers was aware of Virginia's natural heritage resources when approving environmental actions. The locality liaison also participated in the Virginia's Department of Environmental Quality's Coastal Partners Workshop and participated on a panel for the National Oceanic and Atmospheric Association's Virginia Marine Debris Emergency Response Planning for Stakeholders Workshop in Newport News. The locality liaison also gave a presentation to the Women's Club of Sandston about the Natural Heritage program and its mission to protect biodiversity in Virginia.

The Locality Liaison renewed or initiated 49 coastal natural heritage data licenses throughout this grant year, including localities, consultants, land trusts, educational institutions, state agencies, federal agencies and planning district commissions.

The Locality Liaison also posted a quarterly coastal species highlight section to the Local Assistance webpage (http://www.dcr.virginia.gov/natural-heritage/localityliaison) and the locality map (http://www.dcr.virginia.gov/natural-heritage/localitiesmap) was updated quarterly identifying localities with natural heritage data.

Northampton County coordinated with DCR for information on natural heritage resources for inclusion in their updated comprehensive plan. A table of resources, map and text was provided during the comprehensive planning process. In addition, the locality liaison worked with Spotsylvania County on its upcoming comprehensive plan update.

Introduction

Through the Locality Liaison program, the Virginia Department of Conservation and Recreation's Division of Natural Heritage (DCR-DNH) works with local and regional planners to assist them in fully utilizing natural heritage resource information as well as the consultative services we provide to ensure protection of natural heritage resources. The Locality Liaison program seeks to establish natural heritage resource information as part of fundamental locality decision-making criteria through tools such as project review, comprehensive planning, project sitings, zoning amendments, and open space planning.

The Virginia Coastal Zone Management Program (VCZMP) and the Chesapeake Bay Program have developed flood risk management initiatives and generated interest in land use issues within the Coastal Zone. In addition, the Bay Total Maximum Daily Load (TMDL) program has encouraged localities to incorporate green infrastructure into their land planning. Coastal localities are developing conservation objectives, identifying potential areas for protection and looking at innovative approaches in making land use decisions that will improve water quality and develop long-range planning for local resiliency. The Locality Liaison program continues to work to have natural heritage resources play a larger role in decision making in regards to the problems and opportunities they face in development and protecting their natural heritage resources.

Staffing

Alli Baird currently serves as the Coastal Zone Locality Liaison (Locality Liaison) and reviews projects within the coastal zone with assistance from other environmental review staff. Rene' Hypes (Environmental Review Coordinator) provides input for higher profile projects reviewed within the Coastal Zone. Numerous other DCR-DNH staff members also support the Locality Liaison program, including Data Manager Megan Rollins, Project Review Assistants, and various Natural Heritage biological inventory personnel.

Environmental Review

The DCR-DNH Environmental Review Section, to which the Locality Liaison is assigned, works with local, state, and federal government agencies as well as private individuals and consultants to assess the potential for proposed activities to impact natural heritage resources and to recommend ways to avoid or minimize these impacts. The Locality Liaison has primary responsibility for reviewing projects in the Coastal Zone and provides oversight for the Project Review staff assisting in the review process. Barbara Gregory (Project Review Assistant, Senior) conducts reviews for the Virginia Department of Transportation (VDOT) projects statewide including the Coastal Zone. During this grant year, DCR-DNH reviewed 983 projects in the Coastal Zone. This represents 42% of the projects reviewed statewide by DCR-DNH.

Through environmental review, the Locality Liaison provides service in connecting clients directly to needed information about natural heritage resources. With the state's most

comprehensive database for rare, threatened and endangered species and significant natural communities, environmental review provides an opportunity for cooperating with other organizations. Many private consultants routinely and voluntarily coordinate with DCR-DNH before taking development project applications to regulatory agencies. Though DCR-DNH does not have regulatory authority, it has agreements with regulatory agencies that rely on our natural heritage resource data. The United States Army Corps of Engineers (ACOE) and the Department of Environmental Quality (DEQ) Virginia Water Protection Permit Program (VWPP) screen wetland development projects against the DCR-DNH database and forward potential conflicts for our comment. The DEQ Virginia Pollutant Discharge Elimination System (VPDES) program also screens issuance and re-issuances of permits for point source discharges to surface waters against the DCR-DNH database and the Virginia Department of Health (VDH) screens for issuance or re-issuance of pump-out facilities as part of their permitting process. The Virginia Marine Resource Commission (VMRC) relies on the DCR-DNH to review Joint Permit Applications (JPAs) for subaqueous bottomlands impacts and the DEQ Office of Regulatory Affairs, Renewable Energy Permitting relies on DCR-DNH to review solar and wind energy projects for potential impacts to natural heritage resources. Virginia Soil and Water Conservation Districts, which coordinate local natural resource protection programs, rely on DCR-DNH for information to include in local agricultural conservation planning. The United States Fish and Wildlife Service (USFWS) also relies heavily on DCR-DNH data for their own regulatory responses. The USFWS Information, Planning, and Conservation (IPaC) System web site on-line screening process includes DCR-DNH species distribution models and references the Natural Heritage website for species coordination purposes. Additionally, DCR-DNH provides information on natural heritage resources to the Virginia Outdoors Foundation as they work on developing conservation easements.

The DCR-DNH has a Memorandum of Agreement with the Virginia Department of Game and Inland Fisheries (VDGIF) for sharing of data and species coordination between the two agencies. In addition to regulatory agencies, the Virginia Department of Transportation (VDOT) integrates Natural Heritage data into CEDARs, their internal database for environmental screening purposes, and uses the Natural Heritage Data Explorer for submitting transportation projects. Also, under a Memorandum of Agreement established between the Virginia Department of Agriculture and Consumer Services (VDACS) and the DCR, DCR-DNH represents VDACS in comments regarding potential impacts on state-listed threatened and endangered plant and insect species.

Specific Projects

Energy - Pipeline Project

WB Xpress Project – Chantilly Compressor Station and Chantilly Lateral, Fairfax County Section

The portion of the project in Fairfax County intersects the Elklick Diabase Flatwoods Conservation Site and the Elklick Woodlands Natural Area Preserve. A recent re-review of this portion of the project intersected a newly documented location for Purple milkweed, a rare plant

in the easement south of Pleasant Valley Road. The project proposed using the existing access road for proposed activities but expanding the width of the existing gravel road to accommodate the required equipment. The DCR Northern Region Steward determined that expansion of the road width to the north side only would be the least impactful on this resource. DCR also reiterated the need to utilize existing access roads within the intersection of the right-of-ways to the northwest of the proposed staging area to avoid impacts to Purple milkweed, documented in that location. Furthermore, the Elklick Woodlands Natural Area Preserve is located within the project area and is owned by the Fairfax County Parks Authority and jointly managed with DCR. DCR-DNH recommended continued coordination with the Fairfax Parks Authority and the DCR Northern Region Natural Area Steward in regards to avoiding impacts to the natural area preserve.(Appendix A)

Subdivision

Forest Hills Estates

DCR-DNH provided written comments for the approximately 45 acre proposed residential subdivision. A survey documented Small-whorled pogonia, a rare orchid on the site and DCR-DNH recommended coordination with the USFWS and the Virginia Department of Agricultural and Consumer Services (VDACS). As a result of the recommendations for protection of the Small-whorled pogonia population by USFWS, discussions began for the development of a possible alternative mitigation strategy in lieu of trying to protect the rare orchid population on the property surrounded by development. One possible mitigation alternative currently under discussion is the purchase of off-site parcels with documented Small-whorled pogonia occurrences for permanent protection with development proponents contributing to a fund for the purchase of the property and/or conservation easement. (Appendix B)

New Connector Road

Independence Boulevard

This project involved the extension of Richneck Road, at the Fort Eustis Boulevard intersection, to Denbigh Boulevard within the Grafton Pond complex in York County. The project limits are within the Grafton Ponds Conservation Site and intersects several rare plants, and Mabee's salamander. In addition, the project is adjacent to a DCR designated significant natural community. Through numerous comments, DCR-DNH recommended avoidance of conservation sites and where possible the extent of the right-of-way has been limited to avoid the natural community, Elliott's goldenrod and a vernal pond supporting the rare Mabee's salamander. In addition, erosion and sediment control measures were recommended by DCR as well as coordination with VDGIF. Due to potential impacts, a conservation mitigation area was proffered by the developer to protect another vernal pool and documented occurrences of rare plants. DCR recommended a survey of the conservation area as well. (Appendix C)

National Wildlife Refuge

Plum Tree Island National Wildlife Refuge CCP & EA

DCR-DNH recommended a survey for natural heritage resources to aid in development of a resource management plan for the USFWS Wildlife Refuge and in order to offer specific avoidance or mitigation measures for the proposed facilities and infrastructure development. DCR-DNH also supported habitat management and inventory monitoring plans and requested spatial data for species identified in the CCP. Furthermore, the refuge was identified as being in a 3C high significance core as identified in the Virginia ConservationVision. The Virginia ConservationVision is a GIS analysis for identifying and prioritizing conservation lands in Virginia. (http://www.dcr.virginia.gov/natural_heritage/vaconvision.shtml) with the ecological cores model identifying unfragmented forested areas. In addition, due to the legal status of the Northeastern beach tiger beetle and the Piping plover, DCR-DNH recommended coordination with USFWS and VDGIF. (Appendix D)

National Aeronautics and Space Administration

Wallops Island Tower Project

NASA requested a review of the proposed construction of a 750-foot guyed tower, two prefabricated base shelters and a 500-gallon propane tank and generator back-up supply. One natural heritage conservation site is within the project site and another is within two miles of the project site. Both contain documented occurrences of rare, threatened and endangered birds. DCR-DNH recommended adherence to the voluntary implementation of USFWS interim guidelines for communication Tower Siting, Construction, Operation and Decommissioning, especially with regard to height, use of strobes, guy wire markings and access to the site for monitoring. In addition, DCR-DNH recommended coordination with USFWS and VDGIF. (Appendix E)

Natural Heritage Data and Natural Heritage Data Explorer

The heart of DCR-DNH's service to localities is the set of databases and information tools that indicate what is rare, where the rarities are, and how they can be protected. As of September 30, 2017, DCR-DNH databases contain information about approximately 9,559 specific occurrences of natural heritage resources**,** 2,428 of which reside in the coastal zone. Over the years, DCR-DNH has continually worked to improve the quality of the data and the utility of the tools used to present the data to researchers, planners, and decision-makers. All DCR-DNH data has been converted to modified polygons within the GIS system. Conservation sites are now the primary mechanism for distributing natural heritage location information for public use. Conservation sites identify areas that potentially warrant conservation action because of the associated natural heritage resources and the habitat required for their survival. They incorporate contextual information about the key areas of the landscape surrounding the actual locations of natural heritage resources that are necessary to ensure protection of those resources. DCR-DNH currently tracks over 2,223 conservation sites, of which 582 are in the coastal zone as of September 30, 2017. These sites are continuously being updated by DCR-DNH staff.

The Virginia Natural Heritage Data Explorer (NHDE) allows Internet users to access Natural Heritage data on a remote website. This ArcServer GIS informational tool can alert planners to potential areas of opportunity or concern, facilitate proactive planning for county resources, and allow preliminary screening of projects and activities for potential impacts to natural heritage resources. In addition, licensed users may submit projects for review through the website. The natural heritage data on the website is updated quarterly, as updates are released to subscribers for digital screening coverage shapefiles.

The website includes the Species and Community Search function which allows users to search for a list of natural heritage resources by various filters including localities, coastal zone and planning district commissions. The Virginia ConservationVision models are also accessible through the website, which help target conservation efforts by guiding comprehensive planning. In addition, two new layers have been included on the public access tier to address potential Land Conservation Treasures. "Treasures" are a tangible project that provides a new opportunity for the public to access or experience a natural, cultural or scenic outdoor recreation resource. They are a permanent land protection project, including easement amendments that meets one or more of fourteen mapped conservation metrics.

Several different levels of NHDE access are available, from a public access level to a paid subscription with increasing information made available to different Tier level users. The Natural Heritage Data Explorer website tool can be accessed at https://vanhde.org/.

During FY16, staff worked with NatureServe to upgrade the NHDE and tested the functionality of the new site. The upgrades include technical enhancements to the website, improving functionality and efficiency.

Training sessions for the NHDE have generally been held on an every-other-month basis. The training days were held in Richmond utilizing the DEQ computer lab, Middlesex County, and at the Charlottesville and Salem offices of the Virginia Department of Forestry. NHDE training is provided by the project review staff, primarily the Locality Liaison. The general training sessions are open to all organizations, but may be divided into three sections according to the user's tier access level. During this grant year, 6 separate hands-on training sessions for NHDE were held for coastal zone participants.

Approximately 1099 projects have been submitted through NHDE during FY2016 with 495 occurring in the coastal zone. Of those project submittals, 72 within the coastal zone did not document natural heritage resources within two miles of the project location. A NHDE report automatically was sent to the requestor and no further review was required by DCR-DNH staff. Improvements to internal project review efficiency have been achieved through enhanced database query functions and access, updates to the fillable on-line information services order forms including new review services and increasing the number of projects reviewed electronically.

In addition, the locality liaison participated in the Chesapeake Bay Comprehensive Water Resource and Restoration Plan helping to assure the US Army Corps of Engineers was aware of Virginia's natural heritage resources when approving environmental actions. The locality liaison

also participated in the Virginia's Department of Environmental Quality's Coastal Partners Workshop hosted by the DEQ CZM program. The locality liaison participated on a panel for the National Oceanic and Atmospheric Association's Virginia Marine Debris Emergency Response Planning for Stakeholders Workshop in Newport News focusing on permitting and compliance requirements during acute waterway debris response and removal in Virginia. The locality liaison also gave a presentation to the Women's Club of Sandston about the Natural Heritage program and its mission to protect biodiversity in Virginia.

Participants in Locality Liaison Presentations

Presentations included an overview of DCR's Natural Heritage Program, the Locality Assistance Program, the Natural Heritage Data Explorer (NHDE) website and ConservationVision models. Additional information was provided about Virginia Land Conservation Treasures, the Virginia Wetlands Catalog and the Coastal Virginia Ecological Value Assessment (VEVA), part of DEQ's Coastal GEMS website application.

Coastal participants in the training sessions included 23 from state agencies, 1 from a local government, and 9 from consulting companies. A list of the local government, state, agencies and consultants that participated in these training sessions can be found in Appendix F.

Locality Partnerships with DCR-Natural Heritage

The Locality Liaison has worked with localities within the Coastal Zone to encourage comprehensive use of natural heritage data and DCR-DNH services for conservation planning.

At the end of FY16, there were 26 coastal counties and 15 coastal cities, 8 Planning District Commissions and 19 land trusts within the Coastal Zone with access to NHDE, digital shapefile data, and/or a combination of these tools. This equates to 93% of Coastal Zone counties or cities having Natural Heritage data, 100% of the Planning District Commissions and 76% of the Land Trusts as of September 30, 2017. The Locality Liaison updated the website map (http://www.dcr.virginia.gov/natural-heritage/localitiesmap) quarterly to display localities with natural heritage data, reflecting the current status. Please see Appendix G for a map of the Virginia localities with Natural Heritage information. The Locality Liaison renewed or initiated 49 data licenses throughout this year within the coastal zone, including localities, consultants, land trusts, educational institutions, state agencies, federal agencies and planning district commissions.

The locality liaison worked with the data manager to post species highlights on the Locality Liaison webpage. On a quarterly basis, a particular coastal species was highlighted by adding a hyperlinked photograph to the webpage that when clicked on, would take the viewer to a pop-up window with additional species and habitat description. (Appendix H)

Additionally, the Locality Liaison provided natural heritage resource information in the form of tables, text and a map of resources for inclusion in the comprehensive plan update (Appendix I) for Northampton County.

Habitat Restoration and Protection Initiatives

DCR State Parks Planning Review

Natural Heritage staff participated on an advisory committee for state parks to discuss their master planning efforts. DCR staff review the park's resource information to consider appropriate park development. This process has provided state park planners with natural heritage resource information early in the planning stages to prevent impacts to resources. The review of False Cape State Park, Westmoreland State Park, Pocahontas State Park and Mason Neck State Park master plans identified documented natural heritage resources within the parks and DCR provided recommendations for avoidance of impacts to these resources during development.

Virginia Aquatic Resources Trust Fund Interagency Review Team

The Corps-Norfolk District and DEQ chair the Virginia Aquatic Resources Trust Fund (VARTF) Interagency Review Team that reviews and approves wetland and stream mitigation projects. Once approved these projects serve as an acceptable form of compensatory mitigation for impacts to state waters, including wetlands, permitted under Virginia Water Protection individual and general permits. DCR-DNH environmental review coordinator is a member of the interagency review team reviewing proposed wetland mitigation projects in the coastal zone as well as the other parts of the state. Several wetland mitigation bank prospectus were reviewed this year including three coastal zone wetland mitigation bank projects.

Recommendations for Further Actions

The Locality Liaison program has proven most effective when the Locality Liaison can become actively involved in a specific project of concern to the locality such as the partnerships with James City County and Fairfax County. Furthermore, interest in natural heritage information often depends on timing such as whether a comprehensive plan is under review or a major development project is being considered. Thus, the Locality Liaison will strive to stay aware of upcoming locality events through coordination with other Heritage regional and agency staff. The Liaison continues to identify when Coastal Zone localities comprehensive plans are due for review and will contact these localities at the appropriate time to offer assistance.

The Natural Heritage Data Explorer training will continue to be available every other month to provide interested users with the ability to access natural heritage information. In addition to on-site training, the locality liaison will offer to bring the training to the locality and the ability for participants to attend by webinar may also be included to increase participation by localities in NHDE training sessions.

41 Coastal Zone localities currently have access to the NHDE or digital shapefile Natural Heritage data. It is very important to provide follow-up assistance to these localities beyond the initial presentation and delivery of data. The Locality Liaison plans to work with these localities

to determine how these data are being used and discuss local needs for further assistance. Additionally, localities that had used the NHDE in the past, but have not attended training for the NHDE will be targeted in FY17. It is also important to keep in contact with the localities due to possible staffing changes.

To enhance the use of natural heritage information in the FY17 cycle, the creation and updating of conservation sites will be automated to increase updating frequency and consistency in how these sites are displayed to public. The 2.0 Version of NHDE will be also be released, along with the updated user manual to include any changes to the website.

The Locality Liaison will continue to focus on contacting localities that currently do not have Natural Heritage data, with King and Queen, Surry and Caroline Counties being targeted for FY17 in the coastal zone as well as counties that have not renewed their current data licenses. In some cases this may involve contacting departments other than planning, such as GIS, Environmental, Recreation, Parks or Utilities departments if they are separate entities. This may also involve an effort to assist localities in developing ordinances or regulations necessitating the review of Natural Heritage information for certain projects, including renewable energy projects. Contacting PDCs in the coastal zone may help in identifying the best way to involve some of the localities.

The Locality Liaison web page will be updated and revised to continue to provide relevant natural heritage information for localities as well as updating the quarterly coastal species section and the map of localities with Natural Heritage data. The Locality Liaison along with the project review staff will continue to work to improve the environmental review process.

Appendix A

Letter for
Columbia Gas Transmission Line
WB Xpress Project
(Chantilly Compressor Station and Chantilly Lateral, Fairfax County)

Molly Joseph Ward
Secretary of Natural Resources

Clyde E. Cristman
Director

Rochelle Altholz
Deputy Director of Administration and Finance

David C. Dowling
Deputy Director of Soil and Water Conservation and Dam Safety

Thomas L. Smith
Deputy Director of Operations

COMMONWEALTH of VIRGINIA
DEPARTMENT OF CONSERVATION AND RECREATION

October 13, 2017

Karen Beatty
Environmental Resources Management, Inc.
121 W. Trade Street, Suite 2320
Charlotte, NC 28202

Re: WB Express Project

Dear Ms. Beatty:

The Department of Conservation and Recreation's Division of Natural Heritage (DCR) has searched its Biotics Data System for occurrences of natural heritage resources from the area outlined on the submitted map. Natural heritage resources are defined as the habitat of rare, threatened, or endangered plant and animal species, unique or exemplary natural communities, and significant geologic formations.

Dysart Valve Site – Shenandoah County, Columbia Furnace Valve Site-Shenandoah County (new site),
Strasburg Compressor Station-Shenandoah County, Shenandoah River West Valve Site-Warren County (new site) and Nineveh Meter Station- Warren County

These project areas are situated on karst-forming carbonate rock and can be characterized by sinkholes, caves, disappearing streams, and large springs. The Virginia DCR karst staff screened this project against the Virginia Speleological Survey (VSS) database and the Virginia DMME sinkhole coverage for documented sensitive karst features and caves. Based on this review, DCR does not anticipate adverse impacts to documented karst features from the gas pipeline improvements at these five sites in Shenandoah and Warren Counties.

If karst features such as sinkholes, caves, disappearing streams, and large springs are encountered during the project, please coordinate with Wil Orndorff (540-230-5960, Wil.Orndorff@dcr.virginia.gov) to document and minimize adverse impacts. Discharge of runoff to sinkholes or sinking streams, filling of sinkholes, and alteration of cave entrances can lead to surface collapse, flooding, erosion and sedimentation, groundwater contamination, and degradation of subterranean habitat for natural heritage resources. If the project involves filling or "improvement" of sinkholes or cave openings, DCR would like detailed location information and copies of the design specifications. In cases where sinkhole improvement is for stormwater discharge, copies of VDOT Form EQ-120 will suffice. New "Karst Assessment Guidelines" developed by the Virginia Cave Board for land development can be found at http://www.dcr.virginia.gov/natural_heritage/documents/karst_assessment_guidelines.pdf.

In addition, the Nineveh Meter Station and the Shenandoah River West Valve Site are within the range of and overlies potential habitat for the state and federally threatened Madison Cave isopod (*Antrolana lira*, G2G4/S2/LT/LT). Because this species is a groundwater obligate crustacean, knowledge of its presence

at specific locations within its range is poor, and sampling to determine its presence is difficult and frequently inconclusive. Projects involving the following components have potential to impact this species: 1) withdrawal of water from wells or lowering the water table, 2) alteration of sinkholes, cave entrances, or sinking streams, 3) waste water injection, 4) quarrying, 5) nutrient applications lacking a certified nutrient management plan, or 6) discharge of water to a conveyance that discharges to a karst feature downstream. If the project meets one or more of these criteria, please coordinate with the DCR Karst Protection Coordinator Wil Orndorff (Wil.Orndorff@dcr.virginia.gov or 540-230-5960). Due to the legal status of the Madison Cave isopod, DCR recommends coordination with the US Fish and Wildlife Service (USFWS) and Virginia Department of Game and Inland Fisheries (VDGIF) to ensure compliance with protected species legislation.

Loudoun Compressor Station-Loudoun County
According to the information currently in our files, the Little River Stream Conservation Unit (SCU) is located downstream from the project site. SCUs identify stream reaches that contain aquatic natural heritage resources, including 2 miles upstream and 1 mile downstream of documented occurrences, and all tributaries within this reach. SCUs are also given a biodiversity significance ranking based on the rarity, quality, and number of element occurrences they contain. The Little River SCU has been given a biodiversity ranking of B2, which represents a site of very high significance. The natural heritage resources associated with this site are:

Lasmigona subviridis	Green floater	G3/S2/NL/LT
	Aquatic Natural Community	G2/S2/NL/NL
	Aquatic Natural Community	G3G4/S3S4/NL/NL

The Green floater, a rare freshwater mussel, ranges from New York to North Carolina in the Atlantic Slope drainages, as well as the New and Kanawha River systems in Virginia and West Virginia (NatureServe, 2009). In Virginia, there are records from the New, Roanoke, Chowan, James, York, Rappahannock, and Potomac River drainages. Throughout its range, the Green floater appears to prefer the pools and eddies with gravel and sand bottoms of smaller rivers and creeks, smaller channels of large rivers (Ortman, 1919) or small to medium-sized streams (Riddick, 1973). Please note that this species has been listed as state threatened by the Virginia Department of Game and Inland Fisheries (VDGIF).

Considered good indicators of the health of aquatic ecosystems, freshwater mussels are dependent on good water quality, good physical habitat conditions, and an environment that will support populations of host fish species (Williams et al., 1993). Because mussels are sedentary organisms, they are sensitive to water quality degradation related to increased sedimentation and pollution. They are also sensitive to habitat destruction through dam construction, channelization, and dredging, and the invasion of exotic mollusk species.

The documented Aquatic Natural Communities are based on Virginia Commonwealth University's **INSTAR** (*Interactive Stream Assessment Resource*) database which includes over 2,000 aquatic (stream and river) collections statewide for fish and macroinvertebrate. These data represent fish and macroinvertebrate assemblages, instream habitat, and stream health assessments. The associated Aquatic Natural Community is significant on multiple levels. First, one stream is a grade A- and the other stream is a grade B, per the VCU-Center for Environmental Sciences (CES), indicating its relative regional significance, considering its aquatic community composition and the present-day conditions of other streams in the region. The first stream reach also holds an "Exceptional" stream designation and the second stream reach holds a "Healthy" stream designation per the INSTAR Virtual Stream Assessment (VSS) score. This score assesses the similarity of this stream to ideal stream conditions of biology and habitat for this region. Lastly, these streams contribute to high Biological Integrity at the watershed level (6^{th} order) based on number of native/non-native, pollution-tolerant/intolerant and rare, threatened or

endangered fish and macroinvertebrate species present.

Threats to the significant Aquatic Natural Communities and the surrounding watershed include water quality degradation related to point and non-point pollution, water withdrawal and introduction of non-native species.

To minimize adverse impacts to the aquatic ecosystem as a result of the proposed activities, DCR recommends the implementation of and strict adherence to applicable state and local erosion and sediment control/storm water management laws and regulations, establishment/enhancement of riparian buffers with native plant species and maintaining natural stream flow. Due to the legal status of the Green floater, DCR also recommends coordination with Virginia's regulatory authority for the management and protection of this species, the VDGIF, to ensure compliance with the Virginia Endangered Species Act **(**VA ST §§ 29.1-563 – 570**)**.

Chantilly Compressor Station and Chantilly Lateral -Fairfax County

According to information currently in our files, Purple milkweed (*Asclepias purpurascens*, G5?/S2/NL/NL) has been documented within the project area in two locations, one newly documented. Purple milkweed occurs in prairies, woodland openings/edges, and thickets, and in wet situations as well as on dry, rocky ridgetops, along roadsides and rights-of-way (NatureServe, 2004). The plant flowers in June and July. It occurs in eastern North America from Ontario and New Hampshire south to Georgia and west as far as South Dakota and Texas. However, distribution is spotty in parts of the range, especially along the northeastern seaboard, in the southeast (Virginia to Mississippi), and in the northern Midwest. Purple milkweed is currently known from 10 locations in Virginia.

At the intersection of the two ROWs northwest of the proposed staging area, DCR recommends avoidance of purple milkweed by keeping to existing road locations. For the second newly documented location, south of Pleasant Valley Road in the easement, (see attached map) DCR recommends avoidance by expanding the existing gravel road to the north side only.

The Elklick Woodlands Natural Area Preserve is located immediately adjacent to the project area and is owned by the Fairfax County Parks Authority and jointly managed by the Fairfax County Parks Authority and DCR. DCR recommends continued coordination with the DCR Northern Region Natural Area Steward, Mike Lott (540-658-8690) and the Fairfax County Parks Authority.

Under a Memorandum of Agreement established between the Virginia Department of Agriculture and Consumer Services (VDACS) and DCR represents VDACS in comments regarding potential impacts on state-listed threatened and endangered plant and insect species. The current activity will not affect any documented state-listed plants or insects.

New and updated information is continually added to Biotics. Please re-submit a completed order form and project map for an update on this natural heritage information if the scope of the project changes and/or six months has passed before it is utilized.

A fee of $125.00 has been assessed for the service of providing this information. Please find enclosed an invoice for that amount. Please return one copy of the invoice along with your remittance made payable to the Treasurer of Virginia, **DCR - Division of Natural Heritage, 600 East Main Street, 24th Floor, Richmond, VA 23219.** Payment is due within thirty days of the invoice date. Please note the change of address for remittance of payment as of July 1, 2013**.** Late payment may result in the suspension of project review service for future projects.

The Virginia Department of Game and Inland Fisheries (VDGIF) maintains a database of wildlife

locations, including threatened and endangered species, trout streams, and anadromous fish waters that may contain information not documented in this letter. Their database may be accessed from http://vafwis.org/fwis/ or contact Ernie Aschenbach at 804-367-2733 or Ernie.Aschenbach@dgif.virginia.gov.

Should you have any questions or concerns, feel free to contact me at (804) 692-0984. Thank you for the opportunity to comment on this project.

Sincerely,

Alli Baird

Alli Baird, LA, ASLA
Coastal Zone Locality Liaison

CC: Wil Orndorff-DCR-Karst
Troy Anderson, USFWS
Ernie Aschenbach, VDGIF
Mike Lott, DCR

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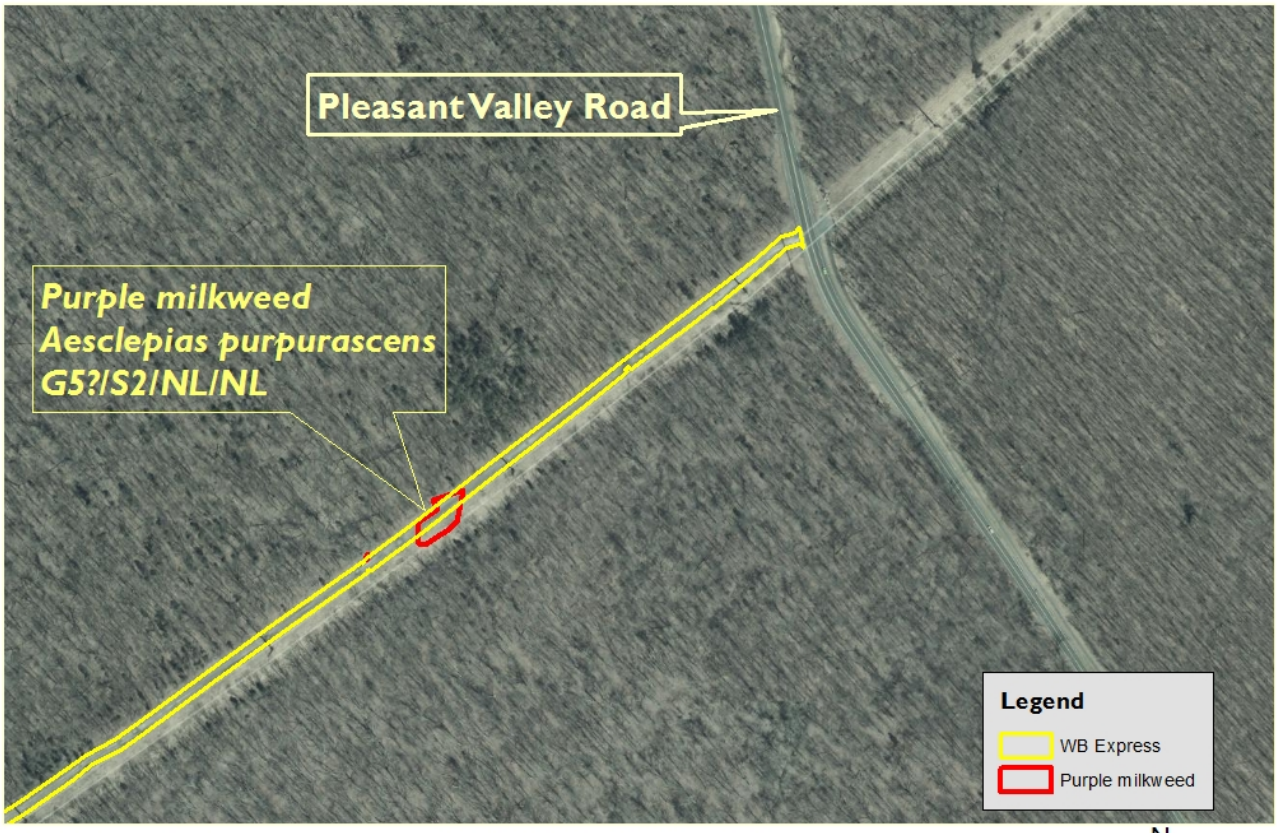


DCR
Department of Conservation & Recreation
CONSERVING VIRGINIA'S NATURAL & RECREATIONAL RESOURCES
Virginia Natural Heritage Program

74487, ERM WB Express
New Purple Milkweed location

Map created October 13, 2017 by DCR-DNH
Base imagery VGIN/VBMP orthoimagery 2013 - 2015

N

Appendix B

Letter for
Forest Hill Estates

Molly Joseph Ward
Secretary of Natural Resources

Clyde E. Cristman
Director

COMMONWEALTH of VIRGINIA

DEPARTMENT OF CONSERVATION AND RECREATION

Rochelle Altholz
Deputy Director of Administration and Finance

David C. Dowling
Deputy Director of Soil and Water Conservation and Dam Safety

Thomas L. Smith
Deputy Director of Operations

October 7, 2016

Tyler Gelles
DEQ-NRO
13901 Crown Court
Woodbridge, VA 22193

Re: WP4-16-1402, Forest Hill Estates

Dear Mr. Gelles:

The Department of Conservation and Recreation's Division of Natural Heritage (DCR) has searched its Biotics Data System for occurrences of natural heritage resources from the area outlined on the submitted map. Natural heritage resources are defined as the habitat of rare, threatened, or endangered plant and animal species, unique or exemplary natural communities, and significant geologic formations.

According to the provided survey report, *Project R16001, Survey for Isotria medeoloides (Small Whorled Pogonia) and Ptilimnium nodosum (Harperella), Forest View Estates, Stafford & Fauquier Counties, Virginia,* submitted August 19, 2016 by, Consulting Biologist: Garrie D. Rouse of Rouse Environmental Services, Small whorled pogonia (*Isotria medeoloides*, G2?/S2/LT/LE) has been documented within the project area.

Small whorled pogonia, a perennial orchid, grows in a variety of woodland habitats in Virginia, but tends to favor mid-aged woodland habitats on gently north or northeast facing slopes often within small draws. It is quite natural for plants of this species to remain dormant in the soil for long periods of time. Direct destruction, as well as habitat loss and alteration, are principle reasons for the species' decline (Ware, 1991). The Virginia Field Office of the U.S. Fish and Wildlife Service recommends that field surveys for this species be conducted in areas of Virginia south of Caroline County from May 25 through July 15 and in areas of Virginia from Caroline County and north from June 1 through July 20 (K. Mayne, pers. com. 1999). Please note that this species is currently classified as threatened by the United States Fish and Wildlife Service (USFWS) and as endangered by the Virginia Department of Agriculture and Consumer Services (VDACS).

DCR has reviewed the survey report and concurs with the methodology and results. Due to the legal status of the Small Whorled Pogonia, DCR recommends continued coordination with the United States Fish and Wildlife Service (USFWS) to ensure compliance with protected species legislation. DCR supports recommendations provided by USFWS in an email dated 10/6/16 to Tyler Gelles of DEQ protective of the Small whorled pogonia documented on the Forest Hills Estates project.

The Virginia Department of Agriculture and Consumer Services (VDACS), which has regulatory authority to conserve rare and endangered plant and insect species through the Virginia Endangered Plant

and Insect Species Act, has established a Memorandum of Agreement with the Virginia Department of Conservation and Recreation (DCR). Under this Agreement DCR's Division of Natural Heritage, in consultation with VDACS, represents VDACS in its comments and recommendations regarding the potential impact of reviewed projects or activities on state-listed plant and insect species. If the USFWS recommendations cannot be adhered to, this project or activity may impact a state-protected plant, Small whorled pogonia**,** VDACS will respond directly to ensure compliance with Virginia's Endangered Plant and Insect Species Act. Further correspondence regarding the potential impacts of this project or activity on state-listed plant and insect species should be directed to VDACS.

There are no State Natural Area Preserves under DCR's jurisdiction in the project vicinity.

New and updated information is continually added to Biotics. Please re-submit project information and map for an update on this natural heritage information if the scope of the project changes and/or six months has passed before it is utilized.

The Virginia Department of Game and Inland Fisheries (VDGIF) maintains a database of wildlife locations, including threatened and endangered species, trout streams, and anadromous fish waters that may contain information not documented in this letter. Their database may be accessed from http://vafwis.org/fwis/ or contact Ernie Aschenbach at 804-367-2733 or Ernie.Aschenbach@dgif.virginia.gov. According to the information currently in our files, Aquia Creek, which has been designated by the Virginia Department of Game and Inland Fisheries (VDGIF) as a "Threatened and Endangered Species Water" for the Dwarf wedgemussel is within 2 miles of the project area. Therefore, DCR recommends coordination with USFWS and Virginia's regulatory authority for the management and protection of this species, the VDGIF, to ensure compliance with the Virginia Endangered Species Act **(**VA ST §§ 29.1-563 – 570).

Should you have any questions or concerns, feel free to contact me at (804) 692-0984. Thank you for the opportunity to comment on this project.

Sincerely,

Alli Baird

Alli Baird, LA, ASLA
Coastal Zone Locality Liaison

CC: Troy Andersen, USFWS
Keith Tignor, VDACS
Amy Ewing, VDGIF

Literature Cited

Ware, D.M.E. 1991. Small whorled pogonia. In Virginia's Endangered Species: Proceedings of a Symposium. K. Terwilliger ed. The McDonald and Woodward Publishing Company, Blacksburg, Virginia.

Appendix C

Letters for Independence Boulevard

DCR

Interoffice

MEMORANDUM

To: Robbie Rhur, DCR-DPRR

From: Alli Baird, DCR-DNH

Date: November 30, 2016

Subject: DEQ 16-218F, Independence Boulevard – New Connector Road
Due November 30, 2016

The Department of Conservation and Recreation's Division of Natural Heritage (DCR) has searched its Biotics Data System for occurrences of natural heritage resources from the area outlined on the submitted map. Natural heritage resources are defined as the habitat of rare, threatened, or endangered plant and animal species, unique or exemplary natural communities, and significant geologic formations.

According to the information currently in our files, the Grafton Ponds Conservation Site is located within two miles of the project site. Conservation sites are tools for representing key areas of the landscape that warrant further review for possible conservation action because of the natural heritage resources and habitat they support. Conservation sites are polygons built around one or more rare plant, animal, or natural community designed to include the element and, where possible, its associated habitat, and buffer or other adjacent land thought necessary for the element's conservation. Conservation sites are given a biodiversity significance ranking based on the rarity, quality, and number of element occurrences they contain; on a scale of 1-5, 1 being most significant. Grafton Ponds Conservation Site has been given a biodiversity significance ranking of B2, which represents a site of very high significance. The natural heritage resources of concern at this site are:

Ambystoma mabeei	Mabee's salamander	G4/S1S2/NL/LT
Fimbristylis perpusilla	Harper's fimbry	G2/S1/SOC/LE
Litsea aestivalis	Pondspice	G3?/S1/NL/NL
Chelone cuthbertii	Cuthbert Turtlehead	G3/S2/NL/NL
Calamovilfa brevipilis	Pine barren sandreed	G4/S1/NL/NL
Sphagnum macrophyllum var. *macrophyllum*	Large-leaf Peatmoss	G3G5T3?/S2/NL/NL
Sabatia campanulata	Slender marsh pink	G5/S2/NL/NL
Hypericum setosum	Hairy Saint-John's wort	G4G5/S1S2/NL/NL
Coastal Plain Seasonal Buttonbush Pond		G3?/S2/NL/NL
Coastal Plain Seasonal Pond (Swamp Tupelo – Overcup Oak type)		G3/SNR/NL/NL

In addition, in October 2016 DCR-DNH documented a new plant occurrence of Elliott's goldenrod (Solidago Latissimifolia, G5/S2/NL/NL) along the access road on the west side of the Dominion powerline ROW south of Richneck Road. There are three distinct colonies, one on the east side of the access road and two on the west side. Elliott's goldenrod (*Solidago latissimifolia*, also known as *Solidago elliottii*, G5/S2/NL/NL) occurs in peaty ground and disturbed wetlands in southeast Virginia and on the eastern shore, where it reaches the northern limit of its range. This goldenrod looks like many other species of the genus *Solidago*, featuring small, bright yellow flowers in sprays on the upper branches.

The plant blooms in September and October (Ludwig 2004). Elliott's goldenrod is currently known from 10 occurrences in Virginia, and historically known from 1 occurrence.

The Coastal Plain Seasonal Pond (Swamp Tupelo – Overcup Oak type) and the Coastal Plain Seasonal Buttonbush Pond natural communities (vernal pools) at the NW corner of the intersection between Richneck Road and the railroad tracks is incorrectly located on the Project Area & Sheet Index. These vernal pools are much closer to the intersection and are likely to be impacted by the proposed disturbance area shown on sheets 3 & 4 (Impact #4). Please note, according to DCR zoologist much of this area floods in wet years including areas north of the railroad tracks and west of Richneck Road. The location of the proposed alignment and bike/pedestrian path is adjacent to the confirmed, documented breeding pond for the Mabee's salamander. The proximity will fragment the salamander habitat disrupting migratory pathways to the vernal pond. In addition, the quality of the water will be impacted by run-off from the paved areas and the modified hydrology and proposed BMP, have the potential to impact the breeding pond.

DCR recommends relocating the expanded limits of disturbance in the NW corner of Richneck Road and the railroad ROW to the eastern side of Richneck Road in the project ROW to avoid impacts to the significant communities. Due to the potential impacts to the Elliott's goldenrod , the potential impacts to the Mabee's salamander habitat, migratory paths and breeding pond, and other natural heritage resources DCR also recommends avoidance of documented occurrences of natural heritage resources and habitat by relocating the proposed road west of existing resources as shown on Independence Boulevard Permit Support Document, Newport News, VA, Figure 10 Alternative E, dated August 24, 2016 as submitted to the Army Corps of Engineers.

To minimize adverse impacts to the aquatic ecosystem as a result of the proposed activities, DCR recommends the implementation of and strict adherence to applicable state and local erosion and sediment control/storm water management laws and regulations. Due to the legal status of Mabee's salamander, DCR recommends continued coordination with Virginia's regulatory authority for the management and protection of this species, the VDGIF, to ensure compliance with the Virginia Endangered Species Act **(**VA ST §§ 29.1-563 – 570). DCR also recommends a meeting with DEQ, DCR, DGIF, Newport News Waterworks and the applicant to discuss alternative solutions for development that has less impact to natural heritage resources and a long-term protection plan for the Grafton Ponds complex as stated in VDGIF email dated February 05, 2016 to DEQ and ACOE.

Under a Memorandum of Agreement established between the Virginia Department of Agriculture and Consumer Services (VDACS) and the DCR, DCR represents VDACS in comments regarding potential impacts on state-listed threatened and endangered plant and insect species.

The Grafton Ponds Natural Area Preserve has been documented within two miles of the project boundary. However, due to the scope of the activity proposed, DCR does not anticipate any negative impacts to the natural area preserve and associated natural heritage resources from this project.

New and updated information is continually added to Biotics. Please re-submit project information and map for an update on this natural heritage information if the scope of the project changes and/or six months has passed before it is utilized.

The Virginia Department of Game and Inland Fisheries (VDGIF) maintains a database of wildlife locations, including threatened and endangered species, trout streams, and anadromous fish waters that may contain information not documented in this letter. Their database may be accessed from http://vafwis.org/fwis/ or contact Ernie Aschenbach at 804-367-2733 or Ernie.Aschenbach@dgif.virginia.gov.

Thank you for the opportunity to comment on this project.

Cc: Amy Ewing, VDGIF
Troy Andersen, USFWS

Literature Cited

Ludwig, J. Christopher. 2004. Personal communication. Department of Conservation and Recreation, Division of Natural Heritage, Richmond, VA, November 3.

Molly Joseph Ward
Secretary of Natural Resources

Clyde E. Cristman
Director

Rochelle Altholz
Deputy Director of Administration and Finance

David C. Dowling
Deputy Director of Soil and Water Conservation and Dam Safety

Thomas L. Smith
Deputy Director of Operations

COMMONWEALTH of VIRGINIA
DEPARTMENT OF CONSERVATION AND RECREATION

December 1, 2016

John D. Evans
Norfolk District, Corps of Engineers
803 Front Street
Norfolk, VA 23510-1096

Re: NAO-2013-1618, 15-1726, Independence Boulevard

Dear Mr. Evans:

The Department of Conservation and Recreation's Division of Natural Heritage (DCR) has searched its Biotics Data System for occurrences of natural heritage resources from the area outlined on the submitted map. Natural heritage resources are defined as the habitat of rare, threatened, or endangered plant and animal species, unique or exemplary natural communities, and significant geologic formations.

According to the information currently in our files, the Grafton Ponds Conservation Site is located within two miles of the project site. Conservation sites are tools for representing key areas of the landscape that warrant further review for possible conservation action because of the natural heritage resources and habitat they support. Conservation sites are polygons built around one or more rare plant, animal, or natural community designed to include the element and, where possible, its associated habitat, and buffer or other adjacent land thought necessary for the element's conservation. Conservation sites are given a biodiversity significance ranking based on the rarity, quality, and number of element occurrences they contain; on a scale of 1-5, 1 being most significant. Grafton Ponds Conservation Site has been given a biodiversity significance ranking of B2, which represents a site of very high significance. The natural heritage resources of concern at this site are:

Ambystoma mabeei	Mabee's salamander	G4/S1S2/NL/LT
Fimbristylis perpusilla	Harper's fimbry	G2/S1/SOC/LE
Litsea aestivalis	Pondspice	G3?/S1/NL/NL
Chelone cuthbertii	Cuthbert Turtlehead	G3/S2/NL/NL
Calamovilfa brevipilis	Pine barren sandreed	G4/S1/NL/NL
Sphagnum macrophyllum var. *macrophyllum*	Large-leaf Peatmoss	G3G5T3?/S2/NL/NL
Sabatia campanulata	Slender marsh pink	G5/S2/NL/NL
Hypericum setosum	Hairy Saint-John's wort	G4G5/S1S2/NL/NL
Coastal Plain Seasonal Buttonbush Pond		G3?/S2/NL/NL
Coastal Plain Seasonal Pond (Swamp Tupelo – Overcup Oak type)		G3/SNR/NL/NL

In addition, in October 2016 DCR-DNH documented a new plant occurrence of Elliott's goldenrod

(Solidago Latissimifolia, G5/S2/NL/NL) along the access road on the west side of the Dominion powerline ROW south of Richneck Road. There are three distinct colonies, one on the east side of the access road and two on the west side. Elliott's goldenrod (*Solidago latissimifolia*, also known as *Solidago elliottii*, G5/S2/NL/NL) occurs in peaty ground and disturbed wetlands in southeast Virginia and on the eastern shore, where it reaches the northern limit of its range. This goldenrod looks like many other species of the genus *Solidago*, featuring small, bright yellow flowers in sprays on the upper branches. The plant blooms in September and October (Ludwig 2004). Elliott's goldenrod is currently known from 10 occurrences in Virginia, and historically known from 1 occurrence.

The Coastal Plain Seasonal Pond (Swamp Tupelo – Overcup Oak type) and the Coastal Plain Seasonal Buttonbush Pond natural communities (vernal pools) at the NW corner of the intersection between Richneck Road and the railroad tracks is incorrectly located on the Project Area & Sheet Index. These vernal pools are much closer to the intersection and are likely to be impacted by the proposed disturbance area shown on sheets 3 & 4 (Impact #4). Please note, according to DCR zoologist much of this area floods in wet years including areas north of the railroad tracks and west of Richneck Road. The location of the proposed alignment and bike/pedestrian path is adjacent to the confirmed, documented breeding pond for the Mabee's salamander. The proximity will fragment the salamander habitat disrupting migratory pathways to the vernal pond. In addition, the quality of the water will be impacted by run-off from the paved areas and the modified hydrology and proposed BMP, have the potential to impact the breeding pond.

DCR recommends relocating the expanded limits of disturbance in the NW corner of Richneck Road and the railroad ROW to the eastern side of Richneck Road in the project ROW to avoid impacts to the significant communities. Due to the potential impacts to the Elliott's goldenrod , the potential impacts to the Mabee's salamander habitat, migratory paths and breeding pond, and other natural heritage resources DCR also recommends avoidance of documented occurrences of natural heritage resources and habitat by relocating the proposed road west of existing resources as shown on Independence Boulevard Permit Support Document, Newport News, VA, Figure 10 Alternative E, dated August 24, 2016 as submitted to the Army Corps of Engineers.

To minimize adverse impacts to the aquatic ecosystem as a result of the proposed activities, DCR recommends the implementation of and strict adherence to applicable state and local erosion and sediment control/storm water management laws and regulations. Due to the legal status of Mabee's salamander, DCR recommends continued coordination with Virginia's regulatory authority for the management and protection of this species, the VDGIF, to ensure compliance with the Virginia Endangered Species Act **(**VA ST §§ 29.1-563 – 570). DCR also recommends a meeting with DEQ, DCR, DGIF, Newport News Waterworks and the applicant to discuss alternative solutions for development that has less impact to natural heritage resources and a long-term protection plan for the Grafton Ponds complex as stated in VDGIF email dated February 05, 2016 to DEQ and ACOE.

Under a Memorandum of Agreement established between the Virginia Department of Agriculture and Consumer Services (VDACS) and the DCR, DCR represents VDACS in comments regarding potential impacts on state-listed threatened and endangered plant and insect species.

The Grafton Ponds Natural Area Preserve has been documented within two miles of the project boundary. However, due to the scope of the activity proposed, DCR does not anticipate any negative impacts to the natural area preserve and associated natural heritage resources from this project.

New and updated information is continually added to Biotics. Please re-submit project information and map for an update on this natural heritage information if the scope of the project changes and/or six months has passed before it is utilized.

The Virginia Department of Game and Inland Fisheries (VDGIF) maintains a database of wildlife locations, including threatened and endangered species, trout streams, and anadromous fish waters that may contain information not documented in this letter. Their database may be accessed from http://vafwis.org/fwis/ or contact Ernie Aschenbach at 804-367-2733 or Ernie.Aschenbach@dgif.virginia.gov.

Thank you for the opportunity to comment on this project.

Should you have any questions or concerns, feel free to contact me at 804-692-0984. Thank you for the opportunity to comment on this project.

Sincerely,

Alli Baird

Alli Baird, LA, ASLA
Coastal Zone Locality Liaison

Cc: Amy Ewing, VDGIF
Troy Andersen, USFWS

Molly Joseph Ward
***Secretary** of Natural Resources*

Clyde E. Cristman
Director

Rochelle Altholz
Deputy Director of Administration and Finance

David C. Dowling
Deputy Director of Soil and Water Conservation and Dam Safety

Thomas L. Smith
Deputy Director of Operations

COMMONWEALTH of VIRGINIA

DEPARTMENT OF CONSERVATION AND RECREATIO

May 12, 2017

Mr. John Evans
Norfolk District, Corps of Engineers
803 Front Street
Norfolk, VA 23510-1096

Re: NAO-2013-1618, 15-1726, Independence Boulevard

Dear Mr. Evans:

The Department of Conservation and Recreation's Division of Natural Heritage (DCR) has reviewed the forwarded letter from R. Timothy Davis of VHB dated January 26, 2917 regarding the DCR-DNH comments for the Independence Boulevard Project..

As stated in DCR's prior comments, Elliot's Goldenrod (*Solidago latissimifolia*, G5/S2/NL/NL), a rare plant was documented in 2016 on both the east and west sides of Road 1 (VHB Figure 1 Map) within the powerline easement. DCR continues to recommend avoidance of this natural heritage resource as shown on DCR Map 1.

In addition, Hairy St. John's-wort (*Hypericum setosum*, G4G5/S1S2/NL/NL) has been documented within the proposed conservation area as identified on the VHB Figure 3 Map. Hairy St. John's-wort inhabits wet pine flatwoods and savannas, boggy areas and scrapes and blooms from May to September (Weakley, in prep.). It has also been documented in disturbed areas such as powerline rights-of-way and roadside ditches (TNC, 1996). In Virginia, Hairy St. John's-wort is currently known from 7 locations in the piedmont and coastal plain regions, and historically from an additional 10 locations.

Due to the documented occurrences of Hairy St. John's-wort and suitable habitat within the proposed conservation mitigation area and north of the parcel, DCR recommends an inventory for the resource in this area to verify the extent and quality of the occurrences (Map 2). With the survey results we can more accurately evaluate any potential impacts to natural heritage resources from the project and offer specific protection recommendations for inclusion in the protective instrument for the parcel.

DCR-Division of Natural Heritage biologists are qualified and available to conduct inventories for rare, threatened, and endangered species. Please contact J. Christopher Ludwig, Natural Heritage Inventory Manager, at chris.ludwig@dcr.virginia.gov or 804-371-6206 to discuss arrangements for field work.

DCR also continues to recommend avoidance of vernal pools and habitat associated with the documented Mabee's salamander (*Ambystoma mabeei*, G4/S1S2/NL/LT) within and immediately adjacent to the project area. DCR supports directing runoff from paved areas away from vernal pools near the roadway

corridor and the permanent protection of approximately 31.5 acres of salamander habitat through the use of a conservation easement held by a third party, that can be more fully protective of the species and habitat than a deed restriction. To minimize adverse impacts to the aquatic ecosystem as a result of the proposed activities, DCR recommends the implementation of and strict adherence to applicable state and local erosion and sediment control/storm water management laws and regulations. DCR also recommends that prior to any land disturbance, the vernal pools and Mabee's habitat be staked and surrounded with safety fencing or other visible barrier (VA Erosion and Sediment Control Handbook, STD & SPEC 3.01) in coordination with VDGIF to prevent encroachment . Finally, DCR also supports continued coordination with Virginia's regulatory authority for the management and protection of the Mabee's salamander, the VDGIF, to ensure compliance with the Virginia Endangered Species Act.

There are no State Natural Area Preserves under DCR's jurisdiction in the project vicinity.

Under a Memorandum of Agreement established between the Virginia Department of Agriculture and Consumer Services (VDACS) and the Virginia Department of Conservation and Recreation (DCR), DCR represents VDACS in comments regarding potential impacts on state-listed threatened and endangered plant and insect species. The current activity will not affect any documented state-listed plants or insects.

New and updated information is continually added to Biotics. Please re-submit project information and map for an update on this natural heritage information if the scope of the project changes and/or six months has passed before it is utilized.

The Virginia Department of Game and Inland Fisheries (VDGIF) maintains a database of wildlife locations, including threatened and endangered species, trout streams, and anadromous fish waters that may contain information not documented in this letter. Their database may be accessed from http://vafwis.org/fwis/ or contact Ernie Aschenbach at 804-367-2733 or Ernie.Aschenbach@dgif.virginia.gov.

Should you have any questions or concerns, feel free to contact me at 804-692-0984. Thank you for the opportunity to comment on this project.

Sincerely,

Alli Baird

Alli Baird, LA, ASLA
Coastal Zone Locality Liaison

Cc: Amy Ewing, VDGIF
Zach, Bradford, DCR-DNH
Janine Howard, DEQ

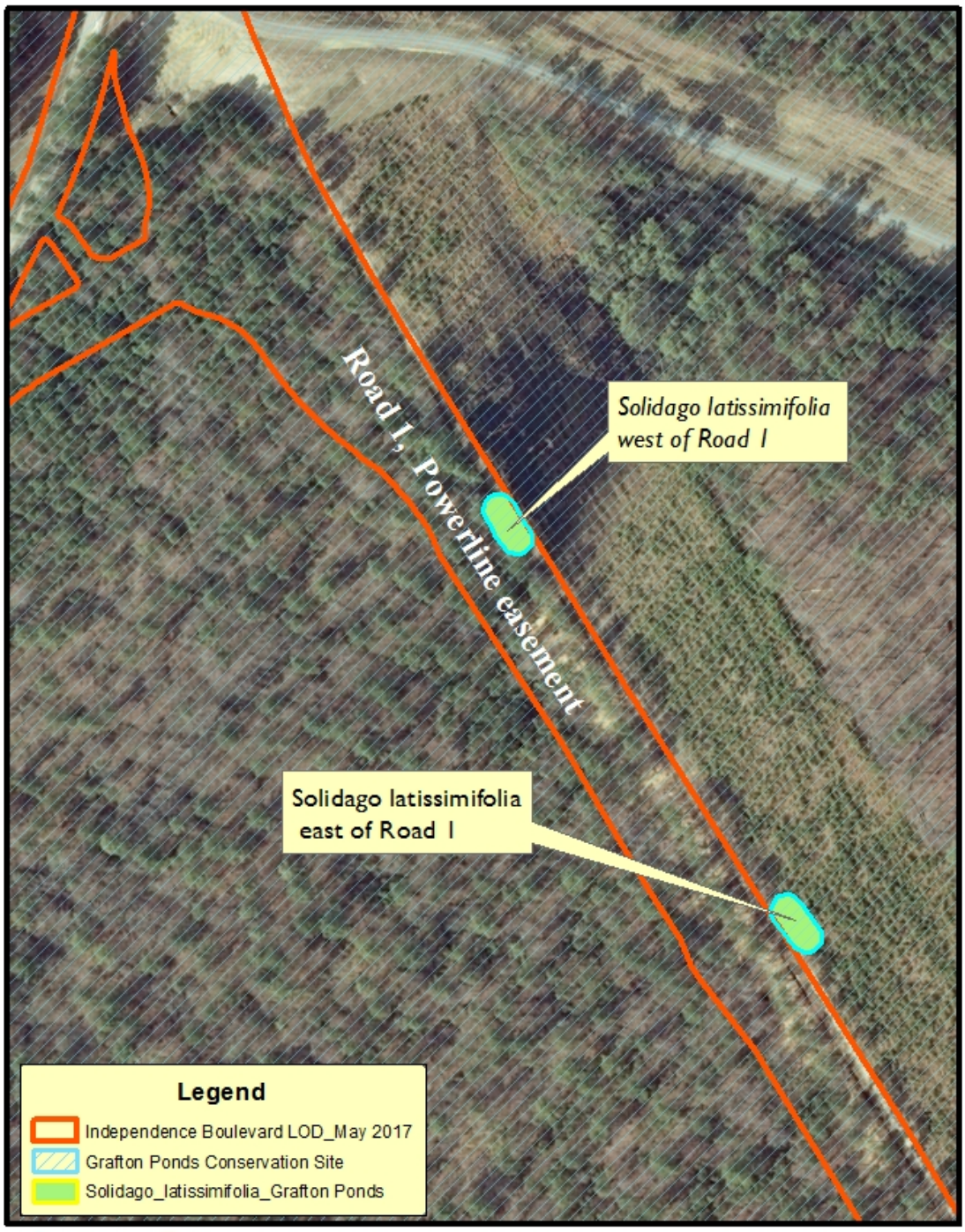
Literature Cited

The Nature Conservancy. 1996. Biological and Conservation Data System. Arlington, Virginia, USA.

Weakley, A.S. In prep. *Flora of the Carolina's and Virginia*. The Nature Conservancy, Southeastern Regional Office. p. 7-10.

MAP I - Independence Boulevard

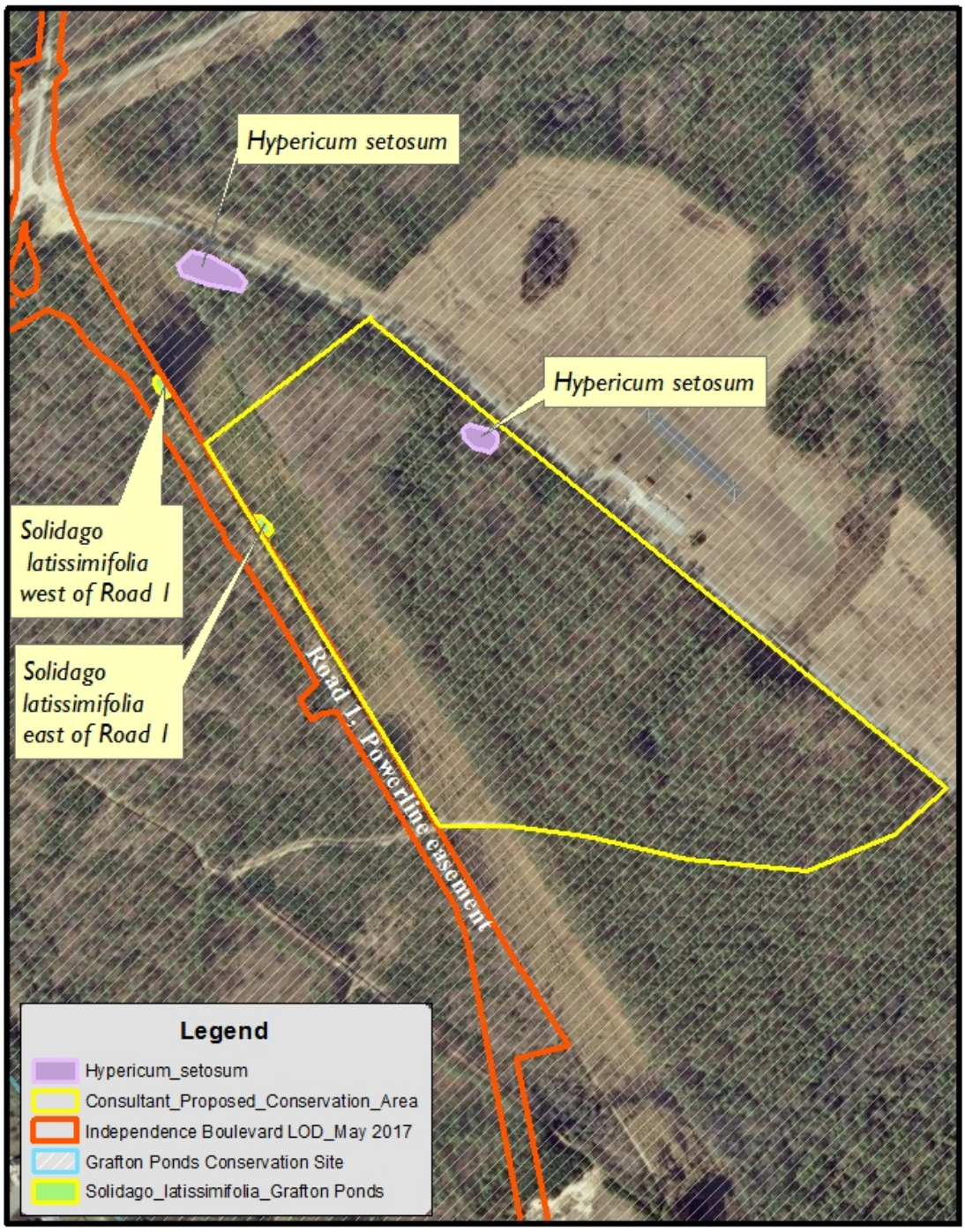
NAO-2013-1618, 15-1726



Map created by DCR-DNH, May 5, 2017: Base imagery: VGIN VBMP 2013-15

MAP II - Independence Boulevard

NAO-2013-1618, 15-1726



Map created by DCR-DNH, May 10, 2017: Base imagery: VGIN VBMP 2013-15

Appendix D

Letter for Plum Tree Island National Wildlife Refuge CCP & EA

DCR

Interoffice

MEMORANDUM

To: Robbie Rhur, DCR-DPRR

From: Alli Baird, DCR-DNH

Date: February 16, 2017

Subject: DEQ 17-008F, Plum Tree Island National Wildlife Refuge
Due February 16, 2017

The Department of Conservation and Recreation's Division of Natural Heritage (DCR) has searched its Biotics Data System for occurrences of natural heritage resources from the area outlined on the submitted map associated with the Plum Tree Island National Wildlife Refuge Draft Comprehensive Conservation Plan and Environmental Assessment. Natural heritage resources are defined as the habitat of rare, threatened, or endangered plant and animal species, unique or exemplary natural communities, and significant geologic formations.

According to the information currently in our files, the Black River Marshes Conservation Site is located within the project site. Conservation sites are tools for representing key areas of the landscape that warrant further review for possible conservation action because of the natural heritage resources and habitat they support. Conservation sites are polygons built around one or more rare plant, animal, or natural community designed to include the element and, where possible, its associated habitat, and buffer or other adjacent land thought necessary for the element's conservation. Conservation sites are given a biodiversity significance ranking based on the rarity, quality, and number of element occurrences they contain; on a scale of 1-5, 1 being most significant. Black River Marshes Conservation Site has been given a biodiversity significance ranking of B3, which represents a site of high significance. The natural heritage resources of concern at this site are:

Circus cyaneus	Northern Harrier	G5/S1S2B,S3N/NL/NL
Cistothorus platensis	Sedge Wren	G5/S1B,S1S2N/NL/NL

The natural heritage resources of concern associated with Back River Marshes Conservation Site and located within two miles of Plum Tree Island NWR are:

Rynchops niger	Black skimmer	G5/S2B,S1N/NL/NL
Sternula antillarum	Least tern	G4/S2B/NL/NL
Cicindela dorsalis dorsalis	Northeastern beach tiger beetle	G3G4T2/S2/LT/LT
Charadrius melodus	Piping plover	G3/S2BS1N/LT/LT
Macrodiplax balteata	Marl pennant	G5/S1/NL/NL
Cicindela trifasciata	A tiger beetle	G5/S1/NL/NL

In addition, Pretty Dodder (*Cuscuta indecora*, G5/S1/NL/NL) has been historically documented within the refuge and Spanish moss (*Tillandsia usneoides*, G5/S1S2/NL/NL) has been historically documented within two miles of Plum Tree Island Refuge.

DCR supports Alternative a B as the preferred option. Please note that some of the potential facilities and infrastructure development as well as recreational, restoration and management activities may potentially impact natural heritage resources. Therefore, DCR recommends an updated survey for rare, threatened and endangered species and natural communities be conducted prior to the development of management plans for these resources. With the survey results, DCR can offer specific protection recommendations for avoidance and minimization of potential impacts to documented resources.

DCR-Division of Natural Heritage biologists are qualified and available to conduct inventories for rare, threatened, and endangered species. Please contact J. Christopher Ludwig, Natural Heritage Inventory Manager, at chris.ludwig@dcr.virginia.gov or 804-371-6206 to discuss arrangements for field work. A list of other individuals who are qualified to conduct inventories may be obtained from the USFWS.

Due to the legal status of the Northeastern beach tiger beetle and the Piping plover, DCR recommends coordination with USFWS and Virginia's regulatory authority for the management and protection of these species, the VDGIF, to ensure compliance with protected species legislation.

. DCR also supports the Habitat Management and Inventory and Monitoring plans as described on page 3 – 15 of the *Plum Tree Island National Wildlife Refuge Draft Comprehensive Conservation Plan and Environmental Assessment*, (CCP) dated January 2017. In addition, DCR would like to be identified as a partner for rare, threatened and endangered species under Goal 3, Objective 3.1, p 3-38 and 3-57, 3-58 of the CCP and requests spatial data for rare, threatened and endangered species including the Least tern, Black skimmer, Northern harrier and Northeastern beach tiger beetle. DCR also supports the protection and enhancement of the natural heritage resources and associated habitat documented at the Plum Tree Island NWR, as well as the active control of invasive species within the refuge.

Under a Memorandum of Agreement established between the Virginia Department of Agriculture and Consumer Services (VDACS) and the Virginia Department of Conservation and Recreation (DCR), DCR represents VDACS in comments regarding potential impacts on state-listed threatened and endangered plant and insect species. Survey results should be coordinated with DCR-DNH and USFWS. Upon review of the results, if it is determined the species is present, and there is a likelihood of a negative impact on the species, DCR-DNH will recommend coordination with VDACS to ensure compliance with Virginia's Endangered Plant and Insect Species Act.

Furthermore the refuge is within a 3C high significance core as identified in the Virginia ConservationVision. The Virginia ConservationVision is a GIS analysis for identifying and prioritizing conservation lands in Virginia.(http://www.dcr.virginia.gov/natural_heritage/vaconvision.shtml)

Cores are areas of unfragmented natural cover with at least 100 acres of interior condition and provide habitat for a wide range of species, from interior-dependent forest species to habitat generalists, as well as species that utilize marsh, dune, and beach habitats. Cores also provide benefits in terms of open space, recreation, water quality (including drinking water protection), and carbon sequestration, along with the associated economic benefits of these functions. The cores are ranked form 1 to 5 (5 being the least ecologically relevant) using many prioritization criteria, such as the number of natural heritage resources (i.e. rare species) occurring in a core.

There are no State Natural Area Preserves under DCR's jurisdiction in the project vicinity.

New and updated information is continually added to Biotics. Please re-submit project information and map for an update on this natural heritage information if the scope of the project changes and/or six

months has passed before it is utilized.

The Virginia Department of Game and Inland Fisheries (VDGIF) maintains a database of wildlife locations, including threatened and endangered species, trout streams, and anadromous fish waters that may contain information not documented in this letter. Their database may be accessed from http://vafwis.org/fwis/ or contact Ernie Aschenbach at 804-367-2733 or Ernie.Aschenbach@dgif.virginia.gov

Thank you for the opportunity to comment on this project.

Cc: Amy Ewing, VDGIF
Troy Andersen, USFWS

Appendix E

Letter for Wallops Island Tower Project

Molly Joseph Ward
Secretary of Natural Resources

Clyde E. Cristman
Director

Rochelle Altholz
Deputy Director of Administration and Finance

David C. Dowling
Deputy Director of Soil and Water Conservation and Dam Safety

Thomas L. Smith
Deputy Director of Operations

COMMONWEALTH of VIRGINIA
DEPARTMENT OF CONSERVATION AND RECREATION

March 31, 2017

Joshua Bundick
Goddard Space Flight Center
Wallops Island, VA 23337

Re: Wallops Island Tower Project

Dear Mr. Bundick:

The Department of Conservation and Recreation's Division of Natural Heritage (DCR) has searched its Biotics Data System for occurrences of natural heritage resources from the area outlined on the submitted map. Natural heritage resources are defined as the habitat of rare, threatened, or endangered plant and animal species, unique or exemplary natural communities, and significant geologic formations.

According to the information currently in our files, the Wallops Island Causeway Marshes Conservation Site is located within the proposed project site. Conservation sites are tools for representing key areas of the landscape that warrant further review for possible conservation action because of the natural heritage resources and habitat they support. Conservation sites are polygons built around one or more rare plant, animal, or natural community designed to include the element and, where possible, its associated habitat, and buffer or other adjacent land thought necessary for the element's conservation. Conservation sites are given a biodiversity significance ranking based on the rarity, quality, and number of element occurrences they contain; on a scale of 1-5, 1 being most significant. Wallops Island Causeway Marshes Conservation Site has been given a biodiversity significance ranking of B4, which represents a site of moderate significance. The natural heritage resources of concern at this site are:

Circus cyaneus	Northern harrier	G5/S1S2B,S3N/NL/NL
Ammodramas caudacutus	Saltmarsh sparrow	G4/S2B,S3N/NL/NL

The Northern harrier is a slender bird of prey that breeds throughout the northern parts of the northern hemisphere in Canada, the northernmost USA, and in northern Eurasia (Bazuin, 1991). Marsh Hawk is a disused common name for the American form. Northern harriers hunt small mammals and birds, surprising them as they drift low over fields and marshes they inhabit. While Northern harriers are common in Virginia during the winter, they rarely breed this far south, with only a few nesting locations known each summer in the coastal plain. There are scattered, non-breeding summer records from across the state.

In the early 20th century, hunting posed a great threat to the Northern harrier (Bazuin, 1991). Later, it suffered from the effects of DDT, a widely used pesticide, which resulted in the thinning of its egg shells and thus failed reproduction (NatureServe, 2009). Current threats to the Northern harrier include human disturbances to nesting birds and destruction of breeding habitats, including the alterations of wetlands and the conversion of grasslands from native grasses to monotypic farmland (Bazuin, 1991; NatureServe, 2009).
The secretive Saltmarsh Sharp-tailed sparrow is a small songbird that breeds in a narrow strip of salt marshes along the Atlantic seaboard from southern Maine all the way south to the Florida Peninsula (NatureServe, 2009). Until 1995 this and Nelson's Sharp-tailed sparrow were considered a single species. In Virginia, Saltmarsh Sharp-tailed Sparrows are uncommon winter residents, but they rarely start to breed with only a few nesting locations in tidal marshes of the Atlantic coast and Chesapeake Bay known each summer (Wilds, 1991).

This Sharp-tailed sparrow has a streaked back and breast with alternating gray and orange-buff colored stripes on its head. It has a distinctive gray nape and a gray cheek surrounded by a rather bright orange triangle. Nests are built low to the ground just above the water. Eggs are laid from May to August with double broods typical (Wilds, 1991).

Widespread loss, degradation, and fragmentation of coastal salt marshes along the eastern seaboard are the biggest threats to this species. Alteration of the habitat from the invasion of the exotic common reed (*Phragmites australis;* Benoit and Askins, 1999 per NatureServe, 2009) and spraying for mosquito and other pest control (Byrd and Johnston, 1991) may also be concerns.

In addition Assawoman Island Conservation Site is within two miles of the project area and has been given a biodiversity significance ranking of B3, which represents a site of high significance. The natural heritage resources of concern at this site are:

Animal Assemblage	Bird Nesting Colony	G5/SNR/NL/NL
Circus cyaneus	Northern harrier	G5/S1S2B,S3N/NL/NL
Charadrius melodus	Piping plover	G3/S2B,S1N/LT/LT
Charadrius wilsonia	Wilson's plover	G5/S1B/NL/LE
Caretta caretta	Loggerhead sea turtle	G3/S1B,S1N/LE/LT
Sternula antillarum	Least tern	G4/S2B/NL/NL
Rynchops niger	Black skimmer	G5/S2B,S1N/NL/NL

Finally, North Wallops Island Conservation Site is within two miles of the project site and has a biodiversity significance ranking of B2, which represents a site of very high significance. The natural heritage resources of concern at this site are:

Circus cyaneus	Northern harrier	G5/S1S2B,S3N/NL/NL
Caretta caretta	Loggerhead sea turtle	G3/S1B,S1N/LE/LT
Charadrius melodus	Piping plover	G3/S2B,S1N/LT/LT

To minimize adverse impacts to the aquatic ecosystem as a result of the proposed activities, DCR recommends the implementation of and strict adherence to applicable state and local erosion and sediment control/storm water management laws and regulations. In addition, DCR also recommends the development and implementation of an invasive species management plan to minimize the spread of documented *Phragmites australis* within the project area.

Due to the legal status of the Piping plover and the Loggerhead sea turtle, DCR recommends coordination with the U.S. Fish and Wildlife Service (USFWS) for potential impacts to migratory birds, possible mitigation measures and to ensure compliance with protected species legislation. Due to the legal status of the Piping plover, Wilson's plover, and Loggerhead sea turtle DCR recommends coordination with Virginia's regulatory authority for the management and protection of these species, the VDGIF, to ensure compliance with the Virginia Endangered Species Act **(**VA ST §§ 29.1-563 – 570**)**.

Furthermore, the United States Fish and Wildlife Service Guidance dated September 14, 2000 "new construction of communication towers creates a potentially significant impact on migratory birds, especially some 350 species of night-migrating birds". "Communications towers are estimated to kill 4-5 million birds per year and some of these species affected are also protected under the Endangered Species Act and Bald and Golden Eagle Act" (USFWS, 2000). Therefore, DCR strongly recommends voluntary implementation of USFWS interim guidelines for Communication Tower Siting, Construction, Operation, and Decommissioning (http://www.fws.gov/northeast/virginiafield/PDFS/EndSpecies/MISC/commtower.pdf) especially with regards to: 2. Towers should be no more than 199' and not require guy wires, 4. not be sited near wetlands or other known bird concentration areas, 5.have minimal use of preferably white strobe lights of minimal number, intensity and number of flashes per minute allowed by the FAA, 6. Guy wires should have daytime visual markers in wires, 8. Seasonal restriction on construction during high bird activity periods, and 11. Allow access for personnel and researchers from the Communication Tower Working Group for monitoring purposes.

There are no State Natural Area Preserves under DCR's jurisdiction in the project vicinity.

Under a Memorandum of Agreement established between the Virginia Department of Agriculture and Consumer Services (VDACS) and the Virginia Department of Conservation and Recreation (DCR), DCR represents VDACS in comments regarding potential impacts on state-listed threatened and endangered plant and insect species. The current activity will not affect any documented state-listed plants or insects.

New and updated information is continually added to Biotics. Please re-submit project information and map for an update on this natural heritage information if the scope of the project changes and/or six months has passed before it is utilized.

The Virginia Department of Game and Inland Fisheries (VDGIF) maintains a database of wildlife locations, including threatened and endangered species, trout streams, and anadromous fish waters that may contain information not documented in this letter. Their database may be accessed from http://vafwis.org/fwis/ or contact Ernie Aschenbach at 804-367-2733 or Ernie.Aschenbach@dgif.virginia.gov.

Should you have any questions or concerns, feel free to contact me at 804-692-0984. Thank you for the opportunity to comment on this project.

Sincerely,

Alli Baird

Alli Baird, LA, ASLA
Coastal Zone Locality Liaison

Cc: Amy Ewing, VDGIF
Troy Andersen, USFWS

Literature Cited

Bazuin, J. B. 1991. Northern Harrier, *Circus cyaneus*. In Virginia's Endangered Species: Proceedings of a Symposium. K. Terwilliger ed. The McDonald and Woodward Publishing Company, Blacksburg, Virginia. pp. 496-497.

Benoit, L. K. and R. A. Askins. 1999. Impact of the spread of PHRAGMITES on the distribution of birds in Connecticut tidal marshes. Wetlands 19:194-208.

Byrd, M. A., and D. W. Johnston. 1991. Birds. Pages 477-537 in K. Terwilliger, coordinator. Virginia's endangered species: proceedings of a symposium. McDonald and Woodward Publ. Co., Blacksburg, Virginia.

NatureServe. 2009. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available http://www.natureserve.org/explorer. (Accessed: March 16, 2010).

NatureServe. 2009. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available http://www.natureserve.org/explorer. (Accessed: March 30, 2010).

U.S. Fish and Wildlife Service. 2000. Interim Guidelines for Recommendations on Communications Tower Siting, Construction, Operation, and Decommissioning.

Wilds, Claudia. 1991. Sharp-tailed Sparrow. . In Virginia's Endangered Species: Proceedings of a Symposium. K. Terwilliger ed. The McDonald and Woodward Publishing Company, Blacksburg, Virginia. pp. 523-525.

Appendix F

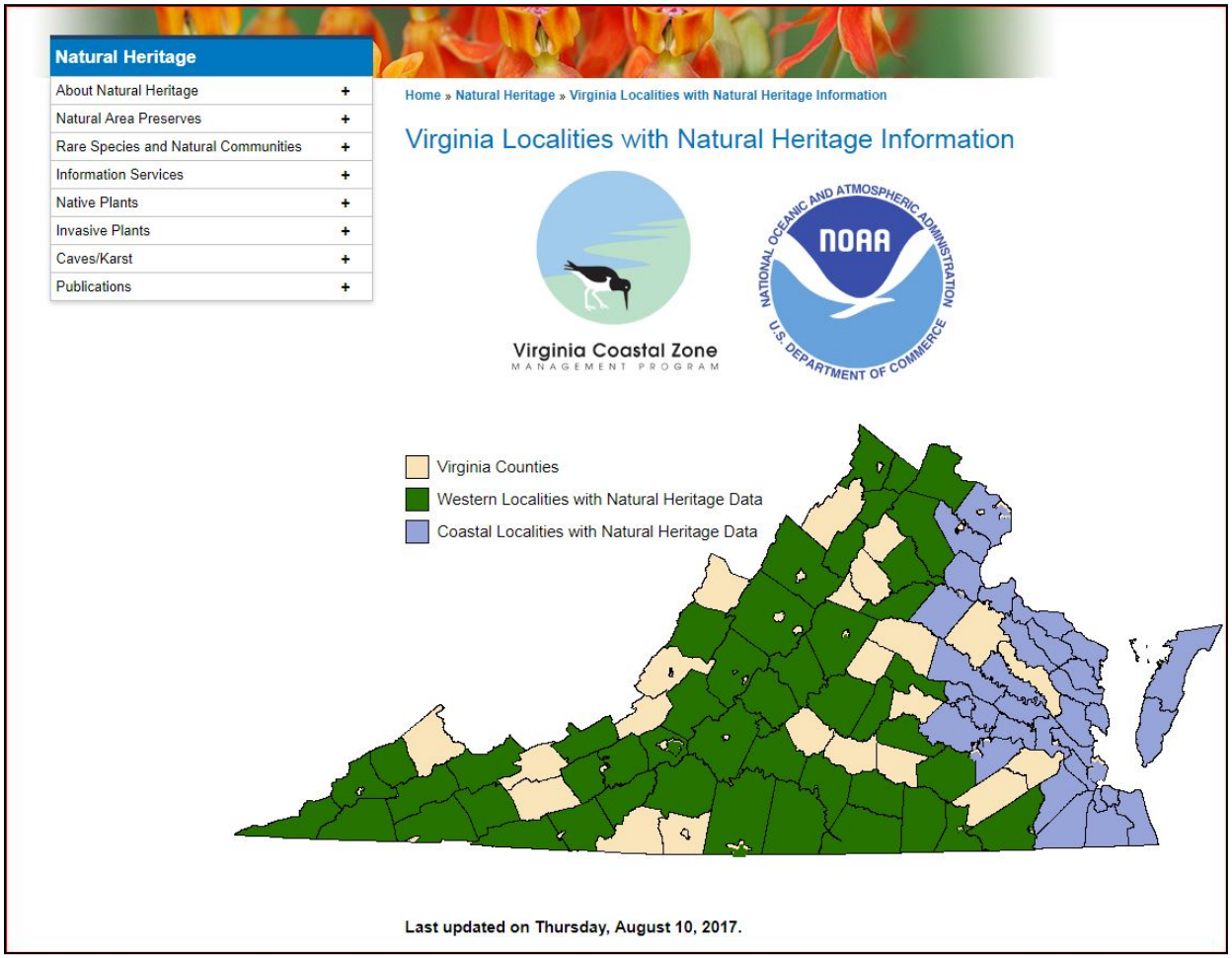
List of Coastal Training Participants

List of Coastal NHDE Training Participants for FY16

Virginia Department of Forestry
Ecosystem Services
DCR – Soil & Water Conservation
DCR – Division of Natural Heritage
Draper Aden
Middlesex County
Angler Environmental
POWER Engineers, Inc
DCR – Conservation Planning and Training Coordinator
AECOM
Froehling & Robertson, Inc.
James City County
GeoEnvironmental Services, Inc.

Appendix G

Map of Localities with
Natural Heritage Information

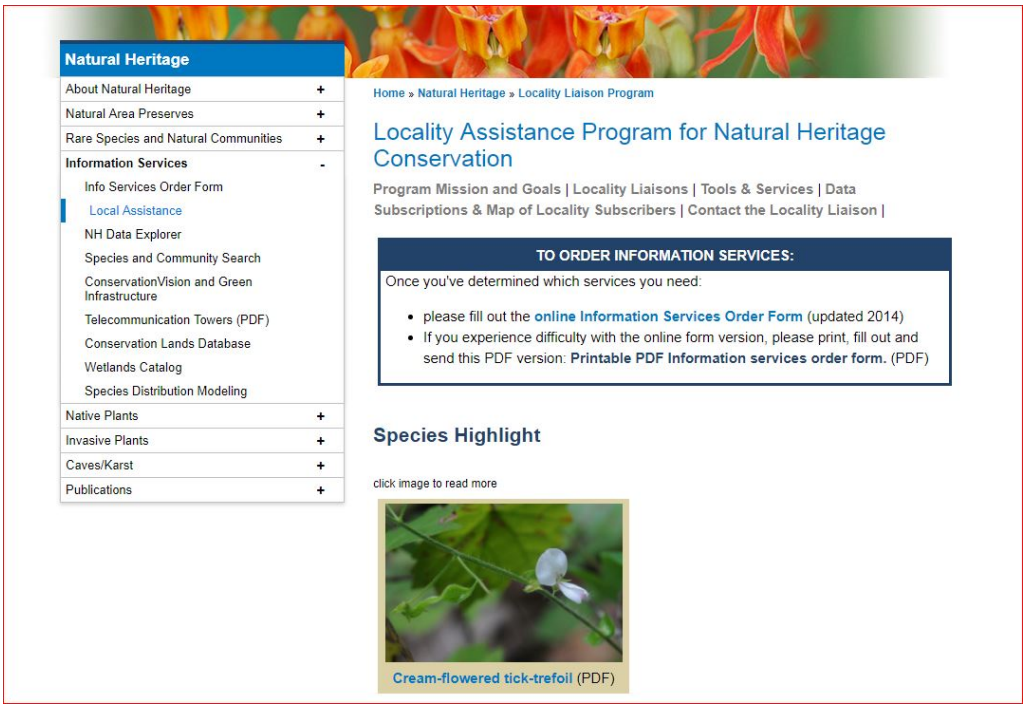


Map of Virginia Localities with Natural Heritage Information can be found at:

http://www.dcr.virginia.gov/natural-heritage/localitiesmap

Appendix H

Quarterly Coastal Species Highlight



Species Highlight:

Cream-flowered tick-trefoil (*Desmodium ochroleucum*)

Global Rarity Rank: G2 – Imperiled

State Rarity Rank: SH – Historically known from VA, but not verified

Legal Status: None

This year, DCR's Chesapeake Bay Region Steward discovered a new population of cream-flowered tick-trefoil (*Desmodium ochroleucum*; G2SH) at Cumberland Marsh Natural Area Preserve in New Kent County. Last documented in Virginia in 1969 and presumed lost, cream-flowered tick-trefoil is only known from about two-dozen sites (totaling roughly 700 plants) across its range in the Mid-Atlantic and Southeast. Virginia's newly discovered population totals many plants, displays evidence of ample new seedling recruitment, and is likely one of the largest known populations of the species. Throughout most of its range, cream-flowered tick-trefoil is typically found in glades and open woodlands over calcium-rich substrata like limestone. Previous collections in Virginia were made from unremarkable places like along roads through immature, low-diversity woods. The New Kent County population co-occurs with other calcium-lovers like nettle-leaf noseburn (*Tragia urticifolia*), yellow giant hyssop (*Agastache neptoides*), and wild columbine (*Aquilegia canadensis*), indicating the site is underlain by nutrient rich alluvial sediment and possibly even Native American shell middens

Appendix I

Northampton Comprehensive Plan
Natural Heritage Information

Northampton County Natural Heritage Resources

Natural heritage resources as defined by the Virginia Department of Conservation and Recreation – Division of Natural Heritage (DCR) are the habitat of rare, threatened, or endangered plant and animal species, unique or exemplary natural communities, and significant geologic formations such as caves and karst features. Northampton County is currently home to 63 distinct types of natural heritage resources with 182 total occurrences throughout the county (Table I: Natural Heritage Resources). In addition, DCR has identified 27 terrestrial conservation sites as areas necessary for their survival and has 5 Natural Area Preserves within its boundaries (Table II: Conservation Sites and Natural Area Preserves).

DCR identifies and protects natural heritage resources statewide and maintains a comprehensive database of all documented occurrences of natural heritage resources in Virginia. DCR has developed conservation sites that contain known populations of natural heritage resources and include adjacent or surrounding habitat vital for their protection. Conservation sites do not represent protected lands. They are recommended for protection and stewardship because of the natural heritage resources and habitat they support, but are not currently under any official protection designation. Conservation sites can be used to screen development projects for potential impacts to natural heritage resources, aid local and regional planning, identify targets for acquisitions and easements, and guide priorities for restoration activities.

An example of a conservation site in Northampton County is the Cape Charles / Pickett's Harbor-Wise Point Conservation Site. In addition to multiple rare species and habitat types found here, the site/ecosystem are critically important because of the geographic location. Conservation sites are given a biodiversity significance ranking based on the rarity, quality, and number of element occurrences they contain; on a scale of 1-5, 1 being most significant. Cape Charles / Pickett's Harbor-Wise Point Conservation Site has been given a biodiversity significance ranking of B2, which represents a site of very high significance. The natural heritage resources associated with this conservation site are:

Northeastern beach tiger beetle	*Cicindela dorsalis*	G4T2/S2/LT/LT
Northern Harrier	*Circus cyaneus*	G5/S1S2B,S3N/NL/NL
Sea-beach knotweed	*Polygonum glaucum*	G3/S1S2/NL/NL
Maritime Dune Grassland		G2/S2/NL/NL
Maritime Dune Woodland		G1G2/S1S2/NL/NL
Maritime Upland Forest		G2/S2/NL/NL
Maritime Dune Scrub		G2/S2?/NL/NL
Interdune Swale/Pond		G2G4/S2?/NL/NL
Piedmont Acidic Oak-Hickory Forest		G4G5/S4S5/NL/NL
Landbird Migratory Concentration Area		G3/S1/NL/NL
Monarch Butterfly Migratory Roost Site		GU/S1/NL/NL

Northeastern beach tiger beetle, *Cicindela dorsalis dorsalis*,
Photo by S.R. Roble © 2003

The **Northeastern beach tiger beetle** historically ranged from coastal Massachusetts to Cape May County, New Jersey, with a disjunct population occurring along shorelines of the Chesapeake Bay. Currently, only the Chesapeake Bay populations (including the Virginia occurrences) and one occurrence in Massachusetts remain (NatureServe, 2009). Along the Chesapeake Bay, this species inhabits wide, highly dynamic, sandy beaches with back beach vegetation. Adults are most active in the summer, actively hunting for insects along the beach (NatureServe, 2009). The larvae live in burrows in the sand where they sit and wait for passing prey to feed on. Larvae are present on the beaches year round, though they hibernate beginning in early fall (NatureServe, 2009). This species is currently classified as threatened by the United States Fish and Wildlife Service (USFWS) and the Virginia Department of Agriculture and Consumer Services (VDACS).

Threats to the northeastern beach tiger beetle include shoreline development, beach stabilization, high recreational use, pesticides, and natural events including winter beach erosion, flood tides, and hurricanes (Knisley, 1991). Disturbance to dynamic, sandy beaches in areas where they occur may detrimentally impact tiger beetles through habitat degradation and individual mortality.

The **Northern harrier** is a slender bird of prey that breeds throughout the northern parts of the northern hemisphere in Canada, the northernmost USA, and in northern Eurasia (Bazuin, 1991). Marsh Hawk is a disused common name for the American form. Northern harriers hunt small mammals and birds, surprising them as they drift low over fields and marshes they inhabit. While Northern harriers are common in Virginia during the winter, they rarely breed this far south, with only a few nesting locations known each summer in the coastal plain. There are scattered, non-breeding summer records from across the state.

In the early 20th century, hunting posed a great threat to the Northern harrier (Bazuin, 1991). Later, it suffered from the effects of DDT, a widely used pesticide, which resulted in the thinning of its egg shells and thus failed reproduction (NatureServe, 2009). Current threats to the Northern harrier include human disturbances to nesting birds and destruction of breeding habitats, including the alterations of wetlands and the conversion of grasslands from native grasses to monotypic farmland (Bazuin, 1991; NatureServe, 2009).

Maritime Zone Communities

These are ecological community groups with distributions and vegetation controlled by oceanic influences (*e.g.*, deep sand deposits, salt spray, maritime microclimates). In Virginia, these are confined to narrow zones along both flanks of the Eastern Shore, the western shore of the Chesapeake Bay, and the Atlantic shore in extreme southeastern Virginia.

Maritime Dune Grassland
Photo by I.T. Wilson © 2004

Maritime Dune Grasslands
These coastal grassland communities of ocean- and bay-fronting dunes are greatly influenced by storm surge activity. Communities of this group are characterized by a few well-adapted herbaceous species and exhibit zonation that is likely related to gradients of salt spray and soil moisture. Maritime Dune Grasslands occur along the Atlantic coast of the United States from New York south to South Carolina. The dominant plants in Virginia stands are saltmeadow cordgrass, American beachgrass bitter seabeach grass, and beach panic grass.

Maritime Dune Woodlands
These deciduous, coniferous, and broadleaf evergreen woodlands occur on back dunes protected from regular salt spray. Similar communities occur along the Atlantic and Gulf coasts from New Jersey to Texas. Compared to maritime upland forests, these woodlands are more localized and restricted to xeric dune systems. Loblolly pine dominates the canopy, but hardwoods such as Southern red oak, Water oak and American holly are frequent . Tall shrubs, low shrubs and herbaceous cover are sparse.

Maritime Upland Forests
This group contains species-poor evergreen and mixed coastal forests of sheltered, oceanside and bayside dunes and sand flats generally protected from salt spray. Similar forests occur along the Atlantic and Gulf coasts from Delaware to Texas.
Pine-dominated maritime forests are distributed along the length of the outer Coastal Plain maritime zone and barrier islands in Virginia, including the western shore of the Chesapeake Bay. This community is dominated by Loblolly pine which can be the sole canopy component, or can be associated with Southern red oak, Black cherry Water oak and Sassafras. A tall shrub layer when present is composed of Southern wax myrtle and Blueberry. Vines and lianas are nearly always in abundance but there is a sparse herbaceous layer.

Maritime Dune Scrub
The shrublands of this group occupy somewhat protected maritime back dunes and leeward dune slopes, generally along the inland edges of dune systems in zones sheltered from constant ocean salt spray. Maritime Dune Scrub occurs along the Atlantic coast of the United States from New Jersey south to Florida. The vegetation is characterized by several tree, shrub and dwarf shrub species. Dominant scrubby species include Northern bayberry, Groundsel-bush, and stunted individuals of Loblolly pine, Persimmon, and Black cherry.

Maritime Interdune Swale / Pond
In Virginia, Interdune Swale/Pond are confined to the barrier beaches of the Eastern Shore (Accomack and Northampton Counties) and southeastern Virginia (City of Virginia Beach). Encompassing swales and low hollows between secondary dunes, habitats are characterized by perched water tables and shallow, seasonal or temporary flooding. The swales are predominantly influenced by fresh water from rainstorms, but some may be periodically flooded by salt water from ocean storm surges. Typically, occurrences are densely vegetated by one or more species of grasses such as saltmeadow cordgrass; rushes; or sedges. All types within the group are uncommon to rare, small-patch communities existing in fragile settings (Fleming et al, 2017).

Sea-beach knotweed is a lustrous perennial with bluish-green, fleshy leaves with reddish brown nutlets on erect branches (Beal, 1977). This globally rare species occurs from Massachusetts to the Carolinas on sand dunes and beaches of the Chesapeake Bay and Atlantic Ocean. Virginia has nine current occurrences of the species and four historic occurrences.

Natural Area Preserves

Northampton County has five Natural Area Preserves protecting significant habitats. The Virginia Natural Area Preserves System was established in the late 1980's to protect some of the most significant natural areas in the Commonwealth. A site becomes a component of the preserve system once it is dedicated as a natural area preserve by the Director of the Department of Conservation & Recreation. Natural area dedication works in much the same way as a conservation easement by placing legally binding restrictions on future activities on a property. The Natural Area Preserve System includes examples of some of the rarest natural communities and rare species habitats in Virginia.

Cape Charles
This preserve is found on the Bay side of the Eastern Shore. Its 29 acres feature coastal beach, dune, and maritime forest habitats. The preserve provides habitat for the federally threatened northeastern beach tiger beetle. Coast bedstraw, an herbaceous plant, grows on the dunes at the interface between open grassy areas and shaded areas where shrubs and trees dominate. During fall migration, the forest abounds with migratory songbirds and raptors resting and feeding before continuing their journey across the Chesapeake Bay.

A long boardwalk takes visitors through several natural communities, including a globally-rare Maritime Dune Woodland, and ends at a low bluff overlooking the Chesapeake Bay. There is no beach access. Due to the sensitivity of the habitat, access to the beach is restricted to researchers and land managers.

Magothy Bay
The Magothy Bay Natural Area Preserve is currently jointly owned by the Virginia Department of Conservation and Recreation and The Nature Conservancy. This 286-acre preserve encompasses woodlands, forested wetlands, and extensive salt marshes. These communities provide habitat for a variety of coastal species. Waterfowl, shorebirds and wading birds forage in the salt marsh for mussel, snails, fish and crustaceans. Diamondback terrapins and clapper rails are common on the mud flats. The woodlands provide excellent resting and foraging habitat for migratory songbirds. Warblers, orioles and other migratory songbirds utilize the abundance of trees and shrubs to rest and replenish energy reserves before crossing the Chesapeake Bay.

This recently acquired preserve and public access facilities are still in the development stage.

Savage Neck Dunes
Savage Neck Natural Area Preserve with its mile of Chesapeake Bay shoreline is special for its unusual bay-side dunes and associated maritime forest communities, and because it supports one of the most important conservation areas in the world for the federally threatened Northeastern beach tiger beetle. The preserve's most striking physical feature is a well developed system of sand dunes that tower as high as 50 feet above the bay. Forests, woodlands and scrub at Savage Neck Dunes are vital habitat for a wide variety of birds including highly important habitats for migratory birds. Trees and shrubs provide escape cover and feeding areas for year-round residents and summer nesters. In the fall, millions of land birds, headed for Central and South America, congregate on the lower end of the Eastern Shore in preparation for the flight south. The tip of the Eastern Shore supports one of the largest congregations of land birds found anywhere along the Atlantic coast and is a critical. Many songbird species, which travel primarily at night, seek shelter and food in woodlands during the daytime. Also, birds of prey flock to the area during the fall migration, including Peregrine Falcons and Cooper's Hawks.
There is a parking lot at the entrance to the preserve and a marked hiking trail.

Pickett's Harbor
This preserve is comprised of two tracts fronting the Chesapeake Bay near Pickett's Harbor and contains exemplary beach strand and dune communities. The Pickett's Harbor Natural Area Preserve supports a population of the federally threatened northeastern beach tiger beetle. Behind the active dune fields of the bayshore are stable Holocene dune ridges which support maritime scrub and woodlands. The preserve also provides important resting and feeding habitat for neo-tropical migratory birds.

Wreck Island
Wreck Island is part of Virginia's Atlantic coast barrier island chain. This pristine island preserve consists of beach, dune, maritime grassland/shrubland, salt flat and salt marsh habitats, and is an important nursery for colonial nesting birds. In fact, the preserve has been designated as an Audubon Important Bird Area (IBA) as part of the Barrier Island/Lagoon System IBA, which extends from Assateague Island south to Fisherman Island NWR. This IBA is considered one of the most important in VA. Wind, waves and ocean currents continuously reshape the island, which is slowly migrating towards the mainland.

Wreck Island Natural Area Preserve can only be accessed by boat. The preserve is open to the public September 1 through April 14, which includes prime surf fishing periods. The preserve is closed to all visitation from April 15 through August 31 to protect nesting birds. Hunting, camping, fires and unleashed dogs are prohibited year-round.

Virginia's Coastal Reserve

Additionally, Northampton contains 14 undeveloped barrier islands that are part of The Nature Conservancy's Virginia Coast Reserve (VCR). These are thin strips of land running parallel to the coastline that help buffer Virginia's Eastern Shore against the effects of storms. "This coastal wilderness also features thousands of acres of pristine salt marshes, vast tidal mudflats, shallow bays, and productive forested uplands. Situated at the lower end of the Delmarva Peninsula, VCR is also one of the most important migratory bird stopover sites on Earth." The islands shelter more than 250 species of raptors, songbirds, and shorebirds, which find food in the adjacent bays and salt marshes (The Nature Conservancy, March 2011).

Potential Threats to Natural Heritage Resources:

Due to its orientation and geographic position, the lowest reach of the Delmarva Peninsula in southern Northampton County ("Southern Tip") represents a significant bottleneck for birds migrating along the Atlantic Coast during the fall months. Large numbers of migrants that reach the mouth of the Chesapeake Bay "fall out" and utilize habitats near the southern tip of the peninsula. The area is important for raptors and passerines that breed in northeastern North America and winter in the Caribbean as well as for temperate migrants that winter in the southeastern United States. An estimated 10 million passerines and 80,000 diurnal raptors migrate through this area between August and December, including many species of conservation concern.

The single greatest threat to this area and its bird species is the ongoing conversion of habitat to residential and commercial development. Interest in the area from developers and potential homeowners has led to a rise in land valuations and subdivision of privately owned land for development. Alteration of the local hydrology by land disturbance and ditching can change or eliminate habitat. Fragmentation of forests and the introduction of invasives, both flora and fauna, can have a direct effect on the survival of many native plants, migratory bird species, and the endangered Delmarva fox squirrel.

Threats to the barrier islands along Northampton's Atlantic coast, and to the Maritime Zone Communities are incompatible development, and recreational activities; overfishing, invasive species; incompatible agricultural and forestry practices and sea-level rise.

Literature Cited:

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Appendix:

Definitions of Abbreviations Used on Natural Heritage Resource Lists of the Virginia Department of Conservation and Recreation

Natural Heritage State Ranks
The following ranks are used by the Virginia Department of Conservation and Recreation to set protection priorities for natural heritage resources. Natural Heritage Resources, or "NHR's," are rare plant and animal species, rare and exemplary natural communities, and significant geologic features. The criterion for ranking NHR's is the number of populations or occurrences, i.e. the number of known distinct localities; the number of individuals in existence at each locality or, if a highly mobile organism (e.g., sea turtles, many birds, and butterflies), the total number of individuals; the quality of the occurrences, the number of protected occurrences; and threats.

S1 - Critically imperiled in the state because of extreme rarity or because of some factor(s) making it especially vulnerable to extirpation from the state. Typically 5 or fewer populations or occurrences, or very few remaining individuals (<1000).

S2 - Imperiled in the state because of rarity or because of some factor(s) making it very vulnerable to extirpation from the state. Typically 6 to 20 populations or occurrences or few remaining individuals (1,000 to 3,000).

S3 - Vulnerable in the state either because rare and uncommon, or found only in a restricted range (even if abundant at some locations), or because of other factors making it vulnerable to extirpation. Typically having 21 to 100 populations or occurrences (1,000 to 3,000 individuals).

S4 - Apparently secure; Uncommon but not rare, and usually widespread in the state. Possible cause of long-term concern. Usually having >100 populations or occurrences and more than 10,000 individuals.

S5 - Secure; Common, widespread and abundant in the state. Essentially ineradicable under present conditions, typically having considerably more than 100 populations or occurrences and more than 10,000 individuals.

S#B - Breeding status of an animal within the state

S#N - Non-breeding status of animal within the state. Usually applied to winter resident species.

S#? - Inexact or uncertain numeric rank.

SH - Possibly extirpated (Historical). Historically known from the state, but not verified for an extended period, usually > 15 years; this rank is used primarily when inventory has been attempted recently.

S#S# - Range rank; A numeric range rank, (e.g. S2S3) is used to indicate the range of uncertainty about the exact status of the element. Ranges cannot skip more than one rank.

SU - Unrankable; Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.

SNR - Unranked; state rank not yet assessed.

SX - Presumed extirpated from the state. Not located despite intensive searches of historical sites and other appropriate habitat, and virtually no likelihood that it will be rediscovered.

SNA - A conservation status rank is not applicable because the element is not a suitable target for conservation activities.

Natural Heritage Global Ranks are similar, but refer to a species' rarity throughout its total range. Global ranks are denoted with a "G" followed by a character. Note GX means the element is presumed extinct throughout its range. A "Q" in a rank indicates that a taxonomic question concerning that species exists. Ranks for subspecies are denoted with a "T". The global and state ranks combined (e.g. G2/S1) give an instant grasp of a species' known rarity. These ranks should not be interpreted as legal designations.

FEDERAL LEGAL STATUS
The Division of Natural Heritage uses the standard abbreviations for Federal endangerment developed by the U.S. Fish and Wildlife Service, Division of Endangered Species and Habitat Conservation.

LE - Listed Endangered
LT - Listed Threatened
PE - Proposed Endangered
PT - Proposed Threatened
C - Candidate (formerly C1 - Candidate category 1)
E(S/A) - treat as endangered because of similarity of appearance
T(S/A) - treat as threatened because of similarity of appearance
SOC - Species of Concern species that merit special concern (not a regulatory category)
NL – no federal legal status

STATE LEGAL STATUS
The Division of Natural Heritage uses similar abbreviations for State endangerment.

LE - Listed Endangered
PE - Proposed Endangered
SC - Special Concern - animals that merit special concern according to VDGIF (not a regulatory category)
LT - Listed Threatened
PT - Proposed Threatened
C - Candidate
NL - no state legal status

For information on the laws pertaining to threatened or endangered species, please contact:

U.S. Fish and Wildlife Service for all FEDERALLY listed species;
Department of Agriculture and Consumer Services, Plant Protection Bureau for STATE listed plants and insects

Department of Game and Inland Fisheries for all other STATE listed animals

Conservation Sites Ranking

Brank is a rating of the significance of the conservation site based on presence and number of natural heritage resources; on a scale of 1-5, 1 being most significant. Sites are also coded to reflect the presence/absence of federally/state listed species:

Conservation Site Ranks	Legal Status of Site
B1 – Outstanding significance	FL – Federally listed species present
B2 – Very High significance	SL – State listed species present
B3 – High significance	NL – No listed species present
B4 – Moderate significance	
B5 – Of general Biodiversity significance	

Table I: Northampton County Natural Heritage Resources

Beach plum
Big-headed rush
Black Skimmer
Bog Fern
Brown Pelican
Brown Pelican
Caspian Tern
Coastal Plain / Outer Piedmont Acidic Seepage Swamp
Coastal Plain Seasonal Pond (Swamp Tupelo - Overcup Oak Type)
Coastal water-pennywort
Cream-flowered tick-trefoil
Delmarva Fox Squirrel
Dwarf Burhead
Elliott's goldenrod
False Hop Sedge
Gadwall
Glasswort Salt Flat
Glossy Ibis
Great Egret
Gull-billed Tern
Interdune Swale (Northern Mixed Grassland Type)
Interdune Swale (Saltmeadow Cordgrass Brackish Type)
King Rail
Landbird Migratory Concentration Area
Least Tern
Little Blue Heron
Loblolly Pine / Sand Heather Dune Woodland
Loggerhead (Sea Turtle)
Maritime Dune Grassland
Maritime Loblolly Pine Forest
Maritime Swamp Forest (Black Willow Type)
Maritime Swamp Forest (Red Maple - Tupelo Type)
Maritime Wet Grassland
Monarch Butterfly Migratory Roost Site
Non-Riverine Wet Hardwood Forest (Northern Coastal Plain Type)
North Atlantic Mixed Dune Grassland
North Atlantic Upper Beach / Overwash Flat
Northeastern Beach Tiger Beetle
Northern Bayberry Dune Scrub
Northern Harrier
Peregrine Falcon
Piedmont Acidic Oak - Hickory Forest
Piping Plover
Plukenet's flatsedge
Royal Tern
Sandwich Tern
Sea-beach amaranth
Sea-beach Knotweed
Slender sand sedge
Snowy Egret
Southern Bladderwort
Southern seaside spurge
Spanish-moss
Tricolored Heron
Tricolored Heron
Tricolored Heron
Twisted leaf goldenrod
Twisted leaf goldenrod
Wax Myrtle Interdune Shrubland
Wax Myrtle Maritime Shrub Swamp
White Ibis
Wild Olive
Wilson's Plover
Xeric Backdune Grassland
Yellow-crowned Night-heron

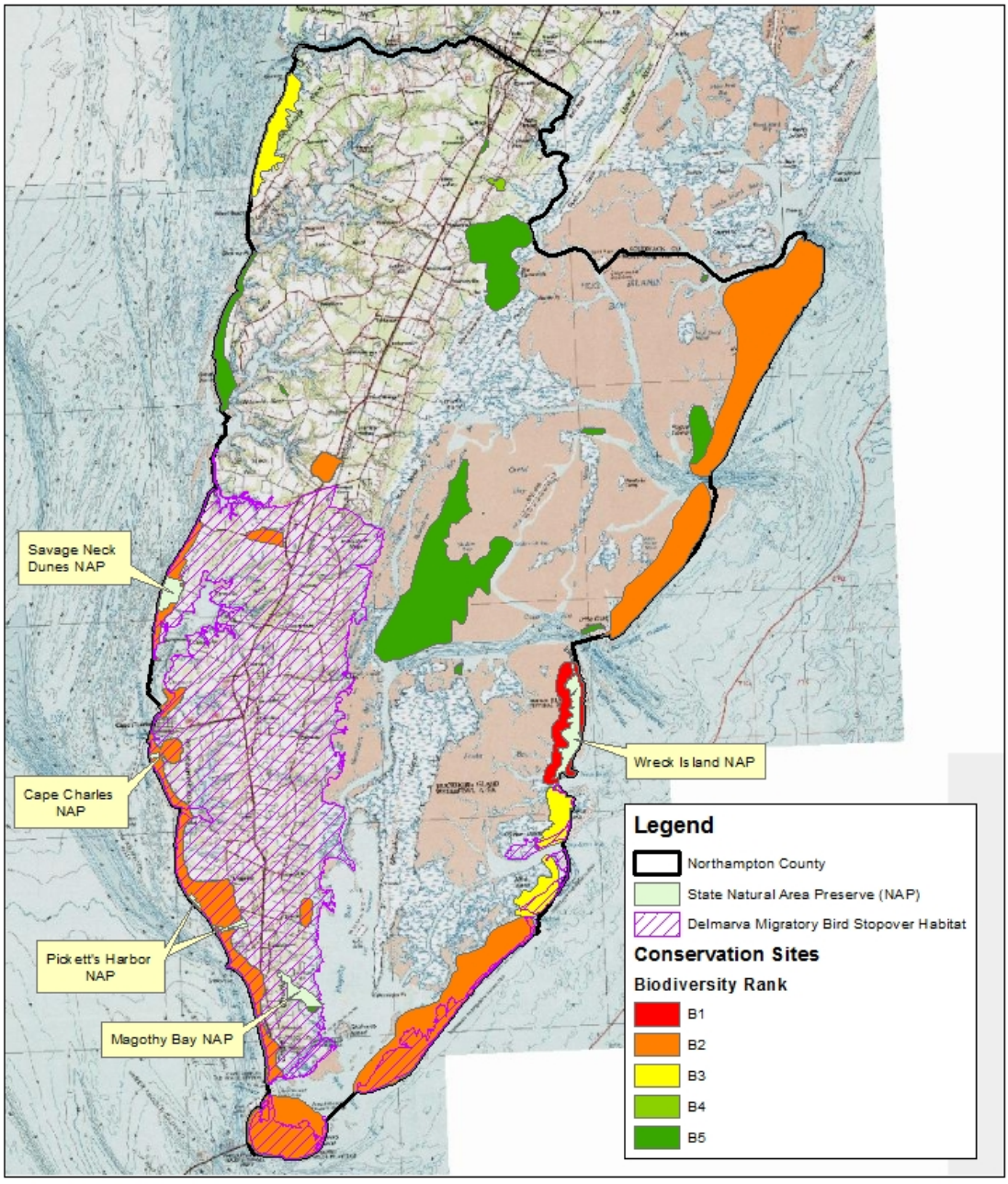
Table II – Northampton County Conservation Sites

Conservation Site Name	Biodiversity Rank	Legal Status
BRANT HILL	B5	SL
CAPE CHARLES/PICKETTS HARBOR/WISE POINT	B2	FL
CHURCH NECK	B5	FL
COBB ISLAND	B2	FL
DELMARVA MIGRATORY BIRD STOPOVER HABITAT	B2	FL
EASTVILLE FOREST	B2	NL
EGGING MARSH	B5	SL
ELKINS MARSH HABITAT ZONE	B5	SL
FISHERMANS ISLAND	B2	FL
GREENS CREEK	B4	NL
HADLOCK ROADSIDE HABITAT ZONE	B5	NL
HOG ISLAND	B2	FL
JACOBUS CREEK HABITAT ZONE	B5	NL
LITTLE COBB ISLAND	B5	FL
MAGOTHY BAY	B5	NL
MYRTLE ISLAND	B3	FL
OCCOHANNOCK NECK	B3	FL
REEDTOWN STREAM BOTTOM FOREST	B3	NL
ROGUE ISLAND	B5	NL
RUNNING CHANNEL POINT	B5	SL
SAVAGE NECK DUNES	B2	FL
SCARBOROUGH NECK	B3	FL
SHIP SHOAL ISLAND	B3	FL
SMITH ISLAND	B2	FL
STEELMANS LANDING	B2	NL
UPSHUR CREEK	B5	FL
WRECK ISLAND	B1	FL

Natural Area Preserves

Wreck Island
Pickett's Harbor
Savage Neck Dunes
Magothy Bay
Cape Charles

Northampton County Natural Heritage Resources



DCR
Department of Conservation & Recreation
CONSERVING VIRGINIA'S NATURAL & RECREATIONAL RESOURCES
Virginia Natural Heritage Program

Map created September 2017 by DCR-DNH for Northampton County
Base imagery: 2002 National Geographic Quads