Natural Heritage – Locality Liaison/Habitat Restoration

Final Report for FY2021 CZM Grant No. NA21NOS4190152Task #5

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Virginia Department of Conservation and Recreation –
Division of Natural Heritage

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Executive Summary

During the FY2021 grant year, the Department of Conservation and Recreation-Division of Natural Heritage (DCR-DNH) reviewed 1,275 projects for impacts to natural heritage resources in the coastal zone (42% of the projects reviewed statewide) as defined by the Department of Environmental Quality (DEQ) Coastal Zone Management (CZM) Program. During FY2021, 758 coastal projects were submitted through the NHDE, 59% of all the projects submitted for review in the coastal zone. 54 of the projects reviewed in the coastal zone were solar projects, representing a continuing trend of solar development in Virginia. Specific project highlights within this report represent the diversity of projects reviewed including creation of nesting habitat in Hamptons Roads, a parkway extension, a fire station development, and a data center development area in Prince William County, and a pipeline replacement project in the Cities of Chesapeake and Suffolk, Isle of Wight, Southampton, Surry and Sussex Counties.

Coastal localities and other conservation partners participated in 8 training sessions for the Natural Heritage Data Explorer (NHDE) website (https://vanhde.org) including 41 from state agencies, 9 from local governments, 20 from consulting companies, 7 from land trusts, 1 from a Planning District Commission, 2 from federal agencies, and 2 from Virginia Indian tribes. At the end of FY2021, there were 43 coastal localities, 8 Planning District Commissions and 18 land trusts within the coastal zone with access to NHDE, digital shapefile data, and/or a combination of these tools. This equates to 98% of coastal zone counties or cities having Natural Heritage data, 100% of the Planning District Commissions and 82% of the Land Trusts as of September 30, 2022. The Natural Heritage Locality Liaison (Locality Liaison) and project review staff renewed or initiated 38 data licenses throughout this year within the coastal zone, including localities, consultants, land trusts, and Virginia Indian tribes.

Presentations included an overview of DCR-DNH's Natural Heritage Program, the Locality Assistance Program and data and functionality of the Natural Heritage Data Explorer (NHDE) website, which includes ConserveVirginia v3.0, the Predicted Suitable Habitat Summary layers and ConservationVision models. Additional information was provided about the Virginia Wetlands Catalog and the Coastal Virginia Ecological Value Assessment (VEVA), part of DEQ's Coastal GEMS website application. Natural Heritage information was updated quarterly on the NHDE website and shapefiles including the updated information are also distributed to licensed users.

The Locality Liaison attended meetings, presentations and workshops throughout the year, and presented information on Natural Heritage resources at the Virginia Tribal Summit on March 16, 2022.

The Locality Liaison worked with other Heritage staff and staff from the DCR-Public Communications and Marketing Office and the CZM Program on two video projects; creation of a short video highlighting coastal natural heritage resources, and creation of NHDE public training tutorial videos. The Locality Liaison also posted quarterly coastal species highlights to the Locality Assistance webpage (http://www.dcr.virginia.gov/natural-heritage/localityliaison).

Introduction

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 Natural Heritage 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 CZM Program and the Chesapeake Bay Program have developed flood risk management and climate change initiatives generating interest in land use issues within the coastal zone defined by CZM. 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

Tyler Meader serves as the Locality Liaison and reviews projects within the coastal zone with assistance from other environmental review staff. Rene' Hypes (Natural Heritage 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 Information Management staff, Project Review Assistants, and various Natural Heritage biological inventory, protection and stewardship personnel.

Product #1: Project 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 which during FY2021 included 97 transportation projects in the coastal zone. During this grant year, DCR-DNH reviewed a total of 1,275 projects in the coastal zone. This represents 42% of the projects reviewed statewide by DCR-DNH. 54 of the projects reviewed in the coastal zone were solar projects, representing a continuing trend of solar development in Virginia.

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 (USACE) 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 Renewable Energy Program relies on DCR-DNH to review permit by rule applications for 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 including 5-year assessments of species listed under the federal Endangered Species Act. The USFWS Information, Planning, and Conservation (IPaC) System website on-line screening process includes DCR-DNH predicted suitable habitat models. Additionally, DCR-DNH provides information on natural heritage resources to the Virginia Outdoors Foundation (VOF) and Virginia land trusts as they work on developing conservation easements and applying for grants.

The DCR-DNH has a Memorandum of Agreement (MOA) with the Virginia Department of Wildlife Resources (DWR) for sharing of data and species coordination between the two agencies. The DCR VDOT data exchange MOA was updated in February 2020 which outlines the integration of Natural Heritage data into their internal database for environmental screening purposes. Based on that internal screening process, projects needing further coordination are submitted by VDOT using the Natural Heritage Data Explorer. Also, under an MOA 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

Habitat Creation

Hampton Roads Beneficial Use of Dredged Material-Bird Habitat Restoration Project-City of Hampton

In August 2022, DCR-DNH provided comments to the USACE on the Hampton Roads Beneficial Use Feasibility Study. The purpose of the project is to beneficially use suitable dredged material from federal projects to establish habitat for seabirds, shorebirds, migratory birds, benthic fauna and fisheries resources, especially the Commonwealth of

Virginia's largest seabird colony that was displaced by the expansion of Hampton Roads Bridge Tunnel (HRBT). DCR-DNH provided comments about natural heritage resources documented within the project site, and stated the intention to continue to attend meetings for this important and necessary project and comment on project proposals as they are developed. The comment letter for this project can be found in Appendix A.

Parkway Improvement Plan

Potomac Shore Parkway Extension – Prince William County

In May 2022, DCR-DNH began consultation with the Department of Environmental Quality-Northern Regional Office (DEQ-NRO) about the potential need for an updated survey for Small whorled pogonia for the Potomac Shores Parkway Extension project. The project had been reviewed in October 2019, November 2019 and in April 2021. Previous Small whorled pogonia surveys conducted for the project were no longer valid per the US Fish and Wildlife Service-Virginia Field Office (USFWS-VFO) survey validity guidelines for that plant species. After confirming with USFWS-VFO that the guidelines were still in effect despite not being available on the website, that information was relayed to DEQ-NRO, who notified the environmental consultant for the project that DCR-DNH would require an updated survey. An updated survey was provided in July 2022, documenting an occurrence of Small whorled pogonia within the study area. The positive survey result was sent to the DCR-DNH information management section, who added the occurrence to our records and created a conservation site protecting the adjacent habitat for the occurrence. Based on the newly documented occurrence of Small whorled pogonia within the study area, consultation with DEQ-NRO and the environmental consultant is ongoing to determine potential adverse effects to the occurrence.

Facilities Development

Fire and Rescue Station 27 – Prince William County

In October 2021, DCR-DNH provided a comment letter to the Northern Virginia Conservation Trust (NVCT) for the proposed construction of a fire station, adjacent to a property with a NVCT conservation easement for the protection of a Small whorled pogonia colony. The proposed fire station is within the Powells Creek Tributary Conservation Site, which was created to protect the state and federally listed orchid. Due to the proximity of the proposed construction to the rare plant population, DCR-DNH made the determination that any development within the conservation site would have an adverse impact on the long-term viability of the documented occurrences of Small whorled pogonia. These potential impacts would include the introduction and/or spread of invasive species into the population area, increased potential for tree windthrow to directly/indirectly impact the population, and increased probability of impacts from erosion as current forest cover is converted to impervious surface. DCR-DNH recommended avoidance of the conservation site, and recommended coordination with the VDACS due to the adverse impacts to a state listed plant per the DCR-DNH and VDACS memorandum of agreement. Extensive additional correspondence between DCR-DNH environmental review staff and botanists, NVCT, and USFWS-VFO is ongoing to protect the documented habitat of Small whorled pogonia. The comment letter from the review provided to NVCT can be found in Appendix B.

Pipeline Replacement

Virginia Reliability Project- Cities of Chesapeake and Suffolk, Isle of Wight, Southampton, Surry and Sussex Counties

The Virginia Reliability project is the planned replacement of ~50 miles of existing 12" pipeline with larger diameter 24" pipeline. DCR-DNH first received and reviewed the project in December 2021 from an environmental consultant, and subsequently reviewed the project twice in March 2022 for an environmental consultant and for the Federal Energy Regulatory Commission (FERC). The project route passes through multiple occurrences of natural heritage resources, as well as the Blackwater Sandhills Natural Area Preserve (NAP). In addition to providing comments recommending surveys for other populations of natural heritage resources, DCR-DNH provided information about the Blackwater Sandhills NAP, including the fact that it is co-owned by DCR-DNH and Isle of Wight County, and provided contact information with the DCR-Real Property office to begin communication about potential impacts to the NAP. The Locality Liaison has continued to monitor the FERC e-filings for this project to stay abreast of project developments. The comment letter from the review provided to FERC can be found in Appendix C.

Data Center Development

Digital Gateway Project-Prince William County

In January 2022, DCR-DNH provided comments on the Digital Gateway Project, a proposed technology corridor for the development of data centers in Prince William County. The project was submitted as three separate parcels for rezoning and eventual development. Based on coordination with DCR-DNH botanists and zoologists, DCR-DNH provided comments on natural heritage resources documented within the parcels, as well as recommending surveys for rare birds, rare plants associated with diabase glades, and a freshwater mussel. The comment letter for this project can be found in Appendix D.

Energy - Solar Project

Chester Solar Technology Park-Chesterfield County

In August 2019, DCR-DNH first provided comments on a planned 120 MW solar facility in Chesterfield County. The planned solar facility is within the Chester Seeps Conservation Site, and has the potential to negatively impact natural heritage resources. In addition, it would fragment over 100 acres of a C2 core, as well as potentially fragment C3 and C4 cores. Since the initial review, DCR-DNH has reviewed the proposed solar project five more times, most recently in May 2022. Over the course of this review period, DCR-DNH has participated in ongoing coordination and data sharing with the project proponent and an environmental consultant to minimize potential adverse impacts to natural heritage resources. Based on internal conversations with DCR-DNH staff concerning the May 2022 review of the project, additional information about the natural heritage resources contained within the Chester Seeps Conservation Site was provided. This included the Essential Conservation Site "Irreplaceable" ranking that the

conservation site holds for achieving statewide biodiversity conservation goals, as well as the rarity of the species documented within the conservation site and the unique ecosystem found within the proposed project area. The comment letter for this project can be found in Appendix E.

Habitat Restoration and Protection Initiatives

DCR State Parks Planning Review

Natural Heritage staff participated on an internal advisory committee for state parks to discuss their master planning efforts. DCR-DNH 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 avoid impacts to resources.

During this grant year, DCR-DNH reviewed proposed projects at Mason Neck State Park, York River State Park, Westmoreland State Park, False Cape State Park, Chippokes State Park, Westmoreland State Park, Caledon State Park, Widewater State Park, Belle Isle State Park, and Leesylvania State Park. Information and recommendations were provided about documented occurrences of natural heritage resources and/or the potential for natural heritage resources within the parks to avoid impacts to these resources during development.

Virginia Aquatic Resources Trust Fund Interagency Review Team

The USACE 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 (preservation, creation and enhancement) 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.

Virginia Solar Pollinator- Smart and Virginia Native Seed Industry

The Environmental Review Coordinator and other Heritage staff continued to promote the Pollinator-Smart Program (https://www.dcr.virginia.gov/natural-heritage/pollinator-smart) including the jump start of a native seed industry here in Virginia. Following the Pollinator-Smart Business Plan (https://www.dcr.virginia.gov/natural-heritage/document/solar-site-business-plan.pdf), the Pollinator-Smart Ecotype group developed a list of 15 native species to target for collections (Figure 1) to serve as the basis of foundational ecotype seed source for Virginia. A subset of the Pollinator-Smart Ecotype members along with the Clifton Institute, Virginia State University, the Nature Conservancy and other partners including DCR-DNH were awarded a $200,000 multi-year grant to hire a native seed project coordinator and provide technical assistance for farmers to grow native species in Virginia. Collections have begun during this grant period with seeds shipped to Ernst Conservation Seeds for grow out in the future. These seedlings will then be provided to farmers as part of the Native Seed Pilot Project (Figure 2). Deliverables for the grant will include a best management practice manual for

growing Virginia native seeds, financial tools for farmers including a crop budget as well as educational tours and workshops.

Research comparing insect populations and energy efficiency production of a Virginia Pollinator-Smart solar site compared to non-Pollinator-Smart solar site was completed during this grant year (Figure 3). Insect populations were more diverse at the Pollinator-Smart solar site when compared to the solar turfgrass site with overall functionally equivalent to a non-solar pollinator-friendly site reference site. The pollinator-friendly landscape also had a greater cooling effect than the turfgrass landscape under high and medium irradiance conditions and therefore higher photovoltaic energy production. Overall, the study supports the idea that pollinator-friendly landscapes could be more economically viable, as pertaining to energy output, and more ecologically beneficial compared to turfgrass. More research is necessary to further investigate and test the patterns seen at only these two solar sites, but these results are encouraging for the future widespread implementation of pollinator friendly management practices in solar facilities across the Mid-Atlantic.

To increase awareness of the Virginia Pollinator-Smart Program, the Environmental Review Coordinator and other Heritage staff participated in multiple webinars during the grant period including the Master Naturalists Riverine Chapter meeting, VDOT Pollinator-Smart discussion, Tennessee Valley Authority meeting and Mid-Atlantic Conservation Alliance meeting. A DCR Pollinator Smart Team Member, Nicki Gustafson, also provided a presentation on March 24, 2022 at the NatureServe Biodiversity without Boundaries on the Pollinator Smart Program with a focus on the Native Seed Pilot Project similar to the one created by the Arkansas Heritage Commission as a model for the future development of the Virginia Native Seed Industry. Also through cooperation with the Cople Elementary School in Westmoreland County and Sun Tribe, the developer of the first Pollinator-Smart Site in Virginia, a pollinator lesson was developed for the 4th graders (https://www.dcr.virginia.gov/natural-heritage/pollinator-smart). Pollinator-Smart Program resources and other information can be found in Appendix H.

Product #3: Improvements to Natural Heritage Data Tools

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, 2022, DCR-DNH databases contain information about 10,506 specific occurrences of natural heritage resources**,** 2,632 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. Conservation sites are 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. DCR-DNH currently tracks over 2,256 conservation sites, of which 690 are in the coastal zone. 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 through the DCR website (https://www.dcr.virginia.gov/natural-heritage/nhdeinfo) or directly at vanhde.org. This ArcServer GIS informational tool last updated in September of

2022 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 NHDE. The natural heritage data on NHDE is updated quarterly, as updates are released to subscribers for digital screening coverage shapefiles.

Approximately 2034 projects have been submitted through NHDE during FY2021 with 758 occurring in the coastal zone. Improvements to internal project review efficiency have been achieved through enhanced database query functions including the tracking of predicted suitable habitat models intersects in project review tracking database, and working to increase the number of projects reviewed electronically through NHDE. During this grant year, 397 projects within the coastal zone (31% of all projects reviewed in the coastal zone) were identified as "no comment" projects for natural heritage resources through the NHDE automated reporting system. This type of screening saves time for DCR-DNH staff and allows project proponents to move forward quickly without additional coordination with Natural Heritage.

NHDE was updated in June 2020 to include a new value and field for ranking conservation sites, part of a larger effort to identify Essential Conservation Sites (ECS). ECS are the subset of conservation sites that contain one or more “irreplaceable” or “critical” natural heritage resources. Irreplaceable element occurrences (EO’s) are the only known viable representative of its element in the state, and Critical EO’s are one of only two known viable representatives of its element in the state. The Documented Natural Heritage Screening layer denotes ECS status in the “Essential Conservation Site?” field with a YES or NO value, where YES indicates the presence of at least one irreplaceable or critical EO at that site. In June 2022, the ECS “priority category” was added to the layer description in NHDE as well as included in the NHDE User Guide. Comments on the ECS status of a conservation site have been included in comment letters when appropriate.

NHDE 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.

NHDE training was updated in November 2021 to include explanation of the changes to Conserve Virginia as a result of the release of version 3.0, including three new data sources for the Water Quality Improvement category, and new data sources for the Agriculture and Forestry category, the Scenic Preservation category, and the Protected Landscapes Resilience category. The Locality Liaison was also involved in assessing modifications to predicted suitable habitat models for federally listed plant species due to differences in display thresholds between DCR-DNH and USFWS. The NHDE training presentation was updated again in August and September of 2022, to include new text and images, slide layout, logo placement, and current numbers of tracked species. With coordination from the Locality Liaison, the Managed Conservation Lands layer within NHDE was also updated to include a Tribal Lands category in response to a suggestion from a representative of the Rappahannock Tribe who has participated in NHDE training.

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. NHDE also contains the ConserveVirginia layer and a Predicted Suitable Habitat Summary (PSHS) layer. The PSHS layer summarizes 179 individual species Predicted Suitable Habitat (PSH) layers into one layer, including species listed as threatened and endangered and globally rare species. An individual species PSH layer is a raster layer, which identifies areas most likely to have suitable habitat for that species. PSH layers were developed using known occurrences, a Species Distribution Model, and expert opinion. During this grant cycle, 26 species models were updated.

The DCR-DNH project review process continued to incorporate the PSHS layer updates as made by the information management section during the grant year. Projects boundaries are screened against the PSHS layer, and are buffered by 100 feet instead of two miles for screening against documented natural heritage resource layers. Projects that intersect with the PSHS layer are further reviewed by inventory biologists to determine whether a survey is needed for the resource(s). The use of the PSHS has resulted in a more informed screening process including recommendations for natural heritage resource surveys and reduced the number of projects submitted to Natural Heritage by partners that are unlikely to impact natural heritage resources.

ConserveVirginia is a statewide land conservation strategy and is based on a data driven process for identifying Virginia's highest priority lands for protection. Research and spatial analysis of many conservation values are summarized into seven categories and mapped as: Agriculture & Forestry, Natural Habitat & Ecosystem Diversity, Floodplains & Flooding Resilience, Cultural & Historic Preservation, Scenic Preservation, Protected Landscapes Resilience, and Water Quality Improvement. The "ConserveVirginia Map" is a summary of all seven category inputs and can be used as an initial screening to determine if a potential land protection project qualifies as a ConserveVirginia priority.

Training sessions for the NHDE were held virtually through GoToMeeting platform on an every-other-month basis. In addition, two one-on-one sessions were scheduled with a representative of the Mattaponi Tribe and a representative from King and Queen County. NHDE training is provided by the project review staff, primarily the Locality Liaison. The general training sessions are open to all organizations. During this grant year, 8 separate training sessions for NHDE were held for coastal zone participants.

Product #2: Locality Assistance Program

Participants in Locality Liaison Presentations

Presentations included an overview of DCR-DNH's Natural Heritage Program, the Locality Assistance Program and data and functionality of the Natural Heritage Data Explorer (NHDE) website, which includes ConserveVirginia, the PSHS layers and ConservationVision models. Additional information was provided about the Virginia Wetlands Catalog and VEVA, part of CZM's Coastal GEMS website application.

Coastal participants in the virtual training sessions included 41 from state agencies, 9 from local governments, 20 from consulting companies, 7 from land trusts, 1 from a Planning District Commission, 2 from federal agencies, and 2 from Virginia Indian tribes. A list of the organizations 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. DCR-DNH reviewed 12 projects for localities within the coastal zone; this does not include projects submitted by consultants on behalf of localities. Positive working relationships with localities have led to the inclusion of language in comprehensive plans that provides additional consideration and protection of natural heritage resources. These positive relationships have also led to DCR-DNH's involvement during early planning stages of proposed projects, when recommendations to avoid and minimize impacts to natural heritage resources are often the most effective. The Locality Liaison continues to update contact information for locality staff as well as comprehensive plan update timelines. During this grant cycle, DCR-DNH continued copying the relevant county administrators when sending comment letters for solar projects, so that the localities can be better informed about potential solar developments. During this grant cycle, the Locality Liaison was able to schedule a one-on-one NHDE presentation with the Environmental Codes Compliance Officer at King and Queen County, and provide an overview of the DCR-DNH program and the NHDE website. Following the training, King and Queen County created an NHDE subscription and returned a signed license agreement for access to DCR-DNH data. This leaves Caroline County as the only coastal locality without access to DCR-DNH data.

At the end of FY2021, there were 43 coastal localities, 8 Planning District Commissions and 18 land trusts within the coastal zone with access to NHDE, digital shapefile data, and/or a combination of these tools. This equates to 98% of coastal zone counties or cities having Natural Heritage data, 100% of the Planning District Commissions and 82% of the Land Trusts as of September 30, 2022. The current status of localities with access to Natural Heritage information is contained within the website map at (http://www.dcr.virginia.gov/natural-heritage/localitiesmap). Please also see Appendix G for a map of the Virginia localities with Natural Heritage information. The Locality Liaison and project review staff renewed or initiated 38 data licenses throughout this year within the coastal zone, including localities, consultants, land trusts, and Virginia Indian tribes

The Locality Liaison attended the USACE Northern Virginia Coastal Storm Risk Management Feasibility Study Agency Meeting on October 13, 2021, the Elizabeth River Floodplain & Wetland Restoration Stakeholder Engagement Meeting on June 10, 2022, the Hampton Roads Beneficial Use Feasibility Study - Interagency Meeting on July 8, 2022 and August 19, 2022, and has participated in multiple ongoing meetings beginning July 28, 2022 for the Spotsylvania Pump Station 23/24 Replacement. The Locality Liaison presented Natural Heritage information at the Virginia Tribal Summit on March 16, 2022.

Product #4: Web Update Project

In FY20, the Locality Liaison worked with other DCR-DNH staff, the DEQ-CZM Coastal Planner, and staff from the DCR Public Communications and Marketing Office (PCMO) to redesign the Locality Assistance Program webpage (https://www.dcr.virginia.gov/natural-heritage/localityliaison). In FY21, after working with other DCR-DNH and PCMO staff, a short video utilizing drone footage and still photos of coastal natural heritage resources was included on the updated Locality Assistance Program webpage. The redesigned webpage including the video can be seen in Appendix I.

NHDE Video Tutorials

Due to increased interest by members of the public in attending NHDE training, the Locality Liaison undertook the creation of tutorial videos that focus on the publically available data layers and functionalities on NHDE. The content included in the video tutorials was a PowerPoint presentation about the DCR-DNH program, data, and website tools and functionality, followed by a live demonstration of the functionalities and tools on the website. Loom recording software was used for the project, since it provided audio recording capability as well as the ability to record the speaker for added user engagement. The creation of over 60 individual video clips for the NHDE video tutorial project was completed and submitted to the Public Communications and Marketing Office (PCMO) for editing into six video segments by topic, totaling ~ 1 hour. The videos have been posted to the DCR-DNH website (https://www.dcr.virginia.gov/natural-heritage/nhde-training-videos), and can be viewed in Appendix J.

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 Locality 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 Locality Liaison will continue to reach out to localities in the coastal zone to update information for a current point of contact for each locality due to potential staffing changes. The Locality Liaison will provide assistance to localities in the development of ordinances or regulations necessitating the review of Natural Heritage information for certain projects, including renewable energy projects. Land trusts and Virginia Indian tribes will also be targeted that do not currently have access to natural heritage information.

NHDE subscriber training will continue to be available every other month to provide interested users with the ability to access natural heritage information and submit projects for environmental screening. The Locality Liaison will also develop additional content for the public

training videos that focus on the publically accessible layers and functionalities of NHDE (Appendix J).

43 coastal zone localities with documented natural heritage resources currently have access to the NHDE or digital shapefile of Natural Heritage data with the addition of King and Queen County during this grant period. License agreements with localities are valid for a period of two years. The Locality Liaison will continue to ensure that all of the license agreements with coastal localities are valid and up-to-date, and work to maintain updated license agreements. A future focus of the Locality Liaison will be to provide Caroline County with natural heritage data access and encourage the use of this information in their comprehensive planning and environmental screening processes.

The Locality Liaison web page will be updated with the quarterly coastal species highlight section (Appendix K) and the map of localities with Natural Heritage data (Appendix G). The Locality Liaison along with the project review staff will continue to work to improve the environmental review process including review efficiencies through coordination with internal and external partners.

Appendix A

Letter for Hampton Roads Beneficial Use of Dredged Material-Bird Habitat Restoration Project

Matthew S. Wells
Director

Frank N. Stovall
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Darryl Glover
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Laura Ellis
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COMMONWEALTH of VIRGINIA
DEPARTMENT OF CONSERVATION AND RECREATION

September 6, 2022

Gina Dotolo
USACE-Norfolk District
803 Front Street
Norfolk, VA 23510

Re: Hampton Roads Beneficial Use of Dredged Material-Bird Habitat Restoration Project

Dear Ms. Dotolo:

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 Hampton Roads Bridge Tunnel Conservation Site is located within the project area. 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. Hampton Roads Bridge Tunnel Conservation Site has been given a biodiversity significance ranking of B5, which represents a site of general significance. The natural heritage resources of concern at this site are:

Rynchops niger	Black skimmer	G5/S2B,S1N/NL/NL
Gelochelidon nilotica	Gull-billed tern	G5/S2B/NL/LT
Thalasseus maximus	Royal tern	G5/S2B/NL/NL
Thalasseus sandvicensis	Sandwich tern	G5/S1B/NL/NL
Egretta thula	Snowy egret	G5/S2B, S3N/NL/NL

Sterna hirundo	Common tern	G5/S2B/NL/NL
	Bird Nesting Colony	G5/SNR/NL/NL

DCR is currently participating in regular meetings as the scope of this project is defined and anticipates continued coordination as project plans continue to be developed. Due to the legal status of the Gull-billed tern, DCR recommends continued coordination with Virginia's regulatory authority for the management and protection of this species, the Virginia Department of Wildlife Resources (VDWR), to ensure compliance with the Virginia Endangered Species Act **(**VA ST §§ 29.1-563 – 570**)**.

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.

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 VDWR 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 Amy Martin at (804-367-2211) or amy.martin@dwr.virginia.gov. According to the information currently in our files, the James River, which has been designated by the VDWR as a "Threatened and Endangered Species Water" for the Atlantic sturgeon is within the submitted project boundary including a 100-foot buffer. Therefore, DCR recommends coordination with the National Oceanic and Atmospheric Administration National Marine Fisheries Service (NOAA Fisheries) and Virginia's regulatory authority for the management and protection of this species, the VDWR, to ensure compliance with protected species legislation.

Should you have any questions or concerns, please contact me at 804-225-2429. Thank you for the opportunity to comment on this project.

Sincerely,

Tyler Meader
Natural Heritage Locality Liaison

Cc: Christine Vaccaro, NOAA Fisheries-Protected Species Division
Amy Martin, VDWR

Appendix B

Letter for Fire and Rescue Station 27

October 20, 2021

Alyssa Hemler
Northern Virginia Conservation Trust
4022A Hummer Road
Annandale, VA 22003

Re: Proposed Development (Commercial /Fire and Rescue Station 27) Adjacent to NVCT Conservation Easement Manassas, Virginia

Dear Ms. Hemler:

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 Powells Creek Tributary 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. The Powells Creek Tributary Conservation Site has been given a biodiversity significance ranking of B2, which represents a site of very high significance. The natural heritage resource of concern at this site is:

Isotria medeoloides	Small whorled pogonia	G2?/S2/LT/LE

Small whorled pogonia is a perennial orchid that 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 (USFWS) 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 USFWS and as endangered by the Virginia Department of Agriculture and Consumer Services (VDACS).

According to a DCR botanist, development within the conservation site would have adverse impacts on the long-term viability of the documented occurrences of Small whorled pogonia. The adverse impacts of adjacent development to the Small whorled pogonia colony includes the introduction and/or spread of invasive species into the population area, increased potential for windthrow to directly/indirectly impact the population, and increased probability of impacts from erosion as current forest cover is converted to impervious surface. To minimize adverse impacts to the natural heritage resource as a result of the proposed activities, DCR strongly recommends avoidance of the conservation site and the associated natural heritage resource. Due to the legal status of Small whorled pogonia, DCR also recommends coordination with USFWS to ensure compliance with protected species legislation.

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 DCR, DCR represents VDACS in comments regarding potential impacts on state-listed threatened and endangered plant and insect species. If the conservation site cannot be avoided, then due to the assessed negative impact to Small whorled pogonia from the proposed project, DCR-DNH recommends coordination with VDACS to ensure compliance with Virginia's Endangered Plant and Insect Species Act.

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 Wildlife Resources (VDWR) 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 Amy Martin at (804-367-2211) or amy.martin@dwr.virginia.gov.

Should you have any questions or concerns, please contact me at 804-225-2429. Thank you for the opportunity to comment on this project.

Sincerely,

Tyler Meader

Tyler Meader
Natural Heritage Locality Liaison

CC: Troy Andersen, USFWS
Keith Tignor, VDACS

Literature Cited

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Appendix C

Letter for Virginia Reliability Project

Matthew S. Wells
Director

Frank N. Stovall
Deputy Director for Operations

Darryl Glover
Deputy Director for Dam Safety, Floodplain Management and Soil and Water Conservation

Laura Ellis
Interim Deputy Director for Administration and Finance

COMMONWEALTH of VIRGINIA
DEPARTMENT OF CONSERVATION AND RECREATION

April 6, 2022

Kimberly Bose
Federal Energy Regulatory Commission
888 First Street NE, Room 1A
Washington, DC 20426

Re: PF22-3-000, Virginia Reliability Project

Dear Ms. Bose:

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.

Compressor Stations

Petersburg Compressor Station, Emporia Compressor Station
According to the information currently in Biotics, natural heritage resources have not been documented within the submitted project boundary including a 100 foot buffer. The absence of data may indicate that the project area has not been surveyed, rather than confirm that the area lacks natural heritage resources. In addition, the project boundary does not intersect any of the predictive models identifying potential habitat for natural heritage resources.

Pipeline

Waverly Quadrangle
According to the information currently in Biotics, natural heritage resources have not been documented within the submitted project boundary including a 100-foot buffer. Please note, a predictive model identifying potential habitat for natural heritage resources intersects the project boundary. However, based on DCR biologist's review of the proposed project a survey is not recommended for the resource.

Dendron Quadrangle
According to DCR biologists and predicted suitable habitat modeling, there is potential for Eastern big-eared bat (*Corynorhinus rafinesquii macrotis*, G3G4T3/S2/NL/LE) to occur in the project area if suitable habitat exists on site. The Eastern big-eared bat is named for its enormous ears twice the length of its head, is extremely rare in Virginia and is currently known only from the southeastern portion of the state. Although widespread throughout the southeast, they are never found in large numbers. These bats roost singly or in small groups in hollow trees or abandoned buildings. They forage only after dark primarily in mature forests of both upland and lowland areas along permanent bodies of water (NatureServe, 2009). The details of this bat's feeding behavior and much of its natural history remain a mystery. Lack of information regarding the ecology of the Eastern big-eared bat, and their sensitivity to disturbance, make them particularly vulnerable to destruction of roost sites and feeding areas where their presence goes undetected (Handley and Schwab 1991, Harvey 1992). Threats to this species include forest destruction, particularly hollow tree removal, decreasing availability of abandoned buildings, and possibly, insecticides. Please note that this species is currently classified as endangered by the Virginia Department of Wildlife Resources (VDWR).

DCR recommends avoiding tree removal in bottomland habitats and assessing any large potential roost trees and/or abandoned structures on the property for bat presence/absence. DCR also recommends coordination with DWR if removal of potential roost habitat for the Eastern big-eared bat becomes necessary to ensure compliance with the Virginia Endangered Species Act **(**VA ST §§ 29.1-563 – 570).

In addition, Coppahaunk Swamp, which has been designated by the VDWR as a "Threatened and Endangered Species Water" for the Blackbanded sunfish, is within the submitted project boundary including a 100-foot buffer. Therefore, DCR recommends coordination with Virginia's regulatory authority for the management and protection of this species, the VDWR, to ensure compliance with the Virginia Endangered Species Act **(**VA ST §§ 29.1-563 – 570).

Furthermore the proposed project will impact an Ecological Core **(C4, C5)** as identified in the Virginia Natural Landscape Assessment (https://www.dcr.virginia.gov/natural-heritage/vaconvisvnla). Mapped cores in the project area can be viewed via the Virginia Natural Heritage Data Explorer, available here: http://vanhde.org/content/map.

Ecological Cores are areas of at least 100 acres of continuous interior, natural cover that provides 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. Interior core areas begin 100 meters inside the nearest core edges and continue to the deepest parts of cores. Cores also provide natural and economic benefits of open space, recreation, water quality (including drinking water recharge and protection, and erosion prevention), and air quality (including carbon sequestration and oxygen production). Cores are ranked from C1 to C5 (C5 being the least significant) using nine prioritization criteria, including the habitats of natural heritage resources they contain.

Impacts to cores occur when their natural cover is partially or completely converted permanently to developed land uses. Habitat conversion to development results in changes that reduce ecosystem processes, biodiversity, population viability and habitat quality due to limited recolonization, increased predation, and increased introduction and establishment of invasive species.

Therefore, avoiding or minimizing core impacts is a key mitigation measure that will reduce deleterious effects and preserve the area and connectivity of habitats that are key components of biodiversity. DCR recommends efforts to minimize edge in remaining habitat fragments, retain natural corridors that allow movement between fragments and design the intervening landscape to support native wildlife (natural cover versus lawns).

Ivor Quadrangle
Please reference recommendations for Eastern big-eared bat above for the Dendron Quadrangle.

Furthermore, the proposed project will impact Ecological Cores **(C3, C5)** as identified in the Virginia Natural Landscape Assessment (https://www.dcr.virginia.gov/natural-heritage/vaconvisvnla). Mapped cores in the project area can be viewed via the Virginia Natural Heritage Data Explorer, available here: http://vanhde.org/content/map.

Raynor Quadrangle
According to the information currently in our files, the Hickaneck Swamp Conservation Site, the Antioch Swamp Stream Conservation Unit and the Blackwater Sandhills Natural Area Preserve are 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. Hickaneck Swamp 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:

Myotis austroriparius	Southeastern myotis	G4/S2/NL/NL
Basilia boardmanni	Southeastern myotis bat fly	G3/S1S2/NL/NL

The Southeastern myotis is a bat which occurs throughout the southeast of the United States, including coastal and piedmont areas from North Carolina to Florida and west to Texas, and north through the Mississippi Valley (NatureServe, 2009). Along the Atlantic coast, its northern range limit is in southeastern Virginia. Throughout its range these bats roost in caves, buildings, mines, and hollow trees during the spring and summer. In the winter they can be found roosting in small groups in outdoor sites at areas over water, such as bridges, culverts, storm sewers, and boat houses as well as in hollow trees (Barbour and Davis, 1969). This bat forages on small insects in riparian floodplain forests or woodland wetlands with permanent open water nearby (Gardner et al., 1992; Humphrey and Gore, 1992). Uncommon among *Myotis* bats, the Southeastern myotis often gives birth to twins (Harvey, 1992). Threats to the Southeastern myotis include human disturbance and physical alteration of caves and other sites used as hibernacula and maternity sites (NatureServe, 2009). Also, the clearing and draining of bottomland hardwood forest wetlands likely reduces summer roosting and foraging habitat (NatureServe, 2009).

Southeastern Myotis bat fly is a state rare insect which parasitizes only the Southeastern Myotis bat (Hobson, 2000). The Southeastern Myotis bat fly is currently known from two locations in southeastern Virginia, with records from Georgia, Florida, and Illinois (Hobson, 2000). Closely associated with its host bat species, the Southeastern Myotis bat is known from five counties in southeastern Virginia, and it is possible the bat fly is also in these locations. Threats to the Southeastern Myotis bat fly reflect threats to the Southeastern Myotis bat. Threats to the bats include alteration of critical cave habitat (Gore and

Hovis, 1992). Clearing and draining of bottomland hardwood forest wetlands likely have reduced available habitat for summer roosting and foraging. The indirect effects of pesticide use are unknown (NatureServe, 2009).

The Antioch Swamp Stream Conservation Unit is within the proposed project area. Stream Conservation Unit (SCU)'s 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 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. The Antioch Swamp SCU has been given a biodiversity significance ranking of B2, which represents a site of very high significance. The natural heritage resources of concern associated with this SCU are:

Epitheca spinosa	Robust baskettail	G4/S3/NL/NL
Isoetes hyemalis	Winter quillwort	G2G3/S2/SOC/NL
Lampsilis radiata	Eastern lampmussel	G5/S2S3/NL/NL
Mitreola petiolata	Lax hornpod	G5/S1/NL/NL
Lipocarpha micrantha	Small-flowered halfchaff sedge	G5/S2/NL/NL
Aquatic Natural Community (SC-Blackwater First Order Stream)		G2G3/S2S3/NL/NL
Aquatic Natural Community (SC-Blackwater Second Order Stream)		G2?/S2?/NL/NL

According to DCR biologists and predicted suitable habitat modeling, there is potential for Eastern big-eared bat (*Corynorhinus rafinesquii macrotis*, G3G4T3/S2/NL/LE) and other rare bats to occur in the project area if suitable habitat exists on site. The Eastern big-eared bat is named for its enormous ears twice the length of its head, is extremely rare in Virginia and is currently known only from the southeastern portion of the state. Although widespread throughout the southeast, they are never found in large numbers. These bats roost singly or in small groups in hollow trees or abandoned buildings. They forage only after dark primarily in mature forests of both upland and lowland areas along permanent bodies of water (NatureServe, 2009). The details of this bat's feeding behavior and much of its natural history remain a mystery. Lack of information regarding the ecology of the Eastern big-eared bat, and their sensitivity to disturbance, make them particularly vulnerable to destruction of roost sites and feeding areas where their presence goes undetected (Handley and Schwab 1991, Harvey 1992). Threats to this species include forest destruction, particularly hollow tree removal, decreasing availability of abandoned buildings, and possibly, insecticides. Please note that this species is currently classified as endangered by the VDWR.

DCR recommends avoiding tree removal in bottomland habitats and assessing any large potential roost trees and/or abandoned structures on the property for bat presence/absence. DCR also recommends coordination with DWR if removal of potential roost habitat for the Eastern big-eared bat becomes necessary to ensure compliance with the Virginia Endangered Species Act **(**VA ST §§ 29.1-563 – 570). To minimize adverse impacts to the aquatic ecosystem as a result of the proposed activities, DCR also recommends the implementation of and strict adherence to applicable state and local erosion and sediment control/storm water management laws and regulations.

The Blackwater Sandhills Natural Area Preserve has been documented within the project site. Both the uplands and bottomlands along the Blackwater River in southeast Virginia support many significant natural areas. From the sandhills adjoining the river which once supported longleaf pine to bottomland hardwoods and saturated swamps, these natural areas have been the target of private and public land conservation organizations for many years. Isle of Wight County is now the owner of 2,348 acres and five and a half miles of frontage on the east side of the Blackwater River. The county sold an open space easement over that acreage to the Virginia Department of Forestry and the Department of Conservation

and Recreation. This protection success is part of a larger project underway to protect bottomland hardwoods and restore longleaf pine communities on the lower Blackwater River.

Approximately 1/3 of the county property, about 815 acres, has been dedicated as the Blackwater Sandhills Natural Area Preserve. This natural area preserve includes 500 acres of old-growth tupelo-baldcypress bottomland and helps protect more than five miles of the Blackwater River. In addition to the old-growth bottomland forest, the preserve includes over 300 acres of sandhills and upland forests where longleaf pine reforestation and frequent prescribed burning will be used to restore fire-maintained Longleaf Pine / Scrub Oak Sandhill communities.

DCR recommends continued coordination with Isle of Wight County and Brian Fuller, DCR Real Property Manager as the project progresses to evaluate potential impacts to the Blackwater Sandhills Natural Area Preserve. Blackwater Sandhills NAP is protected in perpetuity by a Deed of Open-Space Easement and Natural Area Preserve Dedication co-held by the DCR and the Virginia Department of Forestry. These protections are held by the Commonwealth pursuant to the Virginia Open-Space Land Act (Sections 10.1-1700 through 10.1-1705 of the Code of Virginia) and the Virginia Natural Area Preserves Act (Sections 10.1-209 through 10.1-217 of the Code of Virginia), which prohibit improvement and disturbance to the subject property. If Columbia Gas Transmission, LLC intends to increase their existing natural gas pipeline easement, this will require a new deed of easement and may trigger conditions as set forth in Section 10.1-1704 of the Code of Virginia. Please contact Brian Fuller, DCR Real Property Manager, at (804) 678-8533 or brian.fuller@dcr.virginia.gov for more information.

Please note this project is within a section of the Blackwater River that has been designated as a scenic river in the state of Virginia. Due to this designation, DCR recommends you contact Samantha Wangsgard of the DCR-Division of Planning and Recreational Resources at 804-786-5054 or Samantha.Wangsgard@dcr.virginia.gov.

Furthermore, the proposed project will impact Ecological Cores **(C2, C4, C5)** as identified in the Virginia Natural Landscape Assessment (https://www.dcr.virginia.gov/natural-heritage/vaconvisvnla). Mapped cores in the project area can be viewed via the Virginia Natural Heritage Data Explorer, available here: http://vanhde.org/content/map.

The proposed project will impact one or more cores with very high to outstanding ecological integrity. Further investigation of these impacts is recommended and DCR-DNH can conduct a formal impact analysis upon request. This analysis would estimate direct impacts to cores and habitat fragments and indirect impacts to cores. The final products of this analysis would include an estimate of the total impact of the project in terms of acres. For more information about the analysis and service charges, please contact Joe Weber, DCR Chief **of Biodiversity Information and Conservation Tools** at Joseph.Weber@dcr.virginia.gov.

Smithfield Quadrangle, Windsor Quadrangle
According to a DCR biologist, there is a potential for Mabee's salamander (*Ambystoma mabeei*, G4/S1S2/NL/LT) and Barking treefrog (*Hyla gratiosa*, G5/S1/NL/NL) to occur in the project area if suitable habitat exists on site. In Virginia, Mabee's salamander inhabits isolated depression wetlands in pine woods, open fields, lowland deciduous forests (Behler and King, 1979), pine savannas, low wet woods and swamps (Martof et. al., 1980). They breed in fish-free vernal ponds (Pague & Mitchell, 1991) where the eggs are attached to submerged plant material or bottom debris (Behler and King, 1979). This species migrates up to a few hundred meters between their breeding and nonbreeding habitats, although, some adults will remain at the breeding site after the pond dries. Concurrent with heavy winter and springs rains, mass movements of adults to the breeding ponds have been documented (TNC et. al., 1999). Adults and juveniles spend most of the year underground in the upland habitats, but return to the

ponds to breed in February or March (VDGIF, 1994). Because of the amphibious life cycle, the presence of sufficient, suitable terrestrial and aquatic habitat is critical (VDGIF, 1994). Threats to Mabee's salamander include habitat loss, habitat fragmentation, and habitat contamination (VDGIF, 1994). The wetland habitats can be degraded or destroyed by filling, draining, ditching, and changing land use in the groundwater recharge zones or by contamination with pesticides or other chemicals. The upland habitats can be compromised by residential, commercial and industrial development, incompatible forest management practices, and other changes. Loss of suitable continuous terrestrial habitat between breeding sites may fragment populations and lead to extirpation through such factors as environmental perturbations, disease, and inbreeding (VDGIF, 1994). Please note that this species is currently classified as threatened by the VDWR.

The Barking treefrog ranges through the coastal plain from North Carolina to Florida and west to Mississippi and eastern Louisiana (NatureServe, 2009). There are disjunct populations in Delaware, Maryland, Kentucky and Tennessee, and southeastern Virginia (NatureServe, 2009). Across its range, it inhabits areas near shallow ponds in pine savannas and in low wet woods and swamps (Martof et al., 1980). In Virginia, this species breeds in fish-free vernal ponds (Pague & Young, 1991). When inactive during cold or dry seasons, they burrow under tree roots, vegetation, or in the soil; otherwise, this species is mostly arboreal and thus dependent on trees near the water (Pague & Young, 1991). Adult frogs feed on insects and other invertebrates; tadpoles consume primarily algae (VDGIF, 1993). Major threats to the Barking treefrog include continued logging of native pine, destruction of breeding ponds, and over collecting (Pague & Young, 1991).

Due to the potential for this right-of-way to support populations of Mabee's salamander and Barking treefrog, DCR recommends an inventory for the species within potential breeding ponds between Rt. 258 and Rt. 637. With the survey results we can more accurately evaluate potential impacts to natural heritage resources and offer specific protection recommendations for minimizing impacts to the documented resources.

DCR-Division of Natural Heritage biologists are qualified to conduct inventories for rare, threatened, and endangered species. Please contact Anne Chazal, Natural Heritage Chief Biologist, at anne.chazal@dcr.virginia.gov or 804-786-9014 to discuss availability and rates for field work.

Furthermore, the proposed project will impact Ecological Cores **(C4, C5)** as identified in the Virginia Natural Landscape Assessment (https://www.dcr.virginia.gov/natural-heritage/vaconvisvnla). Mapped cores in the project area can be viewed via the Virginia Natural Heritage Data Explorer, available here: http://vanhde.org/content/map.

Chuckatuck Quadrangle, Bowers Hill Quadrangle
According to the information currently in our files, the Great Dismal Swamp Conservation Site and the Great Dismal Swamp: Northwest Section Conservation Site are located within the project site. Great Dismal Swamp 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:

Paspalum dissectum	Walter's paspalum	G4?/S2/NL/NL
Ilex coriacea	Big gallberry	G5/S2/NL/NL
Solidago latissimifolia	Elliott's goldenrod	G5/S2/NL/NL
Crotalus horridus	Canebrake rattlesnake	G4T4/S1/NL/LE

Great Dismal Swamp: Northwest Section Conservation Site has been given a biodiversity significance ranking of B5, which represents a site of general significance. The natural heritage resources of concern at this site are:

Crotalus horridus	Canebrake rattlesnake	G4/S1/NL/LE
Ludwigia pilosa	Hairy seedbox	G5/S1/NL/NL

In addition, Tall yellow-eyed-grass (*Xyris platylepis*, G5/S2/NL/NL) has been documented immediately adjacent to the current limits of disturbance. Tall yellow-eyed grass is a state rare herb species that inhabits sandhill seeps, sphagnous ditches, and powerline rights-of way. This plant blooms from July to September. As of 2014, 13 occurrences of this state rare plant were documented in Virginia, 3 historic and 10 extant.

DCR recommends avoidance of the documented occurrences of natural heritage resources. DCR also recommends continued coordination with this office as the project progresses and becomes more defined so that we can provide more detailed recommendations for minimizing impacts to the natural heritage resources documented within the right-of-way. Due to the legal status of the Canebrake rattlesnake, DCR also recommends coordination with the VDWR, Virginia's regulatory authority for the management and protection of this species to ensure compliance with the Virginia Endangered Species Act **(**VA ST §§ 29.1-563 – 570).

Furthermore, if tree removal occurs outside of the current right-of-way, the proposed project may impact Ecological Cores **(C2, C4, C5)** as identified in the Virginia Natural Landscape Assessment (https://www.dcr.virginia.gov/natural-heritage/vaconvisvnla). Mapped cores in the project area can be viewed via the Virginia Natural Heritage Data Explorer, available here: http://vanhde.org/content/map.

The proposed project will impact one or more cores with very high to outstanding ecological integrity. Further investigation of these impacts is recommended and DCR-DNH can conduct a formal impact analysis upon request. This analysis would estimate direct impacts to cores and habitat fragments and indirect impacts to cores. The final products of this analysis would include an estimate of the total impact of the project in terms of acres. For more information about the analysis and service charges, please contact Joe Weber, DCR Chief **of Biodiversity Information and Conservation Tools** at Joseph.Weber@dcr.virginia.gov.

Please also reference recommendations for Eastern big-eared bat above for the Dendron Quadrangle.

Norfolk South
Please reference recommendations for Eastern big-eared bat above for the Dendron Quadrangle.

All Quads
DCR recommends the development and implementation of an invasive species plan to be included as part of the maintenance practices for the right-of-way (ROW). The invasive species plan should include an invasive species inventory for the project area based on the current DCR Invasive Species List (http://www.dcr.virginia.gov/natural-heritage/document/nh-invasive-plant-list-2014.pdf) and methods for treating the invasives. DCR also recommends the ROW restoration and maintenance practices planned include appropriate revegetation using native species in a mix of grasses and forbs, robust monitoring and an adaptive management plan to provide guidance if initial revegetation efforts are unsuccessful or if invasive species outbreaks occur.

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.

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.

The VDWR 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 Amy Martin at (804-367-2211) or amy.martin@dwr.virginia.gov.

Should you have any questions or concerns, please contact me at 804-225-2429. Thank you for the opportunity to comment on this project.

Sincerely,

Tyler Meader
Natural Heritage Locality Liaison

CC : Amy Martin, VDWR
David Smith, Isle of Wight County
Brian Fuller, DCR-Land Conservation
Rick Myers, DCR-DNH
Samantha Wangsgard, DCR-DPRR

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Appendix D

Letter for Digital Gateway

Ann Jennings
Secretary of Natural and Histor
Resources and Chief Resilience

Clyde E. Cristman
Director

COMMONWEALTH of VIRGINIA

DEPARTMENT OF CONSERVATION AND RECREATION

January 10, 2022

Janelle Bernosky
Wetland Studies and Solutions, Inc.
5300 Wellington Branch Drive
Gainesville, VA 20155

Re: 31856.01, PW Digital Gateway

Dear Ms. Bernosky:

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.

Study Area 1
According to a DCR biologist and predicted suitable habitat modeling per recent data updates, there is a potential for Henslow's sparrow (*Ammodramus henslowii*, G4/S1B/NL/LT) and other rare birds to occur in the project area if suitable habitat exists on site. Henslow's sparrow breeds across the eastern United States from New England south to the piedmont of North Carolina and west to Kansas and South Dakota (Brindza, 1991). In Virginia, it once ranged throughout the Piedmont and Coastal Plain, but with habitat loss it has been reduced to a rare breeder. Henslow's sparrow has a large olive, black and yellow head, pale gray bill and a short tail. The coloration of this bird is olive with black, white and rust streaks throughout. It has a pale gray belly streaked with black, and its wings are chestnut. Henslow's sparrow inhabits low, wet meadows and abandoned agricultural fields in early successional stages. Their nests, which are well concealed on or near the ground, are a cup of deep grasses or forbs lined with finer grasses and hair. The eggs are laid from May to August, each clutch is composed of three to five creamy or pale greenish white eggs that are heavily blotched with shades of brown and lavender and measure 18.3 x 14.1 mm. Threats to Henslow's sparrow include the drainage of wetlands (Brindza, 1991), lack of prescribed fire and inappropriate mowing regimes, etc. Please note that this species is currently listed as threatened by the Virginia Department of Wildlife Resources (VDWR).

Due to the potential for this site to support populations of Henslow's sparrow and other rare birds, DCR recommends an inventory for Henslow's sparrow in the fields south of Lick Branch on both sides of Pageland Lane, and for other rare birds in the wetlands along Lick Branch downstream of Pageland Lane. With the survey results we can more accurately evaluate potential impacts to natural heritage resources and offer specific protection recommendations for minimizing impacts to the documented resources.

DCR-Division of Natural Heritage biologists are qualified to conduct inventories for rare, threatened, and endangered species. Please contact Anne Chazal, Natural Heritage Chief Biologist, at anne.chazal@dcr.virginia.gov or 804-786-9014 to discuss availability and rates for field work.

In addition, if tree clearing occurs in the western portion of the project site, the proposed project may fragment an Ecological Core (**C5)** as identified in the Virginia Natural Landscape Assessment (https://www.dcr.virginia.gov/natural-heritage/vaconvisvnla), one of a suite of tools in Virginia ConservationVision that identify and prioritize lands for conservation and protection. Mapped cores in the project area can be viewed via the Virginia Natural Heritage Data Explorer, available here: http://vanhde.org/content/map.

Ecological Cores are areas of unfragmented natural cover with at least 100 acres of interior that 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 erosion prevention), and air quality (including carbon sequestration and oxygen production), along with the many associated economic benefits of these functions. The cores are ranked from C1 to C5 (C5 being the least ecologically relevant) using many prioritization criteria, such as the proportions of sensitive habitats of natural heritage resources they contain.

Fragmentation occurs when a large, contiguous block of natural cover is dissected by development, and other forms of permanent conversion, into one or more smaller patches. Habitat fragmentation results in biogeographic changes that disrupt species interactions and ecosystem processes, reducing biodiversity and habitat quality due to limited recolonization, increased predation and egg parasitism, and increased invasion by weedy species.

Therefore minimizing fragmentation is a key mitigation measure that will reduce deleterious effects and preserve the natural patterns and connectivity of habitats that are key components of biodiversity. DCR recommends efforts to minimize edge in remaining fragments, retain natural corridors that allow movement between fragments and designing the intervening landscape to minimize its hostility to native wildlife (natural cover versus lawns).

Study Area 2

According to the information currently in our files, the Manassas Diabase Uplands Conservation Site is located within the project area. 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. Manassas Diabase Uplands Conservation Site has been given a biodiversity significance ranking of B3, which represents a site of high significance. The natural heritage resources associated with this site are:

Amolita roseola	Roseate grass moth	G5/S1/NL/NL

Stachys arenicola	Hairy hedge-nettle	G5T4?/S1/NL/NL
Buchnera americana	American bluehearts	G5?/S1S2/NL/NL
Trifolium reflexum	Buffalo clover	G3G4/S1/NL/NL
Isoetes appalachiana	Appalachian Quillwort	G4/S2?/NL/NL
	Northern Hardpan Basic Oak – Hickory Forest	G3/S3/NL/NL`
	Piedmont Upland Depression Swamp	G2/S1/NL/NL

In addition, according to DCR biologists and predicted suitable habitat modeling, there is a potential for Henslow's sparrow as well as several rare plants, which are typically associated with prairie vegetation and inhabit semi-open diabase glades in Virginia, to occur in the project area if suitable habitat exists on site

Diabase glades are characterized by historically fire-dominated grassland vegetation on relatively nutrient-rich soils underlain by Triassic bedrock. Diabase flatrock, a hard, dark-colored volcanic rock, is found primarily in northern Virginia counties and is located within the geologic formation known as the Triassic Basin. Where the bedrock is exposed, a distinctive community type of drought-tolerant plants occurs. Diabase flatrocks are extremely rare natural communities that are threatened by activities such as quarrying and road construction (Rawinski, 1995). In Northern Virginia, diabase supports occurrences of several global and state rare plant species: Earleaf False foxglove (*Agalinis auriculata*, G3/S1/NL/NL), Purple milkweed (*Asclepias purpurascens*, G5?/S2/NL/NL), American bluehearts, Downy phlox (*Phlox pilosa*, G5/S1/NL/NL), Torrey's Mountain-mint (*Pycnanthemum torreyi*, G2/S2/NL/NL), Stiff goldenrod (*Solidago rigida var. rigida*, G5T5/S2/NL/NL), and Hairy hedgenettle.

According to a DCR biologist and predicted suitable habitat modeling, there is a potential for Brook floater (*Alasmidonta varicosa*, G3/S1/NL/LE) to occur in Little Bull Run. The Brook floater, a small freshwater mussel species, is known from the northeastern United States primarily in the Atlantic Slope drainages (NatureServe, 2009). In Virginia, it is recorded from the Potomac River basin with a possible record from the James River. Of 14 documented records in Virginia, only two are thought to be viable. Population declines have been documented throughout its range (NatureServe, 2009). The Brook floater typically inhabits flowing-water habitats in and near riffles and rapids of smaller creeks with rocky or gravelly substrates (Nedeau et al., 2000 per NatureServe, 2009). Many facets of its life history are unknown including its fish host. Please note that this species is currently listed as endangered by the VDWR.

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. Threats for the Brook floater in particular include poor water quality as this species does not tolerate silt or nutrient pollution well (Stevenson and Bruenderman, 1995).

Due to the potential for this site to support populations of Henslow's sparrow, rare plants associated with diabase glades and the Brook floater, DCR recommends an inventory for the resources in the study area, with a focus on fields and powerline rights-of-way for the Henslow's sparrow. With the survey results we can more accurately evaluate potential impacts to natural heritage resources and offer specific protection recommendations for minimizing impacts to the documented resources.

If tree clearing occurs in the northeastern portion of the project site, the proposed project may fragment an Ecological Core **(C5)** as identified in the Virginia Natural Landscape Assessment (https://www.dcr.virginia.gov/natural-heritage/vaconvisvnla), one of a suite of tools in Virginia

ConservationVision that identify and prioritize lands for conservation and protection. Mapped cores in the project area can be viewed via the Virginia Natural Heritage Data Explorer, available here: http://vanhde.org/content/map.

Study Area 3
According to the information currently in our files, the Manassas Diabase Uplands Conservation Site is located adjacent to the project area. Based on DCR biologists and predicted suitable habitat modeling, there is a potential for the Henslow's sparrow and rare plants associated with diabase glades to occur on site if suitable habitat exists.
Due to the potential for this site to support populations of Henslow's sparrow and rare plants associated with diabase glades, DCR recommends an inventory for diabase plants in the study area and within the fields in the project site for the Henslow's sparrow. With the survey results we can more accurately evaluate potential impacts to natural heritage resources and offer specific protection recommendations for minimizing impacts to the documented resources.

If tree clearing occurs in the northwestern portion of the project site or along the southern boundary, the proposed project may fragment Ecological Cores **(C4, C5)** as identified in the Virginia Natural Landscape Assessment (https://www.dcr.virginia.gov/natural-heritage/vaconvisvnla), one of a suite of tools in Virginia ConservationVision that identify and prioritize lands for conservation and protection. Mapped cores in the project area can be viewed via the Virginia Natural Heritage Data Explorer, available here: http://vanhde.org/content/map.

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 current activity will not affect any documented state-listed plants or insects.

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 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 $240.00 has been assessed for the service of providing this information. Please find attached an invoice for that amount. Please return one copy of the invoice along with your remittance made payable to the Treasurer of Virginia, DCR Finance, 600 East Main Street, 24th Floor, Richmond, VA 23219. Payment is due within thirty days of the invoice date. Please note late payment may result in the suspension of project review service for future projects.

The VDWR 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 Amy Martin at (804-367-2211) or amy.martin@dwr.virginia.gov.

Should you have any questions or concerns, please contact me at 804-225-2429. Thank you for the opportunity to comment on this project.

Sincerely,

Tyler Meade

Tyler Meader
Natural Heritage Locality Liaison

CC : Amy Martin, VDWR

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Brindza, L.J. 1991. Henslow's Sparrow. In Virginia's Endangered Species: Proceedings of a Symposium. K. Terwilliger ed. The McDonald and Woodward Publishing Company, Blacksburg, Virginia. Pages 525 – 526.

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Appendix E

Letter for Chester Solar Technology Park

Matthew S. Wells
Director

Frank N. Stovall
Deputy Director for Operations

Darryl Glover
Deputy Director for Dam Safety, Floodplain Management and Soil and Water Conservation

Laura Ellis
Interim Deputy Director for Administration and Finance

COMMONWEALTH of VIRGINIA
DEPARTMENT OF CONSERVATION AND RECREATION

June 17, 2022

Jillian Frazier
Timmons Group
1001 Boulders Parkway, Suite 300
Richmond, VA 23225

Re: 43208, Chester Solar Technology Park Rereview

Dear Ms. Frazier:

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 Chester Seeps 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. The Chester Seeps Conservation Site has a significance biodiversity ranking of B3 and is one of Virginia's Essential Conservation Sites (ECS) that is considered irreplaceable for achieving statewide biodiversity conservation goals. The following natural heritage resources associated with this conservation site listed below includes at least one significantly rare species found nowhere else in the Commonwealth:

			Extant Occurrences Outside of the Project Area
Asclepias rubra	Red milkweed	G4G5/S2/NL/NL	25
Carex vestita	Velvet sedge	G5/S2/NL/NL	9
Chelone cuthbertii	Cuthbert's turtlehead	G3/S2/NL/NL	24

Cleistesiopsis divaricata	Large Spreading pogonia	G4/S1/NL/NL	11
Kalmia angustifolia	Sheep laurel	G5/S2/NL/NL	11
Platanthera blephariglottis	Small white fringed orchid	G4G5T4T5/S2/NL/NL	11
Rhynchospora fascicularis	Fasciculate beakrush	G5/S2/NL/NL	5
Sabatia difformis	Lance-leaved rose-gentian	G4G5/S1/NL/NL	1
Sarracenia purpurea	Purple pitcher plant	G5/S2/NL/NL	25
Tetragonotheca helianthoides	Squarehead	G5/S1/NL/NL	0

Red Milkweed is a showy perennial that grows up to 1.2 meters tall. Its red flowers bloom in June and July. The plant occurs in bogs, sphagnous power-line swales and seeps in the Coastal Plain and outer Piedmont (Weakley et al., 2012). In 2014, 28 documented occurrences of this state rare plant were documented in Virginia, 26 extant and 2 historic. Like many wetland species, this species has suffered a loss of habitat due to conversion and/or draining of wetlands. In addition, this plant has declined as a result of active fire suppression, which has eliminated significant herbaceous-dominated wetlands. As of 2022, 28 occurrences of this state rare plant have been documented by the Virginia Natural Heritage Program, 26 extant and 2 historic.

Velvet sedge, a state rare sedge species, occurs in low forests (Weakley, in prep.), seepage wetlands and seasonally wet conditions. It has been documented in such disturbed areas as powerline rights-of-way (TNC, 1996). This plant blooms during April and May (Weakley, in prep). As of 2022, 10 extant occurrences of this state rare plant have been documented by the Virginia Natural Heritage Program.

Cuthbert turtlehead, a showy, perennial herb, grows in acid water seeps. It has also been documented in such disturbed areas as powerline rights-of-way. Cuthbert turtlehead has bright magenta flowers resembling the shape of a turtle's head that bloom from July through September (Radford et al., 1968) and can grow to be four feet tall (Ludwig, 1996). Due to its restricted distribution, Cuthbert turtlehead is threatened by even the smallest elimination of wetland habitat within its range. Drainage and timbering within wetlands have eliminated much essential habitat. Cuthbert turtlehead is currently known from Virginia's coastal plain, piedmont and Blue Ridge regions, some of those occurrences historical. Surveys for this species should be conducted during the flowering period, with late August – September being optimal in Virginia. As of 2022, 33 occurrences of this state rare plant have been documented by the Virginia Natural Heritage Program, 25 extant and 8 historic.

Large spreading pogonia is a perennial with purplish stems and somewhat nodding magenta to white or brownish flower, and petals pink to white with tips sharply recurved. Large spreading pogonia habitat includes sphagnous bogs and pocosin openings, however it is now confined largely to artificially maintained powerline clearings (Weakley et al., 2012). As of 2022, 15 occurrences of this state rare plant have been documented by the Virginia Natural Heritage Program, 12 extant and 3 historic.

Sheep laurel is a shrub that grows up to 1.2 meters tall. The branches ascend strongly upwards and the leaves are whorled, semi-evergreen, and dull. The flowers vary from reddish purple to deep pink. In Virginia, it flowers during mid-summer and is found in dry to mesic, acidic woodlands, sandhills, and borders of seeps and seepage swamps in the Coastal Plain from Caroline County south to upper Gates County, North Carolina. Like so many of Virginia's rare plants, the major threats to this species are being out-competed by non-native invasive plant species or loss of habitat altogether due primarily to development/conversion. As of 2022, 13 occurrences of this state rare plant have been documented by the Virginia Natural Heritage Program, 12 extant and 1 historic.

Small white fringed orchid is a state rare plant that inhabits savannas, seepages and sandhill-pocosin ecotones (Weakley, in prep.). It has also been documented in such disturbed areas as powerline rights-of-way (TNC, 1996). This plant blooms from July to September (Weakley, in prep.). As of 2022, 13

occurrences of this state rare plant have been documented by the Virginia Natural Heritage Program, 12 extant and 1 historic.

Fasciculate beakrush, a state rare plant species, inhabits sands and peats of interdunal swales, depressions in savannas, open flatwoods, limesink ponds, ditches, and seepage bog edges (Flora of North America Editorial Committee 2002; Weakley, in prep.). This plant blooms from June to September (Weakley, in prep.). As of 2022, 8 occurrences of this state rare plant have been documented by the Virginia Natural Heritage Program, 6 extant and 2 historic. The Chester Seeps Conservation Site represents the northernmost known population of fasciculate beakrush.

Lance-leaved rose-gentian is a state rare perennial herb that inhabits pine savannas, bogs and pocosins (Weakley, in prep.). It has also been documented in such disturbed areas as powerline rights-of-way (TNC, 1996). This plant produces white flowers from May to September that usually turn pinkish-brown upon dying (Radford et. al., 1968). As of 2022, 4 occurrences of this state rare plant have been documented by the Virginia Natural Heritage Program, 2 extant and 2 historic.

The Purple pitcher-plant, a state rare perennial, inhabits bogs, pinelands and such disturbed areas as powerline rights-of-way (TNC, 1996). This species blooms from April to July (Weakley, in prep.). As of 2022, 38 occurrences of this state rare plant have been documented by the Virginia Natural Heritage Program, 26 extant and 12 historic.

Squarehead, Pineland Nerveray (*Tetragonotheca helianthoides*, G5/S1/NL/NL) is a state rare perennial taprooted herbaceous species in the sunflower family. Squarehead blooms with yellow flowers from April until July. Chester Seeps contains the last known population of squarehead in Virginia, which also marks the northernmost reach of the species. It is found in a dry, sandy open wooded area and at the edge of a powerline corridor. As of 2022, 4 occurrences of this state rare plant have been documented by the Virginia Natural Heritage Program, all of which are historic except for the population at Chester Seeps Conservation Site.

The Chester Seeps Conservation Site contains an ecosystem that is thought to have once been more widespread south of Richmond in Chesterfield and surrounding counties. This ecosystem is characterized by dry sandy acidic uplands and boggy wetlands driven by groundwater seepage hydrology. Such habitats contain a plethora of unique species including rare carnivorous plants, fire-loving orchids, and plants at the very edge of their geographic range limits. Historically this area would likely have been prone to natural periodic forest fires, which would have supported the many rare species populations growing there as well as the large area of oak-dominated hardwood forest. Much of the geographic area which may have contained similar ecosystems has been lost to development before the formation of the Natural Heritage Program, and thus before scientists had an opportunity to systematically inventory such habitats. If the Chester Seeps Conservation Site is developed without a proper inventory of natural resources, the opportunity to study and learn from this area of Virginia's natural history may be lost forever.

DCR has reviewed the updated site plans provided on June 2, 2021 by the consultant for the project including the resource protection areas (see figure 1). DCR supports protection of these riparian protection areas which may conserve habitat for some of the documented natural heritage resources on the project site; however, there are documented occurrences of natural heritage resources that occur outside of those protection areas as well as the potential for additional natural heritage resources to be documented from the project site. Therefore, due to the known occurrences of documented natural heritage resources and the potential for this site to support additional populations of natural heritage resources, DCR recommends an inventory for the resources in the study area. With the survey results, we

can more accurately evaluate potential impacts to natural heritage resources and offer specific protection recommendations for minimizing impacts to the documented resources.

DCR-Division of Natural Heritage biologists are qualified and available to conduct inventories for rare, threatened, and endangered species. Please contact Anne Chazal, Natural Heritage Chief Biologist, at anne.chazal@dcr.virginia.gov or 804-786-9014 to discuss availability for field work. Please note, DCR biologists would be willing to conduct inventory surveys for natural heritage resources at no charge.

Furthermore, DCR recommends the development of an invasive species management plan for the project and the planting of Virginia native pollinator plant species that bloom throughout the spring and summer, to maximize benefits to native pollinators. DCR recommends planting these species in at least the buffer areas of the planned facility, and optimally including other areas within the project site. Guidance on plant species can be found here: http://www.dcr.virginia.gov/natural-heritage/solar-site-native-plants-finder. In addition, Virginia native species alternatives to the non-native species listed in the Virginia Erosion and Sediment Control Handbook (Third Edition 1992), can be found in the 2017 addendum titled "Native versus Invasive Plant Species", here: https://www.deq.virginia.gov/home/showpublisheddocument?id=2466. Page 3 of the addendum provides a list of native alternatives for non-natives commonly used for site stabilization including native cover crop species (i.e. Virginia wildrye).

In addition, the proposed project will impact Ecological Cores **(C2, C3, C4)** as identified in the Virginia Natural Landscape Assessment (https://www.dcr.virginia.gov/natural-heritage/vaconvisvnla). Mapped cores in the project area can be viewed via the Virginia Natural Heritage Data Explorer, available here: http://vanhde.org/content/map.

Ecological Cores are areas of at least 100 acres of continuous interior, natural cover that provides 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. Interior core areas begin 100 meters inside the nearest core edges and continue to the deepest parts of cores. Cores also provide natural and economic benefits of open space, recreation, water quality (including drinking water recharge and protection, and erosion prevention), and air quality (including carbon sequestration and oxygen production). Cores are ranked from C1 to C5 (C5 being the least significant) using nine prioritization criteria, including the habitats of natural heritage resources they contain.

Impacts to cores occur when their natural cover is partially or completely converted permanently to developed land uses. Habitat conversion to development results in changes that reduce ecosystem processes, biodiversity, population viability and habitat quality due to limited recolonization, increased predation, and increased introduction and establishment of invasive species.

Therefore, avoiding or minimizing core impacts is a key mitigation measure that will reduce deleterious effects and preserve the area and connectivity of habitats that are key components of biodiversity. DCR recommends efforts to minimize edge in remaining habitat fragments, retain natural corridors that allow movement between fragments and design the intervening landscape to support native wildlife (natural cover versus lawns).

The proposed project will impact one or more cores with very high to outstanding ecological integrity. Further investigation of these impacts is recommended and DCR-DNH can conduct a formal impact analysis upon request. This analysis would estimate direct impacts to cores and habitat fragments and indirect impacts to cores. The final products of this analysis would include an estimate of the total impact of the project in terms of acres. For more information about the analysis and service charges,

please contact Joe Weber, DCR Chief of Biodiversity Information and Conservation Tools at Joseph.Weber@dcr.virginia.gov.

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 current activity will not affect any documented state-listed plants or insects.

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 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 (December 17, 2022) has passed before it is utilized.

A fee of $120.00 has been assessed for the service of providing this information. Please find attached an invoice for that amount. Please return one copy of the invoice along with your remittance made payable to the Treasurer of Virginia, DCR Finance, 600 East Main Street, 24th Floor, Richmond, VA 23219. Payment is due within thirty days of the invoice date. Please note late payment may result in the suspension of project review service for future projects.

The Virginia Department of Wildlife Resources (VDWR) 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 https://vafwis.dgif.virginia.gov/fwis/ or contact Amy Martin at (804-367-2211) or amy.martin@dwr.virginia.gov.

Should you have any questions or concerns, please contact me at 804-225-2429. Considering the exceptional biodiversity significance of this development project, DCR-Natural Heritage is interested and available to continue to work with you on this project. Thank you for the opportunity to comment on this project.

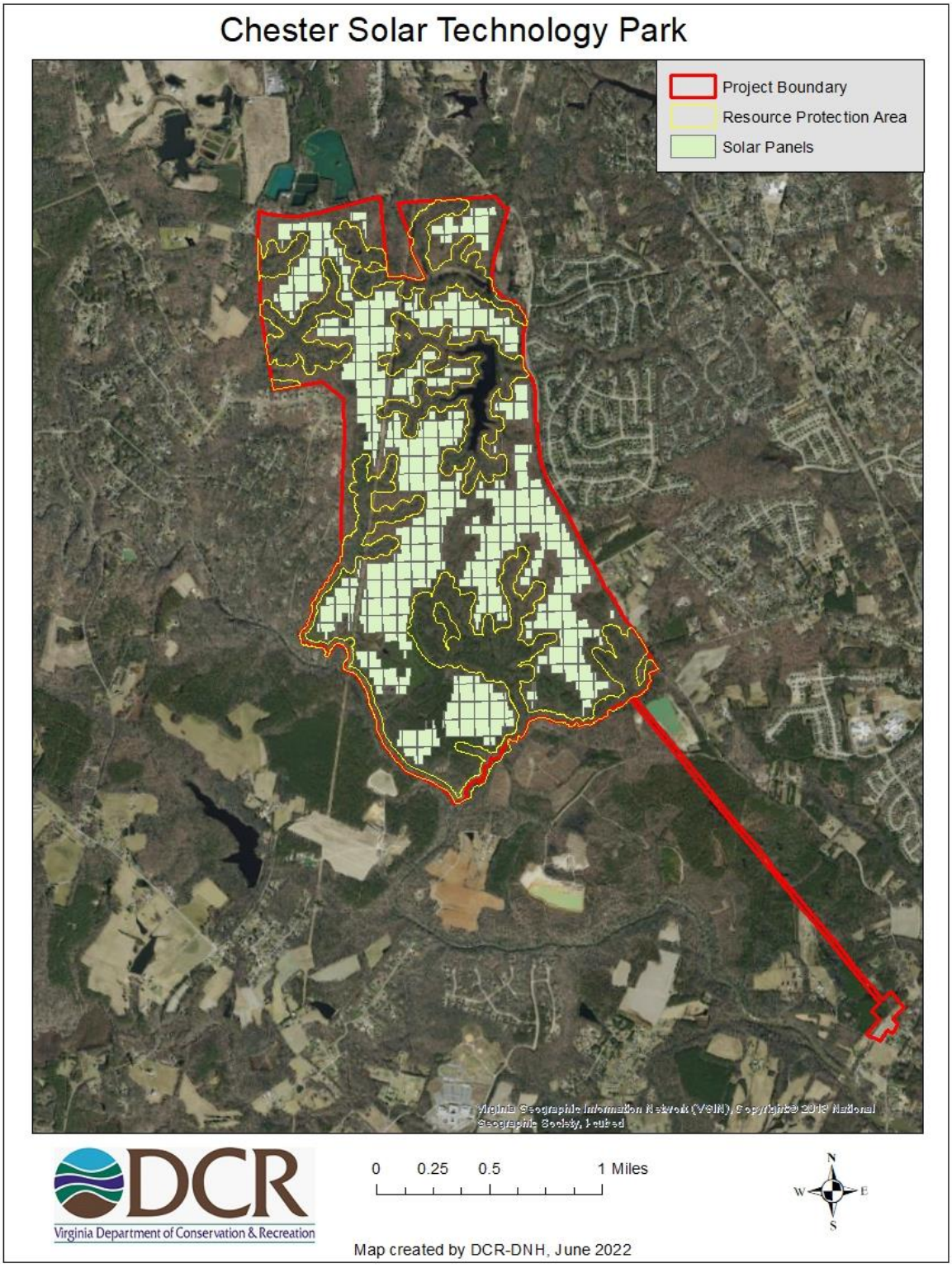
Sincerely,

Tyler Meader

Tyler Meader
Natural Heritage Locality Liaison

Cc: Susan Tripp, DEQ
Joseph Casey, Chesterfield County Administrator

Figure 1. Panel layout and resource protection areas for Chester Solar Technology Park



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Weakley, A.S. In prep. Flora of the Carolinas, Virginia, Georgia, and Surrounding Areas. University of North Carolina Herbarium, Chapel Hill, N.C. 1026 pp.

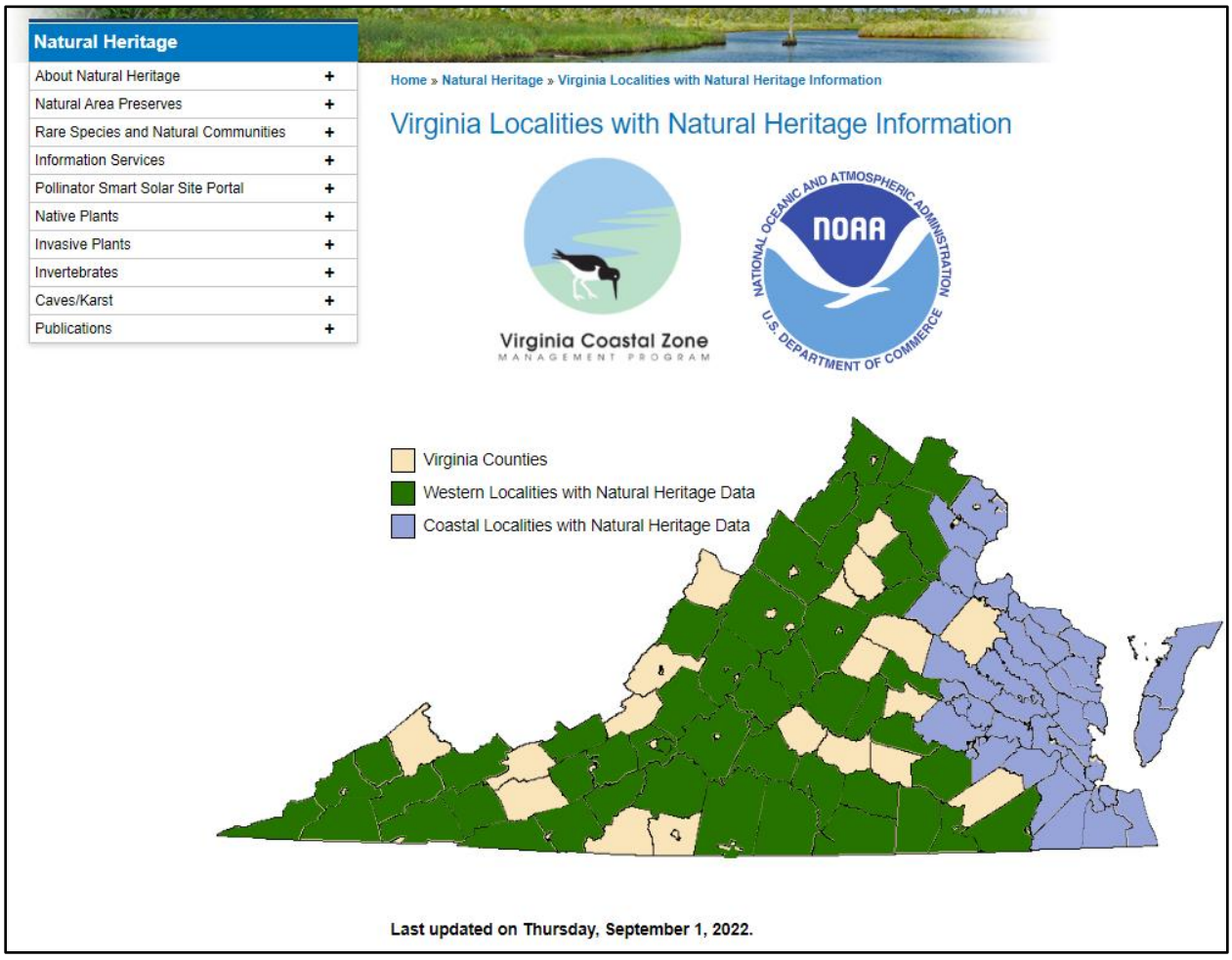
Appendix F

List of Coastal Training Participants for FY21

American Battlefield Trust
City of Chesapeake
Crater Planning District Commission
Cypress Creek Renewables
Department of Conservation and Recreation-Division of Natural Heritage
Department of Conservation and Recreation-Planning and Recreation Resources Division
Department of Conservation and Recreation-State Parks
Department of Environmental Quality-Interagency Review Team
Department of Environmental Quality-Northern Regional Office
Department of Environmental Quality-Piedmont Regional Office
Department of Environmental Quality-Tidewater Regional Office
Department of Forestry
Department of Wildlife Resources
Elizabeth River Project
Energix Renewables
Environmental Resources Management
Environmental Solutions and Innovations, Inc.
Fairfax County
Fairfax County Stormwater Planning Division
Healthy Waters
Historic Virginia Land Conservancy
James City County
JBLE-Langley
King and Queen County
Land Trust of Virginia
Mattaponi Tribe
Northern Virginia Conservation Trust
Prince William Soil and Water Conservation District
Rappahannock Tribe
Resource Environmental Solutions, LLC
Rinker Design Associates
Stantec
Terracon
The Nature Conservancy
The Thrasher Group
Timmons
Virginia Department of Energy
Virginia Department of Transportation-Richmond District
Virginia Institute for Marine Science
Virginia Outdoors Foundation
Virginia Solar Initiative
Zicht & Associates

Appendix G

Map of Localities with Natural Heritage Information



Appendix H

Virginia Solar Pollinator-Smart Program and Native Seed Pilot Project

DCR | Virginia Department of Conservation and Recreation
CONSERVE. PROTECT. ENJOY.

Search DCR Site

About DCR | State Parks | Natural Heritage | Soil and Water Conservation | Recreation Planning | Dam Safety and Floodplains | Land Conservation

Natural Heritage

- About Natural Heritage +
- Natural Area Preserves +
- Rare Species and Natural Communities +
- Information Services +
- Pollinator Smart Solar Site Portal -
  - Comprehensive Manual (PDF)
  - Scorecards
  - Solar Site Native Plant Finder
- Native Plants +
- Invasive Plants +
- Invertebrates +
- Caves/Karst +
- Publications +

Home > Natural Heritage > Solar Site Pollinator-Smart

Virginia Pollinator Smart

The emerging solar power industry holds in its hands an extraordinary opportunity as decision-makers, engineers and designers consider the impact of their facilities on the landscape. Expertly crafted mixes of native plants can transform a solar facility into a thriving ecosystem that supports pollinator species, birds, and other wildlife, while enhancing facility economic efficiencies.

Learn more about the benefits of native plants on solar sites...

The Virginia Department of Environmental Quality and Department of Conservation and Recreation have developed the Virginia Pollinator-Smart Program, an ecologically - responsible program to encourage pollinator friendly solar energy developments throughout the Commonwealth of Virginia.

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Gold Certified Cople Elementary School Solar Facility in Westmoreland, County (developed by SunTribe). Photo is after second growing season. Click to enlarge.

Watch this 1 minute video of 4th Grade Cople Elementary School Sun Tribe Pollinator-Smart Solar Energy Lesson

Click the links below to learn more about the program. If you have questions or comments on the Pollinator-smart program, please contact us at pollinator.smart@dcr.virginia.gov

- Guidance for Establishing & Maintaining a Pollinator-Smart/Bird Habitat Solar Site +
- Environment VA Symposium Webinar, April 2020 +
- Virginia Solar Site Native Plant Finder +
- Virginia Pollinator Smart Program and Localities +
- Virginia Invasive Plant Species List +
- Establishing a Virginia Native Seed Industry +

Guidance for Establishing and Maintaining a Pollinator-Smart/Bird Habitat Solar Site

Virginia's Pollinator-Smart program is designed to provide incentives and tools for solar industry to adopt a native plant strategy to meet soil and water control regulations, community needs, and the needs of our biosphere. Below are links to supporting documents for creating pollinator-friendly habitat on a solar facility and meeting the criteria of the Pollinator-Smart certification program.

Developed with input from many stakeholders, natural resource scientists, and environmental policy experts, the materials presented here provide detailed guidance for planning, designing, installing, and maintaining a Pollinator-Smart habitat at a solar facility.

- **Comprehensive Manual** (PDF)
- **Vegetation Monitoring Manual** (PDF)
- **Native Plants Seed Business Plan** (PDF)
- Pollinator-Smart Scorecards
  - **New site** (PDF)
  - **Established site** (PDF)

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Gold Certified Cople Elementary School Solar Facility in Westmoreland, County (developed by SunTribe). Photo is after first growing season. Click to enlarge.

VA Pollinator Smart Program and Localities

Below is a recorded YouTube video of the September 8, 2020 virtual stakeholder meeting, targeted specifically to city and county governments and local boards. The presentation introduced the Virginia Pollinator-Smart Program and discussed the benefits of participation and ways it can be used to achieve local goals.

Some Virginia localities have local ordinances and policies that include recommendations for planting native pollinator species. These are developed for each locality specifically, by local governing bodies and procedures. For informational purposes, here are some examples provided at the the links below:

- **City of Chesapeake Solar Energy Policy - June 27, 2019** (PDF)
- **Halifax County Ordinance No. 2020-23 - Solar Energy Facilities - enacted August 3, 2020**

Virginia Invasive Plant Species List

The DCR **Invasive Plant Species List** is the result of risk assessment conducted on hundreds of non-native plant species. The list currently identifies 90 species as invasive in Virginia. Invasive species are defined here as non-native species that cause harm to the ecosystem and native species, create economic damage and losses, or pose direct harm to humans. Invasive plant species threaten Pollinator-Smart goals if they are not properly managed at a site.

Establishing a Virginia Native Seed Industry

A goal of the Pollinator-Smart program is to kickstart a robust native seed industry that would be able to serve the coming demand for tens of thousands of acres of native plant materials. The **Native Plants Seed Business Plan** (PDF) builds on knowledge generously provided by established members of the native seed industry and outlines the steps toward a Virginia-based industry that could also serve other surrounding states.

DEQ Solar Site web page

In Virginia, the Department of Environmental Quality has oversight of the establishment of solar facilities. To learn about the permit requirements and opportunities for the solar industry in Virginia, visit the **DEQ Solar Energy** page.

Questions/Comments

If you have questions or comments on the Pollinator-smart program, please contact us at **pollinator.smart@dcr.virginia.gov**

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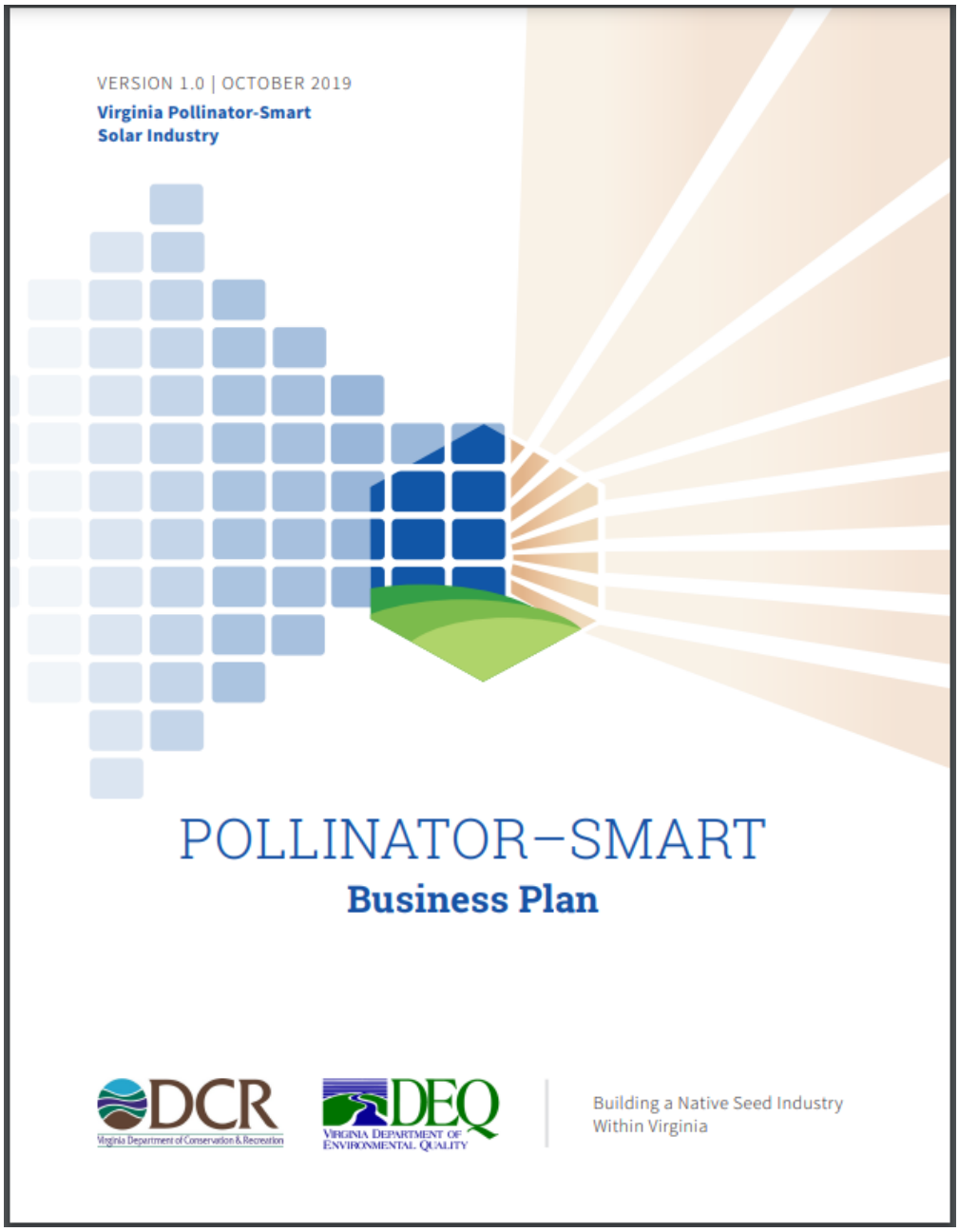

VERSION 1.0 | OCTOBER 2019
Virginia Pollinator-Smart
Solar Industry
POLLINATOR–SMART
Business Plan
DCR
Virginia Department of Conservation & Recreation
DEQ
Virginia Department of Environmental Quality
Building a Native Seed Industry
Within Virginia

Figure 1. Pollinator Smart List of Native Species Targeted for Collection

List of Native Species for Grow Out for VA Native Seed Industry (1st Round)

Grass-leaf Blazing Star (*Liatris pilosa*)

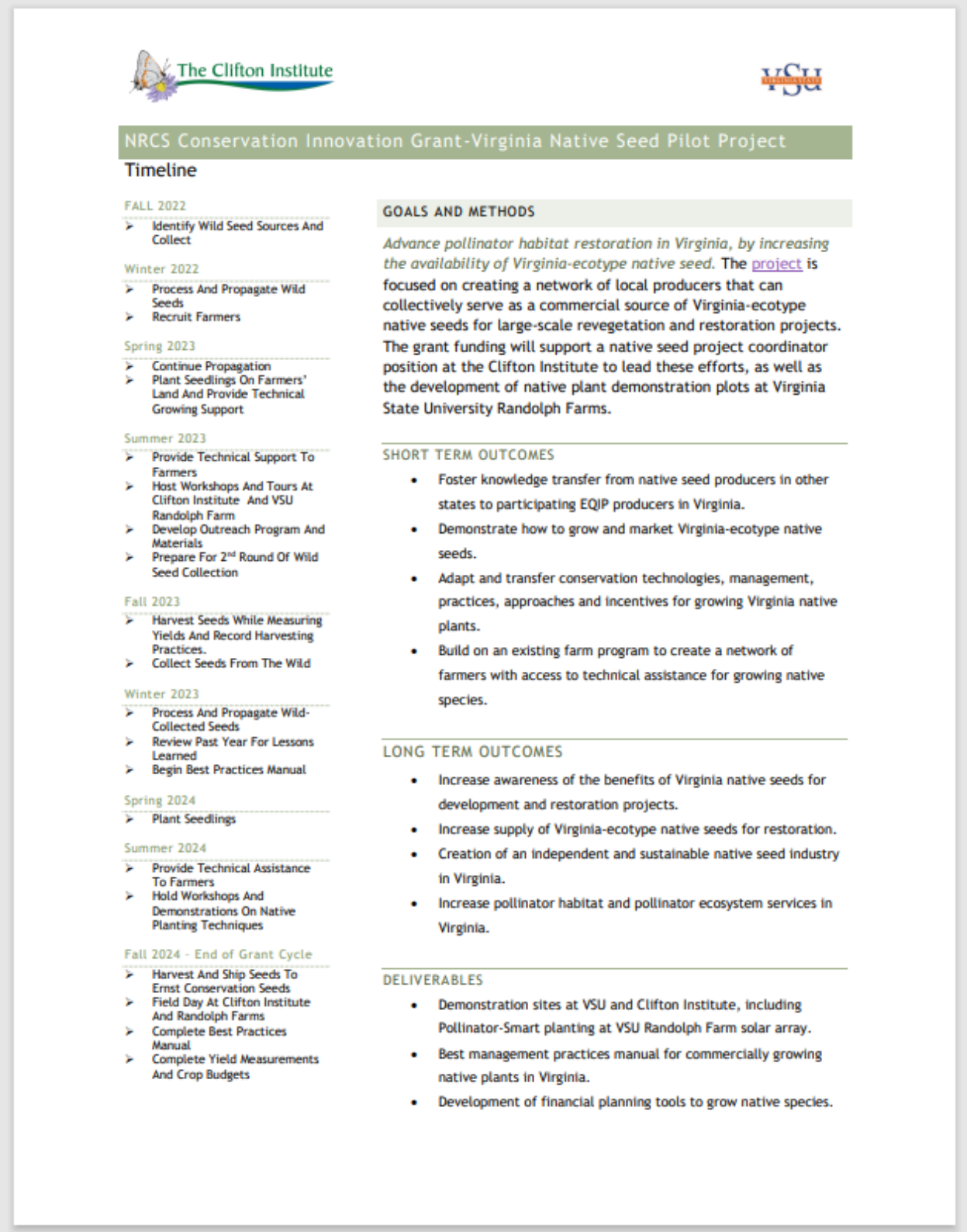
© DCR-DNH, Gary P. Fleming

Scientific Name	Common Name
Liatris pilosa	Grass-leaf Blazing Star
Asclepius tuberosa	Butterfly weed
Pycnanthemum tenuifolium	Narrow-leaf Mountain-mint
Sabatia angularis	Rose-pink
Symphyotrichum patens	Late Purple Aster
Vernonia glauca	Upland Ironweed
Scutellaria integrifolia	Helmet Skullcap
Baptisia tinctoria	Yellow False Indigo
Penstemon laevigatus	Smooth Beard-tongue
Solidago nemoralis	Gray Goldenrod
Desmodium paniculatum	Panicled-leaf Tick-trefoil
Chrysopsis mariana	Maryland Golden-aster
Asclepias syriaca	Common Milkweed
Cirsium discolor	Field Thistle
Symphyotrichum lateriflorum	Calico Aster

Butterfly weed (*Asclepius tuberosa)*

© Kenneth Lawless

Figure 2. Native Seed Pilot Project Factsheet



The Clifton Institute

VSU

NRCS Conservation Innovation Grant-Virginia Native Seed Pilot Project

Timeline

FALL 2022
- Identify Wild Seed Sources And Collect

Winter 2022
- Process And Propagate Wild Seeds
- Recruit Farmers

Spring 2023
- Continue Propagation
- Plant Seedlings On Farmers' Land And Provide Technical Growing Support

Summer 2023
- Provide Technical Support To Farmers
- Host Workshops And Tours At Clifton Institute And VSU Randolph Farm
- Develop Outreach Program And Materials
- Prepare For 2nd Round Of Wild Seed Collection

Fall 2023
- Harvest Seeds While Measuring Yields And Record Harvesting Practices.
- Collect Seeds From The Wild

Winter 2023
- Process And Propagate Wild-Collected Seeds
- Review Past Year For Lessons Learned
- Begin Best Practices Manual

Spring 2024
- Plant Seedlings

Summer 2024
- Provide Technical Assistance To Farmers
- Hold Workshops And Demonstrations On Native Planting Techniques

Fall 2024 - End of Grant Cycle
- Harvest And Ship Seeds To Ernst Conservation Seeds
- Field Day At Clifton Institute And Randolph Farms
- Complete Best Practices Manual
- Complete Yield Measurements And Crop Budgets

GOALS AND METHODS

Advance pollinator habitat restoration in Virginia, by increasing the availability of Virginia-ecotype native seed. The project is focused on creating a network of local producers that can collectively serve as a commercial source of Virginia-ecotype native seeds for large-scale revegetation and restoration projects. The grant funding will support a native seed project coordinator position at the Clifton Institute to lead these efforts, as well as the development of native plant demonstration plots at Virginia State University Randolph Farms.

SHORT TERM OUTCOMES

- Foster knowledge transfer from native seed producers in other states to participating EQIP producers in Virginia.
- Demonstrate how to grow and market Virginia-ecotype native seeds.
- Adapt and transfer conservation technologies, management, practices, approaches and incentives for growing Virginia native plants.
- Build on an existing farm program to create a network of farmers with access to technical assistance for growing native species.

LONG TERM OUTCOMES

- Increase awareness of the benefits of Virginia native seeds for development and restoration projects.
- Increase supply of Virginia-ecotype native seeds for restoration.
- Creation of an independent and sustainable native seed industry in Virginia.
- Increase pollinator habitat and pollinator ecosystem services in Virginia.

DELIVERABLES

- Demonstration sites at VSU and Clifton Institute, including Pollinator-Smart planting at VSU Randolph Farm solar array.
- Best management practices manual for commercially growing native plants in Virginia.
- Development of financial planning tools to grow native species.

Virginia Native Seed Pilot Project Partners

Contact Information

Isaac Matlock

Clifton Institute

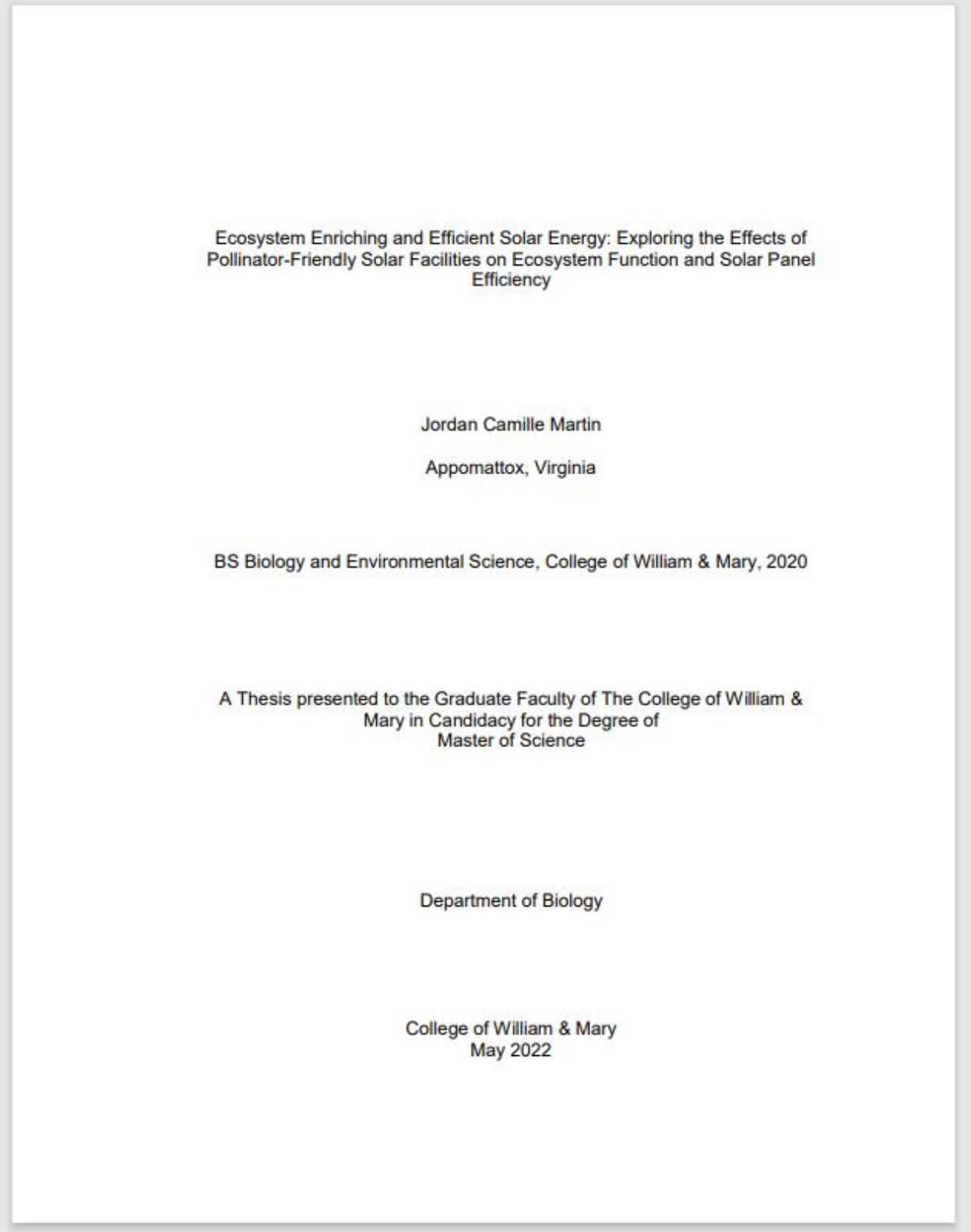
Native Seed Project Coordinator

Address: 6712 Blantyre Rd. | Warrenton, VA 20187

Mobile: 703-508-5196 | Office: 540-341-3651

Email: imatlock@cliftoninstitute.org

Figure 3. Research on Pollinator-Smart Solar Facilities in Virginia



Ecosystem Enriching and Efficient Solar Energy: Exploring the Effects of Pollinator-Friendly Solar Facilities on Ecosystem Function and Solar Panel Efficiency

Jordan Camille Martin

Appomattox, Virginia

BS Biology and Environmental Science, College of William & Mary, 2020

A Thesis presented to the Graduate Faculty of The College of William & Mary in Candidacy for the Degree of Master of Science

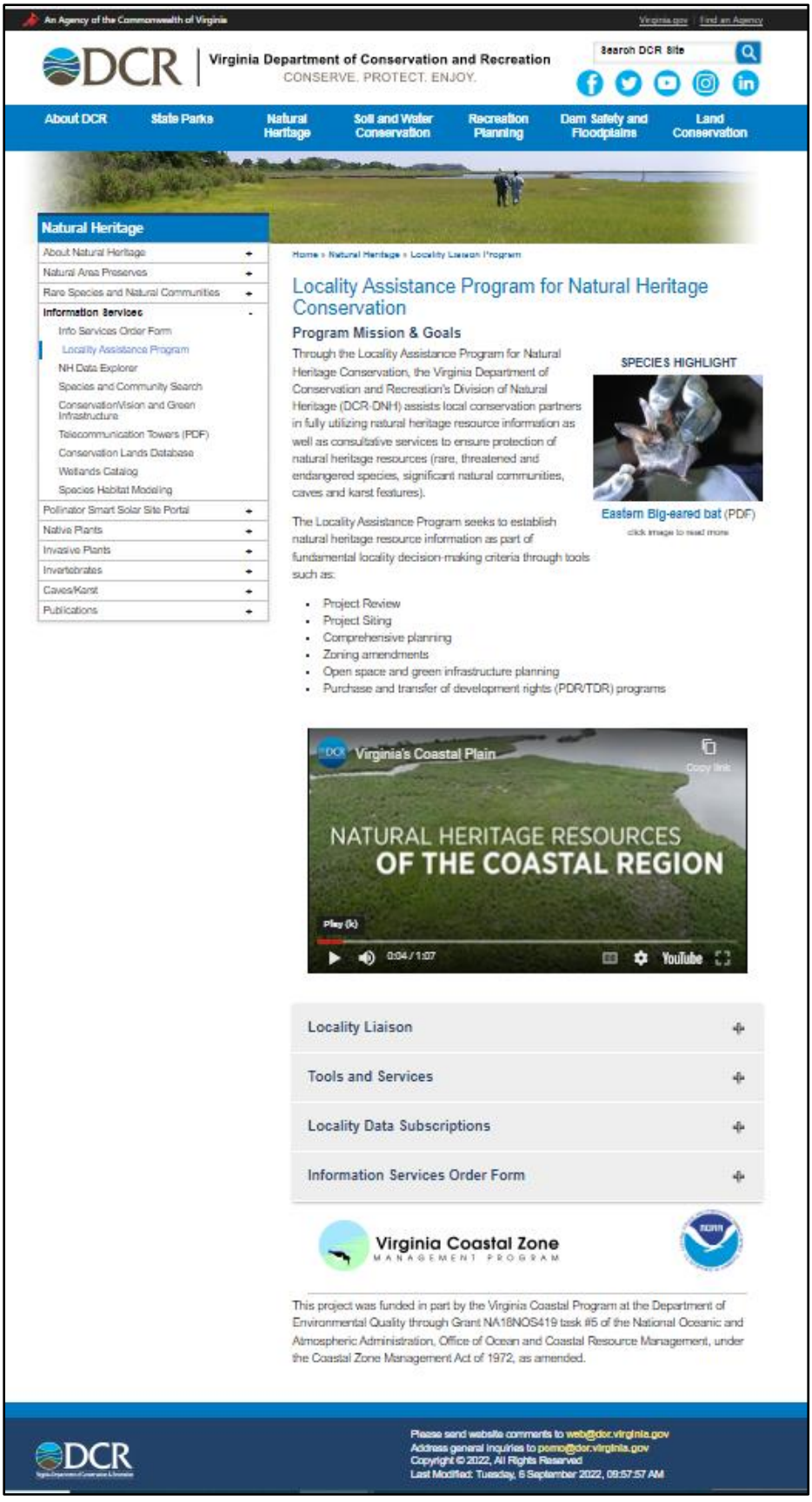
Department of Biology

College of William & Mary
May 2022

Figure 4. 4th Grade Pollinator Lesson at Cople Elementary School

Appendix I

Locality Liaison Webpage Project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Natural Heritage
Soil and Water Conservation
Recreation Planning
Dam Safety and Floodplains
Land Conservation
Natural Heritage
About Natural Heritage
Natural Area Preserves
Rare Species and Natural Communities
Information Services
Info Services Order Form
Locality Assistance Program
NH Data Explorer
Species and Community Search
ConservationVision and Green Infrastructure
Telecommunication Towers (PDF)
Conservation Lands Database
Wetlands Catalog
Species Habitat Modeling
Pollinator Smart Solar Site Portal
Native Plants
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Publications
Home › Natural Heritage › Locality Liaison Program
Locality Assistance Program for Natural Heritage Conservation
Program Mission & Goals
Through the Locality Assistance Program for Natural Heritage Conservation, the Virginia Department of Conservation and Recreation's Division of Natural Heritage (DCR-DNH) assists local conservation partners in fully utilizing natural heritage resource information as well as consultative services to ensure protection of natural heritage resources (rare, threatened and endangered species, significant natural communities, caves and karst features).
SPECIES HIGHLIGHT
Eastern Big-eared bat (PDF)
click image to read more
The Locality Assistance Program seeks to establish natural heritage resource information as part of fundamental locality decision-making criteria through tools such as:
Project Review
Project Siting
Comprehensive planning
Zoning amendments
Open space and green infrastructure planning
Purchase and transfer of development rights (PDR/TDR) programs
Virginia's Coastal Plain
NATURAL HERITAGE RESOURCES
OF THE COASTAL REGION
Play (k)
0:04 / 1:07
YouTube
Locality Liaison
Tools and Services
Locality Data Subscriptions
Information Services Order Form
Virginia Coastal Zone
MANAGEMENT PROGRAM
This project was funded in part by the Virginia Coastal Program at the Department of Environmental Quality through Grant NA18NOS419 task #5 of the National Oceanic and Atmospheric Administration, Office of Ocean and Coastal Resource Management, under the Coastal Zone Management Act of 1972, as amended.
DCR
Please send website comments to web@dcr.virginia.gov
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Appendix J

NHDE Video Tutorials

An Agency of the Commonwealth of Virginia | Virginia.gov | Find an Agency

DCR | Virginia Department of Conservation and Recreation
CONSERVE. PROTECT. ENJOY.

Search DCR Site

About DCR | State Parks | Natural Heritage | Soil and Water Conservation | Recreation Planning | Dam Safety and Floodplains | Land Conservation

Natural Heritage

- About Natural Heritage +
- Natural Area Preserves +
- Rare Species and Natural Communities +
- Information Services +
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Home » Natural Heritage » Natural Heritage Data Explorer Training Videos

Virginia Natural Heritage Data Explorer Training Videos

Welcome to the video tutorials for the Virginia Natural Heritage Data Explorer. The following video tutorials will provide information about the Virginia Natural Heritage Program, as well as provide detailed information about the publicly accessible data layers and functionality of the interactive application.

Part One: Introduction

Part Two: Agency Overview

Part Three: What Is ConserveVirginia?

Part Four: Explorer Data Layers and Functionality

Part Five: Navigating the Explorer

Part Six: Explorer Map Viewer

Appendix K

Quarterly Coastal Species Highlights

Species Highlight: American blue-hearts (*Buchnera americana*)

Global Rarity Rank: G5?-Secure **State Rarity Rank:** S1S2- Critically Imperiled-Imperiled

Legal Status: No state or federal legal protection status

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American blue-hearts occurs in seasonally moist to dry soils of barrens, clearings, old fields, meadows, and roadsides; occurs on calcareous or mafic substrates in the mountains and Piedmont and on acidic, sandy or clayey soils in the Coastal Plain (Weakley et al., 2012). It has also been documented in such disturbed areas as railroad rights-of-way (TNC, 1996). This species blooms from July through September (Gleason, 1952).

As of 2021, 17 occurrences of this state rare plant were documented by the Virginia Natural Heritage Program, 8 historic (last field observation > 30 years) and 9 extant. This species has been documented within the coastal zone from the counties of Fairfax, Prince George and Prince William as well as the City of Petersburg. Threats include loss of habitat due to conversion and succession as well as competition from non-native invasive species.

Literature Cited

Gleason, H.A. 1952. Illustrated Flora of the Northeastern United States and Adjacent Canada. Hafner Press. New York, NY. p. 246.

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

Weakley, A.S., J.C. Ludwig and J.F. Townsend. 2012. *Flora of Virginia.* Botanical Research Institute of Texas Press, Fort Worth. p. 322.

ADA Compliance Note for Image Below: Photo of Natural Heritage Resources Highlight of the King Rail (*Rallus elegans*). Bird standing in marsh.

Natural Heritage Resource Highlight: King Rail (*Rallus elegans*)

Global Rarity Rank: G4-Apparently Secure State Rarity Rank: S2B/S3N-Imperiled/Vulnerable Legal Status: Not Listed

The King rail breeds from southeastern North Dakota southward through central Texas and east to southern Connecticut and Florida (not including the Appalachian Mountains; NatureServe, 2009). In Virginia, there are scattered records from across the state, including the Ridge and Valley, Piedmont, and Coastal Plain physiographic regions. It inhabits tidal freshwater and brackish marshes, non-tidal freshwater marshes, successional stages of marsh-shrub swamp, and domestic rice fields in some states (Meanley, 1969).

Loss of wetland habitat due to alterations to river hydrology and development is the greatest threat to this species (Meanley, 1969). Increased predation pressure from raccoons and domesticated animals have also been cited as detrimental to the King rail (NatureServe, 2009). As of 2021, 12 breeding occurrences of this state rare bird were documented by the Virginia Natural Heritage Program within the coastal zone from the counties of Fairfax, Prince William, King William, Northampton, and Stafford as well as the Cities of Portsmouth and Virginia Beach.

Literature Cited

Meanley, B. 1969. Natural History of the King Rail. North America Fauna 67:1-108.

NatureServe. 2009. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available http://www.natureserve.org/explorer. (Accessed: June 24, 2010).

ADA Compliance Note for Image Below: Photo of Natural Heritage Resource Highlight Purple Milkweed (*Asclepias purpurascens*). Pink flower.

Natural Heritage Resource Highlight: Purple milkweed (*Asclepias purpurascens)*

Global Rarity Rank: G5?- Secure **State Rarity Rank**: S2-Imperiled

Legal Status: Not Listed

Purple Milkweed is a perennial rare plant native to Virginia that may grow as tall as 1 meter. Its showy purple flowers bloom in May and June. The species occurs in a wide variety of habitats including openings in floodplain forests, wet meadows and clearings, stream banks, upland depression swamps, and clay flatwoods, usually on soils derived from calcareous and mafic rocks (Weakley et al., 2012).

Threats include competition from non-native invasive species and loss of habitat due to succession or conversion.

As of 2022, 28 occurrences of this state rare plant were documented in Virginia, 23 extant and 5 historic, including from the coastal zone counties of Fairfax, Hanover, and James City as well as the City of Hampton.

Literature Cited

Weakley, A.S, J. C. Ludwig, and J.F. Townsend 2012. *Flora of Virginia.* Bland Crowder, ed. Foundation of the Flora of Virginia Project Inc., Richmond. Fort Worth: Botanical Research Institute of Texas Press. p. 257.

ADA Compliance Note for Image Below: Photo of Natural Heritage Resource Highlight Eastern bid-eared bat (*Corynorhinus rafinesquii macrotis*). Scientist wearing latex gloves holding a bat.

Natural Heritage Resource Highlight: Eastern big-eared bat (*Corynorhinus rafinesquii macrotis)*

Global Rarity Rank: G3G4T3-Vulnerable **State Rarity Rank**: S2-Imperiled **Legal Status**: State Listed Endangered

The Eastern big-eared bat, named for its enormous ears twice the length of its head, is extremely rare in Virginia and is currently known only from the southeastern portion of the state. Although widespread throughout the southeast, they are never found in large numbers. These bats roost singly or in small groups in hollow trees or abandoned buildings. They forage only after dark primarily in mature forests of both upland and lowland areas along permanent bodies of water (NatureServe, 2009). The details of this bat's feeding behavior and much of its natural history remain a mystery.

Lack of information regarding the ecology of the Eastern big-eared bat, and their sensitivity to disturbance, make them particularly vulnerable to destruction of roost sites and feeding areas where their presence goes undetected (Handley and Schwab 1991, Harvey 1992). Threats to this species include forest destruction, particularly hollow tree removal, decreasing availability of abandoned buildings, and possibly, insecticides. This species is currently classified as endangered by the Virginia Department of Wildlife Resources (VDWR).

As of 2022, 27 occurrences of this state rare bat were documented by the Virginia Natural Heritage Program, 26 extant and 1 historic, including from the coastal zone counties of Surry and Isle of Wight, as well as the Cities of Virginia Beach, Suffolk and Chesapeake.

Literature Cited

Handley, C.O., and D. Schwab. 1991. Eastern big-eared bat. In Virginia's Endangered Species: Proceedings of a Symposium. K. Terwilliger ed. The McDonald and Woodward Publishing Company, Blacksburg, Virginia. p. 571-573.

Harvey, M.J. 1992. Bats of the Eastern United States. Arkansas Game and Fish Commission, Little Rock, Arkansas. pp.46

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 31, 2010).