Natural Heritage – Locality Liaison/Habitat Restoration

Final Report for FY2022 VCZMP Grant No. NA22NOS4190152Task #5

November 15, 2023

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Virginia Department of Conservation and Recreation –
Division of Natural Heritage

This project was funded in part by the Virginia Coastal Zone Management Program at the Department of Environmental Quality through Grant # NA22NOS4190152 of the U.S. Department of Commerce, National Oceanic and Atmospheric Administration, under the Coastal Zone Management Act of 1972, as amended.

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Executive Summary

During the FY2022 grant year, the Department of Conservation and Recreation-Division of Natural Heritage (DCR-DNH) reviewed 1,298 projects for impacts to natural heritage resources in the coastal zone (38% of the projects reviewed statewide) as defined by the Department of Environmental Quality (DEQ) Coastal Zone Management (CZM) Program. During FY2022, 789 coastal projects were submitted through the NHDE, 61% of all the projects submitted for review in the coastal zone. 42 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 a subdivision review with documented natural heritage resources in Prince William County, transmission line rebuilds in multiple counties, a subdivision review requiring coordination with another state agency in City of Chesapeake, and a proposed rail line in Fairfax County.

Coastal localities and other conservation partners participated in 9 training sessions for the Natural Heritage Data Explorer (NHDE) website (https://vanhde.org) including 31 from state agencies, 24 from local governments, 11 from consulting companies, 11 from Soil and Water Conservation Districts, 10 from land trusts, 5 from Planning District Commissions, 5 from federal agencies, one from a Virginia Indian tribe, and one from an educational institution. At the end of FY2022, there were 44 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 100% of coastal zone localities having Natural Heritage data, 100% of the Planning District Commissions and 78% of the Land Trusts as of September 30, 2023. The Locality Liaison and project review staff renewed or initiated 46 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 Natural Heritage Locality Liaison (Locality Liaison) also attended 5 meetings, presentations, and workshops throughout the year.

The Locality Liaison worked with other Heritage staff and staff from the DCR-Public Communications and Marketing Office on the development of an additional NHDE public training tutorial video. 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 the DEQ 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 Assistance Program continues to work to have natural heritage resources play a larger role in decision making including the problems and opportunities they face in development and protecting their natural heritage resources.

Staffing

Tyler Meader serves as the Natural Heritage Locality Liaison (Locality Liaison) and reviews projects within the coastal zone with assistance from other environmental review staff. René 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.

Environmental Review

The DCR-DNH Environmental Review Section, to which the Locality Liaison is assigned, works with local, state, and federal government agencies as well as private individuals and consultants to assess the potential for proposed activities to impact natural heritage resources and to recommend ways to avoid or minimize these impacts. The Locality Liaison has primary responsibility for reviewing projects in the coastal zone and provides oversight for the Project Review staff assisting in the review process. Barbara Gregory (Project Review Assistant, Senior) conducts reviews for the Virginia Department of Transportation (VDOT) projects statewide which during FY2022 included 114 transportation projects in the coastal zone. During this grant year, DCR-DNH reviewed a total of 1,298 projects in the coastal zone. This represents 38% of the projects reviewed statewide by DCR-DNH. 42 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 (ACOE) and the Department of Environmental Quality (DEQ) Virginia Water Protection Permit Program (VWPP) screen wetland development projects against the DCR-DNH database and forward potential conflicts for our comment. The DEQ Virginia Pollutant Discharge Elimination System (VPDES) program also screens issuance and re-issuances of permits for point source discharges to surface waters against the DCR-DNH database and the Virginia Department of Health (VDH) screens for issuance or re-issuance of pump-out facilities as part of their permitting process. The Virginia Marine Resource Commission (VMRC) relies on the DCR-DNH to review Joint Permit Applications (JPAs) for subaqueous bottomlands impacts and the DEQ 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. In addition, the State Corporation Commission (SCC) through DEQ coordinates utility projects with DCR-DNH to inform SCC certification regarding impacts to natural heritage resources and avoidance measures both in written format and through in-person testimony. The Virginia Department of Forestry (DOF) submits forest management plans for review and incorporates natural heritage resource recommendations that will help the landowner with forest management decisions for their property. 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 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-DNH /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 (NHDE). 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 Preservation

Hoadly Falls Proposed Subdivision – Prince William County

In November 2020, DCR-DNH first received a proposed subdivision project submitted for review by DEQ, located in Prince William County. Within the project footprint were two documented populations of Small whorled pogonia (*Isotria medeoloides*, G2?/S2/LT/LE), a state and federally listed species. Since that time, DCR-DNH has had continued involvement with the project, including meetings with DEQ, the USFWS, the Virginia Department of Agriculture and Consumer Services (VDACS) which has regulatory authority over state listed plants, as well as a site visit. On June 13, 2023, the USFWS released the Biological Opinion (BO) for the project, which stated that the two populations of Small whorled pogonia may experience reductions in fitness, and therefore specific protection requirements will be required to be put in place, to include: a 10 year monitoring plan, a permanent conservation easement area protected in perpetuity with a legally binding Declaration of Restrictions for Conservation Easement, fencing off the population before construction begins, and ensuring project activities will be planned as to avoid and minimize foot traffic through areas known to have Small whorled pogonia plants to the maximum extent practicable. After reviewing the special conditions listed above for the issuance of the permit, the DCR-DNH Environmental Review Coordinator provided final concurrence on behalf of the agency on July 5, 2023, to DEQ. Excerpts from the USFWS Biological Opinion issued for the project can be found in Appendix A.

Transmission Line Rebuilds – City of Suffolk, City of Petersburg, Accomack County, Dinwiddie County

Virginia's southern Coastal Plain and Piedmont historically supported numerous species and habitats allied with the fire-maintained ecosystems, including longleaf communities and their embedded wetlands. Due to the suppression of fire, species tied to open, fire-maintained habitats have suffered drastic declines. Botanists have long recognized that mechanical clearing of vegetation can be a surrogate for fire when the latter is no longer a part of the equation. The discovery of many rare plant species in these artificial habitats, particularly powerline rights-of-way on the southside of Virginia led DCR-DNH to work with Dominion Energy on an inventory of significant power line habitats and associated rarities, beginning in 1992.

Due to increased demand on current aging energy infrastructure, DCR-DNH has seen an uptick in transmission line rebuild projects in the coastal zone of Virginia. Since certain types of natural heritage resources are found in transmission line rights-of-way due to the management of early successional habitat, careful coordination is required to avoid or minimize impacts to those resources during transmission line wreck and rebuilds. DCR-DNH has provided numerous comment letters, maps, shapefiles, and a site visit this year in an effort to ensure natural heritage resources are flagged and fenced off during deconstruction of older towers and the rebuild of new towers and restringing transmission line, and all of the ground disturbance including staging of equipment and vehicular traffic that that entails. An example of this type of comment letter is included in Appendix B.

Cobblestone Cay Subdivision-City of Chesapeake

On October 12, 2022, DCR-DNH provided comments on a planned 18 lot subdivision with anticipated impacts to ~3 acres of palustrine forested wetland. The project was routed to a zoologist for additional review due to an intersect with the Canebrake rattlesnake Predicted Suitable Habitat (PSH) layer, as well as an intersect with a conservation site known to contain occurrences of Canebrake rattlesnake. The DCR-DNH zoologist felt there was a high likelihood of Canebrake rattlesnake occurring within the property based on suitable habitat and nearby records. Since the Canebrake rattlesnake is state listed as Endangered, the Locality Liaison began communication with project review staff at the DWR, the regulatory agency for this species, to ensure that both agencies had similar levels of concern for the species' potential to occur at this project site. DWR had similar concerns, and an extended dialogue ensued between the DEQ permit writer and DWR and DCR-DNH. After an initial unsatisfactory attempt by the applicant at a habitat assessment, a complete habitat assessment was ultimately submitted to DEQ, DWR and DCR for review. Habitat assessments are preferred over a survey as the Canebrake rattlesnake can be extremely difficult to locate. Potential habitat for the species was found, and the applicant is now required to mitigate for impacts to Canebrake rattlesnake habitat for this project. DCR-DNH has subsequently reviewed the project two more times for different permitting agencies, and provided comment letters that incorporate DCR-DNH and DWR comments and concerns. This strong working relationship with DWR ensures better protection of rare, threatened, and endangered species in Virginia. A comment letter for this project to the U.S. Army Corps of Engineers permit request reviewed in September 2023 can be found in Appendix C.

Rail Line Development

Franconia-Springfield Bypass-Fairfax County

In August 2023, the Locality Liaison was contacted by a project manager from Kimley-Horn, an environmental consultant, about a planned rail line development in Fairfax County that would likely impact natural heritage resources, specifically multiple occurrences of a Coastal Plain / Outer Piedmont Acidic Seepage Swamp significant natural community. After a preliminary phone call to discuss the project, a virtual meeting was set up with DCR-DNH, multiple staff from Kimley-Horn, and staff from the Virginia Passenger Rail Authority on August 17. During the meeting, the importance of submitting precise project footprints was stressed, as the significant natural community occurrences are either within or adjacent to the proposed rail line. An agreement was reached where DCR-DNH would receive two different shapefiles with the project review submission, one denoting geotechnical boring limits-of-disturbance (LOD) and the other showing grading LOD for the rail line. DCR-DNH agreed to provide a shapefile containing significant natural community locations to accompany our comment letter, so that the project proponent could reference the natural community locations and avoid impacts as much as possible. In depth comments from a DCR-DNH ecologist were included in the comment letter to provide information about the significant natural communities including recommendations for avoiding direct impacts as well as indirect impacts from potential changes to local hydrology. Due to the potential for the project site to contain Small whorled pogonia (*Isotria medeoloides*, G2/S2/LT/LE), a federally and state listed plant, DCR also recommended a survey for Small

whorled pogonia, and provided detailed comments about the risk of introduction of invasive species as a result of the project. The comment letter for this project can be found in Appendix D.

Energy - Solar Project

Merry Point Solar-Lancaster County

In May 2023, DCR-DNH provided comments on the Merry Point Solar project to an environmental consultant. DCR-DNH has previously provided comments on the project in April, June, and October of 2021. DCR-DNH has continued to recommend avoidance of the Hickory Hollow Conservation Site, a portion of which is within the project site. The Hickory Hollow Conservation Site was created to provide a protective buffer for documented natural heritage resources including the Kentucky Lady's-slipper (*Cypripedium kentuckiense/* G3/S1/NL/NL) and multiple occurrences of a Northern Coastal Plain / Piedmont Oak - Beech / Heath Forest significant natural community. This population of Kentucky Lady's slipper is the only extant occurrence documented by DCR-DNH in the state. Due to the potential for additional populations of Kentucky Lady's slipper to occur within the project site, DCR-DNH has consistently recommended a survey for the species. DCR-DNH has also reviewed a negative Small whorled pogonia (*Isotria medeoloides*, G2/S2/LT/LE) conducted for the project, and recommended an updated survey for the resource to adhere to the US Fish and Wildlife Service (USFWS) validity guidelines for a Small whorled pogonia survey. DCR-DNH worked with the environmental consultant to confirm that the proposed project would avoid impacts to the Hickory Hollow Natural Area Preserve immediately to the east of the project area. The comment letter for this project can be found in Appendix E.

Natural Heritage Data and Natural Heritage Data Explorer

The heart of DCR-DNH's service to localities is the set of databases and information tools that indicate what is rare, where the rarities are, and how they can be protected. As of September 30, 2023, DCR-DNH databases contain information about 10,563 specific occurrences of natural heritage resources**,** 2,656 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 2,272 conservation sites, of which 701 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 https://vanhde.org/. This ArcGIS informational tool last updated in September-October of 2023 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 2348 projects have been submitted through NHDE during FY2022 with 789 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, 464 projects within the coastal zone (36% of all projects reviewed in the coastal zone) were identified as "no comment/no conflict" 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 Essential Element Occurrences. Essential Element Occurrences (EEO's) include those in the Irreplaceable, Critical, Vital, and High Priority tiers. 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 EEO associated with 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. In March 2023, a field denoting whether an element occurrence was an EEO was added to NHDE. 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.

In January 2023, the Locality Liaison participated in evaluating the feasibility and usefulness of adjusting the NHDE website to allow the submittal of multi-part shapefiles for projects. It was ultimately decided that due to limitations in the accuracy of the subsequent reports from NHDE, submittal of multi-part shapefiles would not be pursued at this time. In September 2023, the Locality Liaison also participated in the testing of the NHDE quarterly update which included Stream Conservation Sites with associated upland areas replacing Stream Conservation Units, as well as inclusion of major and minor ground disturbance categories, and the automation of appropriate language in the NHDE report depending on the layers intersected and the project type.

NHDE training was updated in June 2023 to include explanation of the new Virginia Wildlife Corridor Action Plan (https://dwr.virginia.gov/wildlife/corridors/). The NHDE training presentation was also updated multiple times throughout the grant period to keep information contained in the presentation up-to-date, and to refine talking points, flow, and information provided.

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, 30 species models were updated, including Shale barren rock cress (*Boechera serotina*, G2/S2/LE/LT), Rusty-patched Bumblebee (*Bombus affinis*, G2/S1/LE/LE), and Bog Turtle (*Glyptemys muhlenbergii*, G2G3/S2/LT/SA/LE).

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 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 Microsoft Teams platform on an every-other-month basis. In addition, tailored NHDE training sessions were held, one during a Crater Planning District Commission meeting, one with representatives from Caroline County, and one presented by the Environmental Review Coordinator for Soil and Water Conservation District staff. 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, 9 separate training sessions for NHDE were held for coastal zone participants.

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 NHDE website, which includes ConserveVirginia, the PSHS 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.

Coastal participants in the virtual training sessions included 31 from state agencies, 24 from local governments, 11 from consulting companies, 11 from Soil and Water Conservation Districts, 10 from land trusts, 5 from Planning District Commissions, 5 from federal agencies, one from a Virginia Indian tribe, and one from an educational institution. 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 14 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. During the grant cycle, the Locality Liaison worked with Southampton County and Hanover County on updates to their Comprehensive Plans, providing current DCR-DNH data and recommendations for inclusion in the plans. Examples from the Hanover County Comprehensive Plan updates featuring natural heritage resources and recommendations can be found in Appendix G .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 tailored NHDE presentation with employees at Caroline County and provide an overview of the DCR-DNH program and the NHDE website. Following the training, Caroline County entered into a NHDE subscription with an accompanying license agreement for access to DCR-DNH data. Caroline County was the last remaining coastal locality with documented natural heritage resources to obtain access to DCR-DNH data in the coastal zone!

At the end of FY2022, there were 44 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 100% of coastal zone localities having Natural Heritage data, 100% of the Planning District Commissions and 78% of the Land Trusts as of September 30, 2023. 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 H for a map of the Virginia localities with Natural Heritage information. The Locality Liaison and project review staff renewed or initiated 46 data licenses throughout this year within the coastal zone, including localities, consultants, land trusts, and a Virginia Indian tribe.

The Locality Liaison attended the U.S. Army Corps of Engineers (USACE) Virginia Beach Coastal Storm Risk Management Feasibility Study-Interagency Kick-Off Meeting on October 13, 2022, the USACE Virginia Beach Coastal Storm Risk Management Feasibility Study Interagency Meeting on December 15, 2022, the York River and Small Coastal Basins

Symposium on May 17, 2023, and the Sovereign Nations of Virginia Conference on September 14, 2023. The Locality Liaison presented NHDE and the Virginia Wetlands Catalog at the Virginia Association of Wetland Professionals annual spring meeting on May 12, 2023. Over the course of the grant year, the Locality Liaison also attended the Viginia Natural Resources Leadership Institute course in different locations around Virginia focusing on a variety of environmental issues over six 3-day sessions beginning in September 2022 and finishing in June 2023. The VNRLI curriculum focuses on building skills in conflict resolution, collaborative problem solving and service leadership through the lens of current real world environmental issues.

Habitat Restoration and Protection Initiatives

DCR State Parks Planning Review

Natural Heritage staff participated in updated state park workflow for master planning efforts. DCR-DNH staff review the park's resource information to consider appropriate park development. This process continues to provide 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 Westmoreland State Park, False Cape State Park, Chippokes State Park, First Landing State Park, Middle Peninsula State Park, Machicomoco State Park, and Lake Anna 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 Corps-Norfolk District and DEQ chair the Virginia Aquatic Resources Trust Fund (VARTF) Interagency Review Team that reviews and approves wetland and stream mitigation projects/banks. 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. The 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). The webpage was updated with new formatting, partner logos and additional resources (Figure 1). To increase awareness of the Virginia Pollinator-Smart Program, the Environmental Review Coordinator and other Heritage staff continue to participate in multiple presentations/webinars

during the grant period including the Bee Better Program, Make Your Trash Bloom and American Planning Association Conference.

Nicki Gustafson, DCR Pollinator-Smart member along with other Pollinator-Smart team members from DWR, William and Mary and Verdantas provided a presentation to localities with a focus on increasing awareness and answering questions about the program. 49 attendees spanning 34 localities and 7 regional planning district commissions participated in the webinar. Several localities have included pollinator friendly habitat requirements for solar development in their ordinances with some localities requiring the facilities to be Pollinator-Smart certified as identified in the Virginia Localities Solar Ordinances and Native Vegetation 2022 Report (Figure 2).

Over the past several years, through continued development by DEQ contractor several Pollinator-Smart training modules have been produced and were posted on the Pollinator-Smart website at https://www.dcr.virginia.gov/natural-heritage/pollinatorsmart-training-videos in February 2023. The Pollinator-Smart training modules includes information regarding site constraints and zones, seed mix design, site preparation and installation methods, integrated vegetation management and monitoring plan and much more (Figure 3).

The new Virginia Native Plant Finder (https://www.dcr.virginia.gov/natural-heritage/native-plants-finder) was released in September 2023 combining the DCR Native Plant Finder and the Solar Site Native Plant Finder into one application (Figure 4). The free online tool can be used for native planting projects of any scale, from backyard gardens to large solar sites, and park management to landscape architectural design. The finder does not include any rare species, or any non-native plants that have been introduced to Virginia.

The Clifton Institute, Virginia State University, the Nature Conservancy, and other partners including DCR-DNH were awarded a Natural Resource Conservation Service (NRCS) $200,000 multi-year grant in 2022 to hire a native seed project coordinator and provide technical assistance for farmers to grow native species 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 targeted 15 native species for collections in the fall of 2022 to serve as the basis of foundational ecotype seed source for Virginia. Collections were shipped to Ernst Conservation Seeds for grow out and these seedlings were provided to farmers as part of the Native Seed Pilot Project (Figure 5). Figures 1-5 can be found in Appendix I.

NHDE Video Tutorials

In FY21, the Locality Liaison undertook the development of tutorial videos that focused on the publicly available data layers and functionalities on NHDE. In FY22, the Locality Liaison worked with Joseph Weber, DCR-DNH Chief of Biodiversity Information and Conservation Tools, to record a video for the Virginia Wildlife Corridor Action Plan, an additional data layer added to NHDE in the April 2023 quarterly update. The Plan was a collaborative effort of DWR, VDOT, DCR-DNH, and DOF, with the goal of protecting vital wildlife habitat corridors and reducing wildlife-vehicle conflicts, such as collisions, to promote driver safety. The additional

video has 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.

44 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 Caroline 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 license agreements with coastal localities are valid and up-to-date..

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 H). 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

Excerpts from the USFWS Biological Opinion

Conservation measures included in the biological opinion issued by the USFWS on June 13, 2023, for avoidance of potential impacts to Small whorled pogonia, a federal and state listed rare plant documented within the Hoadly Falls proposed development in Prince William County.

- Project activities will be planned as to avoid and minimize foot traffic through areas known to have SWP plants to the maximum extent practicable.
- A "Permanent Tree Save Area/BMP" Conservation Easement area, which contains the 2 known SWP colonies, will be set aside and protected in perpetuity with a permanent legally binding real estate instrument (e.g., Declaration of Restrictions for Conservation Easement). This instrument will be in place prior to initiation of construction authorized by any permit. This instrument will be in perpetuity and the Service, Corps, Virginia Department of Agriculture and Consumer Services, and Virginia Department of Recreation and Conservation will approve the language prior to recording.
- Before construction begins, fencing will be installed around known SWP colonies to avoid trampling plants. Fencing will be removed after construction.
- Surveyors will not touch the plants. To check stems, they will move the plant gently with a small stick, rather than with their hands (which can leave salt behind, attracting herbivores).

Appendix B
Letter for Transmission Line Rebuild Project

August 30, 2023

Corey Gray
Stantec Consulting Services, Inc.
5209 Center Street
Williamsburg, VA 23188

Re: 203401971, Carson to Locks 230kV Line 249 Rebuild Project

Dear Mr. Gray:

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 in our files, the Oak Grove Church Powerlines Conservation Site and the Lower Arthur Swamp Powerline Conservation Site are located within the project area, including a 100 foot buffer (Figure 1). 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 Oak Grove Church Powerlines Conservation Site (Figure 2) has been assigned a biodiversity rank of B4, which represents a site of moderate significance. The natural heritage resources associated with this site are:

Asclepias rubra	Red milkweed	G4G5/S2/NL/NL
Chelone cuthbertii	Cuthbert's turtlehead	G3/S2/NL/NL

The Lower Arthur Swamp Powerline Conservation Site (Figure 3) has been assigned a biodiversity rank of B3, which represents a site of high significance. The natural heritage resources associated with this site are:

Chelone cuthbertii	Cuthbert's turtlehead	G3/S2/NL/NL
Lilium pyrophilum	Sandhills bog lily	G2/S1/SOC/NL
Rhynchospora cephalantha var. attenuata	Small bunched beaksedge	G5T3?/S1/NL/NL
Xyris curtissii	Curtiss' yellow-eyed grass	G5T5/S1/NL/NL
Asclepias rubra	Red milkweed	G4G5/S2/NL/NL

In addition, Rafinesque's seedbox (*Ludwigia hirtella*, G5/S2/NL/NL) has been documented within the powerline right-of-way (ROW) (Figure 3).

To minimize adverse impacts to the documented natural heritage resources within the powerline ROW as shown in Figures 2 and 3, DCR provides the following recommendations:

- Flagging or fencing the documented populations of rare plants so that direct impacts can be avoided during the transmission line rebuild.
- Avoidance of equipment staging, vehicular traffic and other activities within these sensitive areas.
- 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.
- 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. 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 $450.00 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 https://services.dwr.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. Thank you for the opportunity to comment on this project.

Sincerely,

Tyler Meader
Natural Heritage Locality Liaison

Appendix C
Letter for Cobblestone Cay Subdivision

October 12, 2023

David Knepper
USACE-Norfolk District
803 Front Street
Norfolk, VA 23510

Re: NAO-2017-00737, Cobblestone Cay Subdivision

Dear Mr. Knepper:

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 project site is located within the North Landing River Conservation 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 North Landing River Conservation Site has been given a biodiversity significance ranking of B1, which represents a site of outstanding significance. The natural heritage resource of concern at this site is:

Crotalus horridus	Canebrake rattlesnake	G4T4/S1/NL/LE

Timber and Canebrake rattlesnakes are two forms of the same species (*Crotalus horridus*). The species is widespread throughout eastern United States ranging from New England to Minnesota and south to Florida and Texas. The forms differ in appearance and habitat distribution but share enough genetic similarities that they are the same species (NatureServe, 2009). The Timber rattlesnake is typically darker or yellow-ish (Gibbons and Dorcas, 2005). In Virginia, it is found in the piedmont and mountainous regions. The Canebrake rattlesnake is typically lighter in color, often pinkish, and is found in more coastal areas, including the northern limit of its range in the southeastern counties of the coastal plain of Virginia (Gibbons and Dorcas, 2005).

Canebrake rattlesnakes in Virginia inhabit hardwood and mixed hardwood-pine forests, cane thickets and the ridges and glades of swampy areas (Mitchell and Schwab, 1991). Canebrake rattlesnakes are generally terrestrial and feed on a variety of small animals including small mammals, birds, and amphibians (Mitchell & Schwab, 1991). The primary threats to the Canebrake rattlesnake are the loss of habitat due to development activities and persecution by humans (Mitchell, 1994). Please note that the coastal plain populations of the Canebrake rattlesnake are currently classified as endangered by the Virginia Department of Wildlife Resources (VDWR).

DCR concurs with the previous VDWR determination, for Virginia Department of Environmental Quality (VDEQ) permit number 22-2024, that habitat of significant value for Canebrake rattlesnake exists on site, and DCR supports recommendations to compensate for impacts to Canebrake rattlesnake habitat, as well as contractor education measures. Due to the legal status of the Canebrake rattlesnake, 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).

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

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

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

The Virginia Department of 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 https://services.dwr.virginia.gov/fwis/ or contact Amy Martin at 804-367-2211 or amy.martin@dwr.virginia.gov. According to the information currently in our files, there is potential for the Northern long-eared bat (*Myotis septentrionalis*, G2G3/S1S3/LE/LT) to occur within the project area. Due to the legal status of the Northern long-eared bat, DCR recommends coordination with the United States Fish and Wildlife Service (USFWS) and the VDWR to ensure compliance with protected species legislation.

The U.S. Fish and Wildlife Service (USFWS) utilizes an online project review process (https://www.fws.gov/office/virginia-ecological-services/virginia-field-office-online-review-process) to facilitate compliance with the Endangered Species Act (16 U.S.C. 1531-1544, 87 Stat. 884) (ESA), as amended. The process enables users to 1) follow step-by-step guidance; 2) access information that will allow them to identify threatened and endangered species, designated critical habitat, and other Federal trust resources that may be affected by their project; and 3) accurately reach determinations regarding the potential effects of their project on these resources as required under the ESA. If you have questions regarding the online review process, please contact Rachel Case at rachel_case@fws.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

Literature Cited

Gibbons, W. and Dorcas, M. 2005. Snakes of the southeast. University of Georgia Press. Athens, GA. 253pp.

Mitchell, J.C. 1994. The reptiles of Virginia. Smithsonian Institution Press. Washington, DC. pp. 296 - 302.

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Appendix D
Letter for Franconia-Springfield Bypass

October 18, 2023

Kendall Odell
Kimley-Horn and Associates
2035 Maywill Street, Suite 200
Richmond, VA 23220

Re: Franconia-Springfield Bypass

Dear Ms. Odell:

The Department of Conservation and Recreation's Division of Natural Heritage (DCR) has searched its Biotics Data System for occurrences of natural heritage resources within the project area included as part of the submitted shapefiles, titled Geotechnical Boring LOD and Grading LOD. 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 in our files, the Newington Conservation Site is located within the project area, including a 100 foot buffer. 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 Newington Conservation Site has been assigned a

biodiversity rank of B4, which represents a site of moderate significance. The natural heritage resource associated with this site is:

Coastal Plain / Outer Piedmont Acidic Seepage Swamp G3?/S3/NL/NL

The Coastal Plain / Outer Piedmont Acidic Seepage Swamp (*Acer rubrum – Nyssa sylvatica – Magnolia virginiana – Viburnum nudum – Osmunda cinnamomea – Woodwardia areolata* Forest, G3?/S3/NL/NL), is an acidic groundwater saturated swamp forest that ranges from southeastern New York and New Jersey to southeastern Virginia, primarily on the Coastal Plain. In Virginia, it occurs mostly in the inner (western) portion of the Coastal Plain and the extreme eastern portion of the Piedmont. This community occurs in nutrient-poor soils in stream headwaters, where abundant groundwater is discharged in springs and seeps. The soil typically consists of muck or shallow peat over sandy mineral soil, with Sphagnum-covered hummocks and pools of standing water also present. The vegetation is a closed-canopy forest with red maple (*Acer rubrum*) and black gum (*Nyssa sylvatica*) typically dominant. Characteristic understory trees and shrubs include sweetbay magnolia (*Magnolia virginiana*), possum-haw (*Viburnum nudum*), and sweet pepperbush (*Clethra alnifolia*). The herbaceous flora is usually rich in sedges and ferns, especially cinnamon fern (*Osmunda cinnamomea*) and netted chain fern (*Woodwardia areolata*). Skunk-cabbage (*Symplocarpus foetidus*) forms large colonies early the growing season in many stands. This uncommon wetland habitat is vulnerable to alteration or destruction by beavers and various anthropogenic activities including hydrologic modifications (NatureServe, 2010).

To minimize adverse impacts to the documented natural heritage resources as a result of the proposed activities, DCR recommends avoidance of the resources to the greatest extent possible. Please note that these are groundwater-driven wetlands that are not ephemeral or even intermittent. They rely on regional rain and rainwater permeation to the water table. The top layers of soil are gravelly and sandy which allows water flow. At a certain depth (perhaps several feet), there is an impermeable clay layer upon which the water flows laterally. Each one of these wetlands represents a potential spring head which flows perennially and where more water flows or where a depression results in the upper soil layers dipping into the water table. DCR recommends avoiding activities that will damage the original soil material. If filling of wetlands cannot be avoided for this development, DCR recommends the use of a permeable material that allows water flow to continue so that the water source for these significant wetlands is not cut off, or more likely redirected.

Furthermore, according to a DCR biologist and predicted suitable habitat modeling, there is potential for Small whorled pogonia (*Isotria medeoloides*, G2/S2/LT/LE) to occur in the project area if suitable habitat exists on site. 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 principal 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).

Due to the potential for this site to support populations of Small whorled pogonia, DCR recommends an inventory for the resource 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 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. For a list of USFWS-approved surveyors in Virginia visit https://www.fws.gov/media/collection-approved-surveyor-lists-project-review-process-virginia.

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. Survey results should be coordinated with DCR-DNH and USFWS. Upon review of the results, if it is determined the species is present, and there is a likelihood of a negative impact on the species, DCR-DNH will recommend coordination with VDACS to ensure compliance with Virginia's Endangered Plant and Insect Species Act.

DCR also recommends the development and implementation of an invasive species management plan. Many invasive plant species are adapted to take advantage of soil disturbances and poor soil conditions. Japanese stilt grass (*Microstegium vimineum*) is an invasive plant species that is already present in large numbers in the area. Japanese stilt grass can spread rapidly following a disturbance such as flooding or mowing. Within three to five years it can form dense monotypic stands which crowd out native herbaceous vegetation. Although Japanese stilt grass does not produce prolific amounts of seed, a single plant typically giving rise to 100 to 1000 seeds, the seeds remain viable in the soil for three to five years. It is also well adapted to low light levels and is able to grow and produce seed in 5 percent of full sunlight. More information on Japanese stilt grass can be found here: https://www.dcr.virginia.gov/natural-heritage/document/fsmivi.pdf.

To minimize the potential for invasive species infestation, construction should be conducted to minimize the area of disturbance, and disturbed sites should be revegetated with desirable species at the earliest opportunity following disturbance. DCR recommends the use of native species similar to those found in surrounding areas when revegetating disturbed areas. For more information on invasive alien plants and native plants, see the DCR-Division of Natural Heritage website http://www.dcr.virginia.gov/natural_heritage/invspinfo.shtml.

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 $470.00 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 U.S. Fish and Wildlife Service (USFWS) utilizes an online project review process (https://www.fws.gov/office/virginia-ecological-services/virginia-field-office-online-review-process) to facilitate compliance with the Endangered Species Act (16 U.S.C. 1531-1544, 87 Stat. 884) (ESA), as amended. The process enables users to 1) follow step-by-step guidance; 2) access information that will allow them to identify threatened and endangered species, designated critical habitat, and other Federal trust resources that may be affected by their project; and 3) accurately reach determinations regarding the

potential effects of their project on these resources as required under the ESA. If you have questions regarding the online review process, please contact Rachel Case at rachel_case@fws.gov.

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 https://services.dwr.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. Thank you for the opportunity to comment on this project.

Sincerely,

Tyler Meader
Natural Heritage Locality Liaison

CC: Nick Drunasky, Fairfax County Park Authority
John Burke, Fairfax County Park Authority

Literature Cited

NatureServe. 2010. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available http://www.natureserve.org/explorer. (Accessed: March 19, 2012).

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

Appendix E
Letter for Merry Point Solar

May 18, 2023

Robin Weissert
GAI Consultants, Inc.
6000 Town Center Boulevard, Suite 300
Canonsburg, PA 15317

Re: Merry Point Solar Project

Dear Ms. Weissert:

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 Hickory Hollow Conservation Site is located within the project site and the Hickory Hollow Natural Area Preserve is immediately adjacent to 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. Hickory Hollow 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:

Cypripedium kentuckiense	Kentucky Lady's-slipper	G3/S1/NL/NL
Northern Coastal Plain / Piedmont Oak - Beech / Heath Forest		G4/S3/NL/NL

Kentucky Lady's-slipper is a perennial orchid that is found in seepage swamp ecotones and hummocks with moderately base-rich soils. The Virginia population is significantly disjunct from the nearest other occurrences, in Kentucky and Tennessee. As of 2023, 1 extant occurrence of this state rare plant was documented by the Virginia Natural Heritage Program.

Northern Coastal Plain / Piedmont Oak - Beech / Heath Forests are widely but locally distributed in small to occasionally large patches across much of the Piedmont and dissected, inner Coastal Plain in Virginia. Similar forests are known from North Carolina, South Carolina, and Maryland. This community type is particularly common on steep ravine slopes and bluffs of dissected terrain with highly acidic soils. It occurs occasionally on short, steep bluffs of the Outer Coastal Plain, and occasionally occurs on elevated swamp islands with sandy, oligotrophic soils (NatureServe, 2013). Over most of the state, white oak (*Quercus alba*), northern red oak (*Quercus rubra*), chestnut oak (*Quercus montana*, = *Quercus prinus*), and American beech (*Fagus grandifolia*) are the major overstory trees. Eastern hemlock (*Tsuga canadensis*) and sweet birch (*Betula lenta*) are occasional associates in the Piedmont. Sourwood (*Oxydendrum arboreum*), blackgum (*Nyssa sylvatica*), red maple (*Acer rubrum*), and American holly (*Ilex opaca* var. *opaca*) are common understory trees. Dense colonies of mountain-laurel (*Kalmia latifolia*) or, very locally, great rhododendron (*Rhododendron maximum*) form a continuous shrub layer. Few herbaceous species occur in the stands. On very steep and rocky bluffs, tree canopies may be quite open as the result of poor establishment and frequent downfalls. Communities in this group are similar to Mesic Mixed Hardwood Forests but usually occupy drier, steeper sites that support fewer mesophytic plants and a greater abundance of heaths. (Fleming, et al., 2012)

To minimize adverse impacts to the documented natural heritage resources, DCR recommends avoidance of the Hickory Hollow Conservation Site. The Hickory Hollow Natural Area Preserve is owned by the Northern Neck Audubon Society and managed by DCR. For further information, please contact Zach Bradford, Chesapeake Bay Region Steward at zach.bradford@dcr.virginia.gov.

In addition, according to a DCR biologist, there is potential for additional populations of Kentucky Lady's-slipper to occur in the project area if suitable habitat exists on site. Therefore, DCR recommends an inventory for Kentucky Lady's slipper 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.

According to predicted suitable habitat modeling, there is a potential for Small whorled pogonia (*Isotria medeoloides*, G2/S2/LT/LE) to occur in the project area if suitable habitat exists on site. However, DCR concurs with the survey methodology from "Small Whorled Pogonia Population Survey, Merry Point Solar, Lancaster County, Virginia" conducted by EDGE Engineering LLC from June 25, 2021, to July 15, 2021. If the project has not commenced within two years of the last survey, DCR recommends an updated inventory for the resource in the suitable habitat areas identified in the most recent survey report to adhere to the USFWS validity guidelines for a Small whorled pogonia survey. 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.

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. For screening zones outside the perimeter fencing, DCR recommends native species appropriate for the region be used. 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 and 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 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. Interior core areas begin 100 meters inside core edges and continue to the deepest parts of cores. Cores also provide the natural, economic, and quality of life benefits of open space, recreation, thermal moderation, water quality (including drinking water recharge and protection, and erosion prevention), and air quality (including sequestration of carbon, absorption of gaseous pollutants, and production of oxygen). 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 causes reductions in ecosystem processes, native biodiversity, and habitat quality due to habitat loss; less viable plant and animal populations; increased predation; and increased introduction and establishment of invasive species.

DCR recommends avoidance of impacts to cores. When avoidance cannot be achieved, DCR recommends minimizing the area of impacts overall and concentrating the impacted area at the edges of cores, so that the most interior remains intact.

The proposed project will impact one or more cores with very high (C2) to outstanding (C1) ecological integrity. Further investigation of these impacts is recommended and DCR-DNH can conduct a formal impact analysis upon request. This analysis would estimate impacts to cores and habitat fragments, providing an estimate of the total acreage of direct and indirect impacts of the project. 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. Survey results should be coordinated with DCR-DNH and USFWS. Upon review of the results, if it is determined the species is present, and there is a likelihood of a negative impact on the species, DCR-DNH will recommend coordination with VDACS to ensure compliance with Virginia's Endangered Plant and Insect Species Act.

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 (November 18, 2023) has passed before it is utilized.

A fee of $425.00 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 http://vafwis.org/fwis/ or contact Amy Martin at (804-367-2211) or amy.martin@dwr.virginia.gov.

The U.S. Fish and Wildlife Service (USFWS) utilizes an online project review process (https://www.fws.gov/office/virginia-ecological-services/virginia-field-office-online-review-process) to facilitate compliance with the Endangered Species Act (16 U.S.C. 1531-1544, 87 Stat. 884) (ESA), as amended. The process enables users to 1) follow step-by-step guidance; 2) access information that will allow them to identify threatened and endangered species, designated critical habitat, and other Federal trust resources that may be affected by their project; and 3) accurately reach determinations regarding the potential effects of their project on these resources as required under the ESA. If you have questions regarding the online review process, please contact Rachel Case at rachel_case@fws.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: Jennifer Stanhope, USFWS
Zach Bradford, DCR-DNH
Susan Tripp, DEQ
Don Gill, Lancaster County Administrator

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Appendix F

List of Coastal Training Participants for FY22

Ameresco, Inc.
AMT Engineering
Appomattox River Water Authority and South Central Wastewater Authority
Bay Environmental
BDA Development Services
Berkley Group
Capital Region Land Conservancy
Caroline County
Central Virginia Community College
Chesterfield County
City of Hopewell
City of Newport News
City of Richmond-Parks Recreation and Community Facilities
Clearwater Ventures, LLC
Crater Planning District Commission
Eastern Shore Broadband Authority
Eastern Shore Soil and Water Conservation District
Essex County
Fairfax County Park Authority
Federal Highway Administration-Eastern Federal Lands
George Washington Regional Commission
Hanover County
Henrico County
Historic Virginia Land Conservancy
James City County
James River Park System
Merjent
Northern Neck Land Conservancy
Northern Neck Land Conservancy Board
Northern Neck Planning District Commission
Northern Neck Soil and Water Conservation District
Northern Virginia Conservation Trust
Northern Virginia Regional Commission
Pamunkey Indian Tribe
Petersburg
Potomac Conservancy
Prince George County
Prince William Soil and Water Conservation District
Skelly and Loy, A Terracon Company
The Nature Conservancy
Three Rivers Soil and Water Conservation District
Tidewater Soil and Water Conservation District
Tri-County/City Soil and Water Conservation District
U.S. Environmental Protection Agency-Water Division – Wetlands Branch
U.S. National Park Service-Fredericksburg and Spotsylvania
Virginia Conservation Network

Virginia Department of Conservation and Recreation-Division of Natural Heritage
Virginia Department of Conservation and Recreation-Planning and Recreational Resources
Virginia Department of Conservation and Recreation-State Parks Resource Management
Virginia Department of Environmental Quality
Virginia Department of Environmental Quality-Office of Pollution Response and Emergency Preparedness
Virginia Department of Environmental Quality-Piedmont Regional Office
Virginia Department of Environmental Quality-Tidewater Regional Office
Virginia Department of Forestry-Blackwater
Virginia Department of Forestry-Capital District
Virginia Department of Forestry-Eastern
Virginia Department of Forestry-Headquarters
Virginia Department of Forestry-New Kent
Virginia Department of Historic Resources
Virginia Department of Transportation-Central
Virginia Department of Transportation-Hampton Roads
Virginia Department of Transportation-Hampton Roads Bridge Tunnel
Virginia Department of Transportation-Northern Virginia
Wetland Studies and Solutions, Inc.

Appendix G

DCR-DNH Information in Hanover County Comprehensive Plan Update

ENVIRONMENT + RESILIENCY

GOAL

Hanover County is a community that strategically preserves critical natural resources for the health and enjoyment of its current residents and future generations, creating a resilient community.

WHY IT MATTERS

Protecting forests, streams, wetlands, riparian buffers, prime agricultural soils, and critical wildlife habitat provides significant benefits to the community. Appropriate stewardship practices provide clean air, potable water, and a safe food supply for residents, contributing to Hanover County's high quality of life and helping create a resilient community.

QUICK FACTS

- Hanover County is located along the Fall Line, which separates the Coastal Plain from the Piedmont Plateau. The Fall Line generally follows the right-of-way of the Richmond, Fredericksburg, and Potomac Railroad, with areas east of the Fall Line within the Coastal Plain and areas to the west in the Piedmont Plateau. Soil types, geology, and landscapes vary from the Coastal Plain to the Piedmont Plateau.
- Elevations in the County range from about sea level along eastern portions of the Pamunkey River to about 370 feet above sea level on the highest ridges to the west. Most areas with steep slopes occur along streams and rivers, especially near the Fall Line.
- Hanover County is within the Humid Subtropical Climate Zone, which is characterized by hot, humid summers and cool winters. Average temperatures vary from 36.2 degrees in January to 76.5 degrees in July, with an average precipitation of 42.05 inches. February tends to be the driest month, with August being the wettest.
- All of Hanover County is within the Chesapeake Bay watershed. There are two major drainage areas. About 15% of the County drains southward to the Chickahominy River, which eventually drains into the James River. The remaining area drains to the Pamunkey River Basin, which is a tributary of the York River. Most wetland areas are along stream corridors, particularly along portions of the Chickahominy River, Pamunkey River, Newfound River, Totopotomy Creek, Beaverdam Creek, and Mechumps Creek.
- The Chickahominy River from U.S. Route 360 to the terminus of the Henrico County/Hanover County border is designated a State Scenic River (Code of Virginia § 10.1-410.1).
- Areas east of Interstate 95 are within the Eastern Virginia Groundwater Management Area.
- There are 31 unique natural heritage sites (per the Virginia Department of Conservation and Recreation). These sites include rare, threatened, or endangered plant and animal species and/or unique natural communities.
- Approximately 63% of the County (over 180,000 acres) is forested (per U.S. Forest Service: Forest Inventory and Analysis Application "EVALIDator").

MEASURING OUR PROGRESS

- Percentage of County Forested
- Number of High Ozone Days

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NATURAL HERITAGE RESOURCES

Natural heritage resources, as defined by the Virginia Department of Conservation and Recreation – Division of Natural Heritage (DCR –DNH), include the habitat of documented occurrences of rare, threatened, or endangered plant and animal species; unique or exemplary natural communities; and significant geologic formations, such as caves and karst features. Hanover County is currently home to 31 unique natural heritage resources. In addition, DCR has identified 23 terrestrial and aquatic conservation sites as areas within the County necessary for their survival. These conservation sites are recommended for protection because of the natural heritage resources and habitat they support.

Some of the plant and animal species that are listed as natural heritage resources include:

- Yellow Lampmussel (Lampsilis cariosa)
- Eastern Lampmussel (Lampsilis radiate)
- Dwarf Wedgemussel (Alasmidonta heterodon)
- Yellow Lance (Elliptio lanceolate)
- Virginia Piedmont Water Boatman (Sigara depressa)
- Green Floater (Lasmigona subviridis)
- Barrens Dagger Moth (Acronicta albarufa)
- Tiger Salamander (Ambystoma tigrinum)
- Lesser Siren (Siren intermedia)
- Little-Leaf Sensitive-Brier (Mimosa microphylla)
- Lesser Marsh St. John's-Wort (Triadenum tubulosum)
- Squarehead (Tetragonotheca helianthoides)
- Small Whorled Pogonia (Isotria medeoloides)
- Purple Pitcher Plant (Sarracenia purpurea)
- Short-Leaf Sneezeweed (Helenium brevifolium)

Many of the conservation sites where these species are located can be found along the County's major waterways and include the following areas:

- North Anna Bluffs
- Vontay Bottomlands
- Vontay Forest
- Millwood Landing
- South Anna Bluffs
- Normans Bridge Floodplain
- Upper Pamunkey Wetlands: Macon Creek Marshes
- Totopotomoy
- Bloody Run
- Grapevine Bridge
- Elder Swamp
- Chickahominy Flats

A number of species have been classified by either the Virginia Department of Wildlife Resources (VDWR) through the Biota of Virginia (BOVA) survey or VDCR-DNH as a rare, threatened, or endangered species meriting special concern to ensure their long-term health. A Wildlife Action Plan has been prepared by VDWR for a number of these species.

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of wildlife corridors within larger-scale development proposals that exceed 250 acres in area.

- Strategy EN.3e: Encourage the protection of natural heritage resources identified by the Virginia Department of Conservation and Recreation (DCR) as part of the development review process.
- Strategy EN.3f: Support the work of conservation organizations in acquiring conservation easements or purchasing property in areas with critical environmental resources.

OBJECTIVE EN.4: Minimize light pollution.

- Strategy EN.4a: Continue to pursue measures to reduce light pollution in the County caused by uplighting and excessive lighting, such as maintaining requirements that outdoor light at commercial, industrial, and institutional development sites use full cut-off fixtures.

improvements.

- Strategy EN.6f: Promote different recycling-related programs and events.

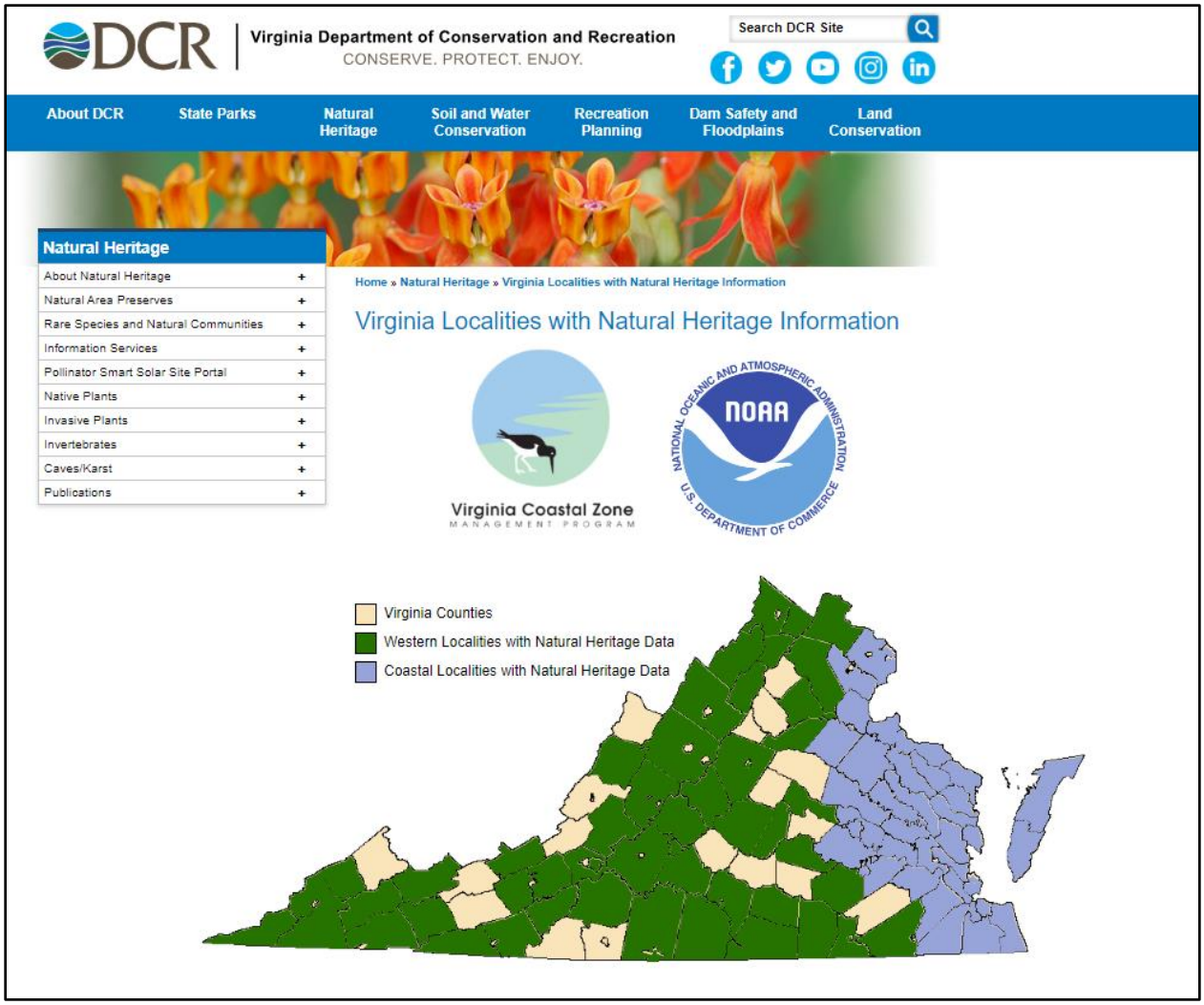
OBJECTIVE EN.7: Consider continued development of appropriate alternative energy production.

- Strategy EN.7a: Regularly evaluate policies regarding renewable energy facilities (including land use and fiscal policies) to address the latest technology and ensure these facilities have a positive impact on residents' quality of life.
- Strategy EN.7b: Work collaboratively with the private sector to improve access to electric vehicle charging stations.

OBJECTIVE EN.8: Consider the impacts that County policies, programs, capital investments, and land use decisions may have on historic and culturally-sensitive communities, including (but not limited to) Brown Grove, Pleasant Grove Road, and Cobbs Road.

Appendix H

Map of Localities with Natural Heritage Information



Appendix I

Virginia Solar Pollinator-Smart Program and Native Seed Pilot Project

Figure 1. Pollinator-Smart webpage

Virginia Pollinator Smart Program and Localities

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. Please see the **Solar Ordinance Report** (PDF) for more information.

For informational purposes, here are some examples provided at the links below:

- **City of Chesapeake Solar Energy Policy** - June 27, 2019
- **Franklin County Solar Ordinance #20-07-2022** - enacted July 19, 2022
- **Louisa County Solar Generation Facilities Sec. 86-632** - enacted August 1, 2022
- **Patrick County Solar Ordinance** - enacted Sept 26, 2022; amended June 12,2023

Figure 2. Virginia Localities Solar Ordinances and Native Vegetation Report

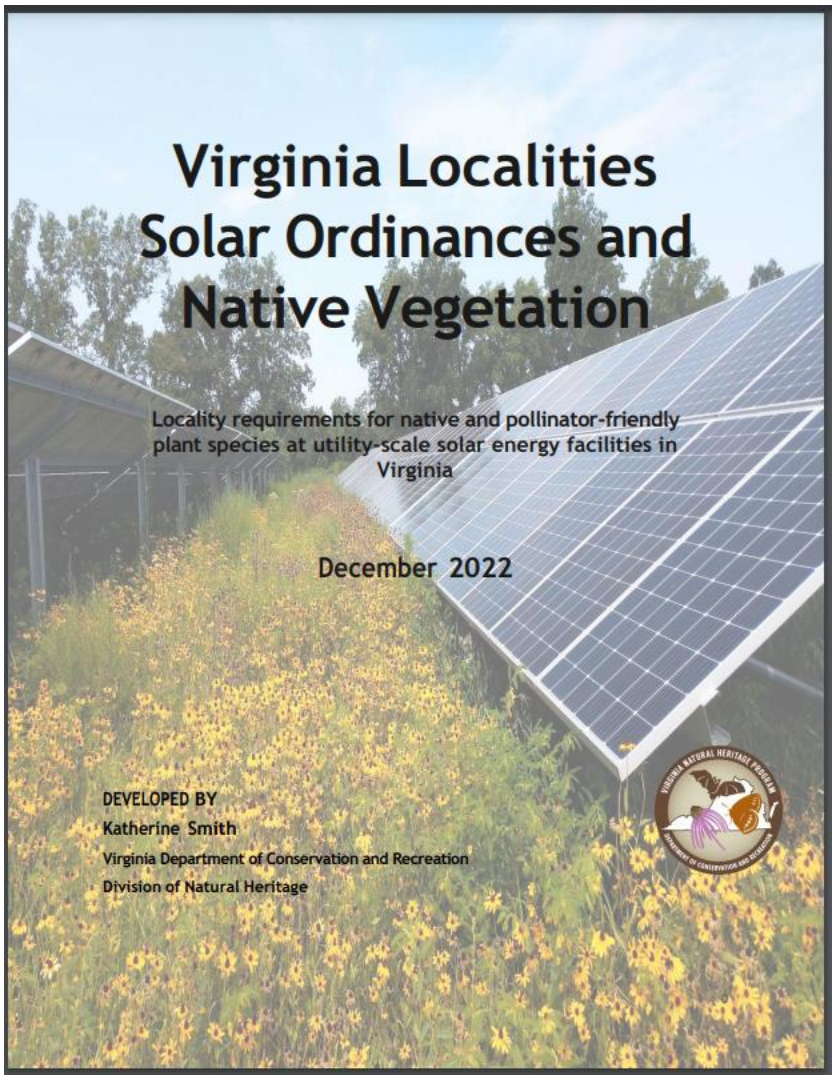


Figure 3. Pollinator-Smart Training Modules

Module 8: Site Preparation and Installation Methods

Module 9: Vegetation Management Plans

Module 10: Integrated Vegetation Management

Module 11: Monitoring Plan

Figure 4. Virginia Native Plant Finder

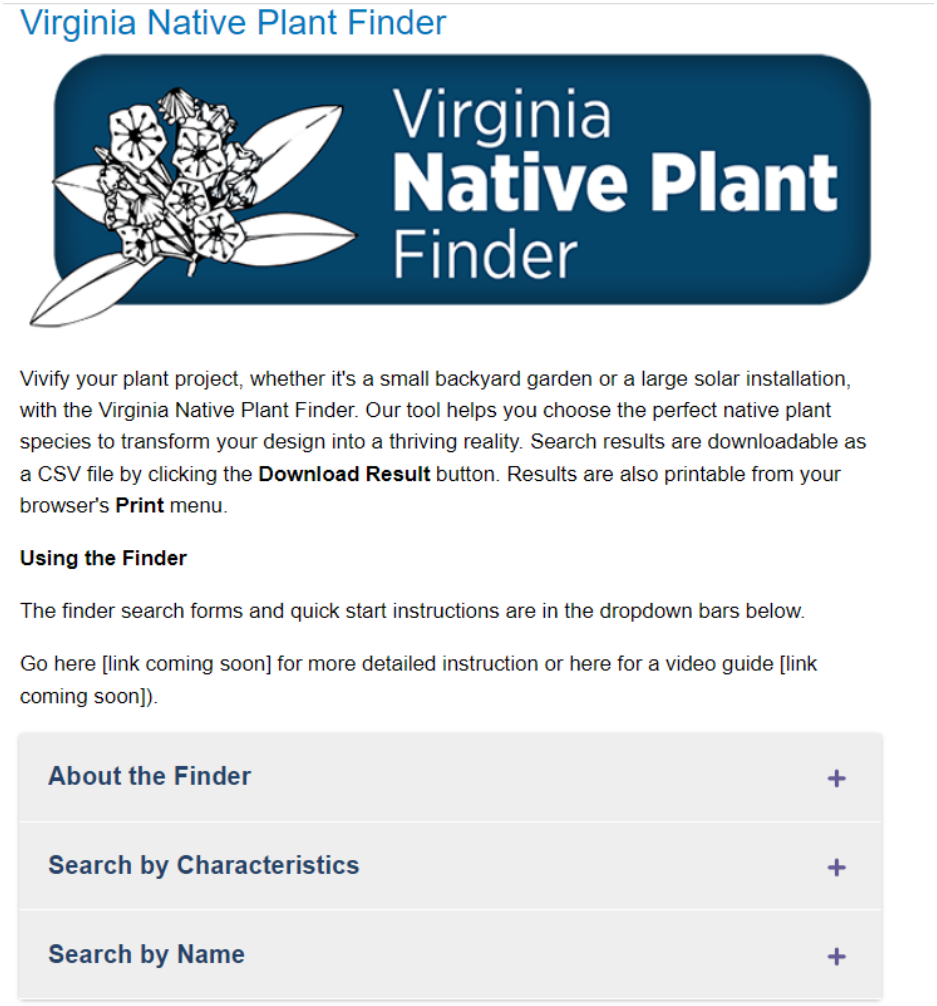
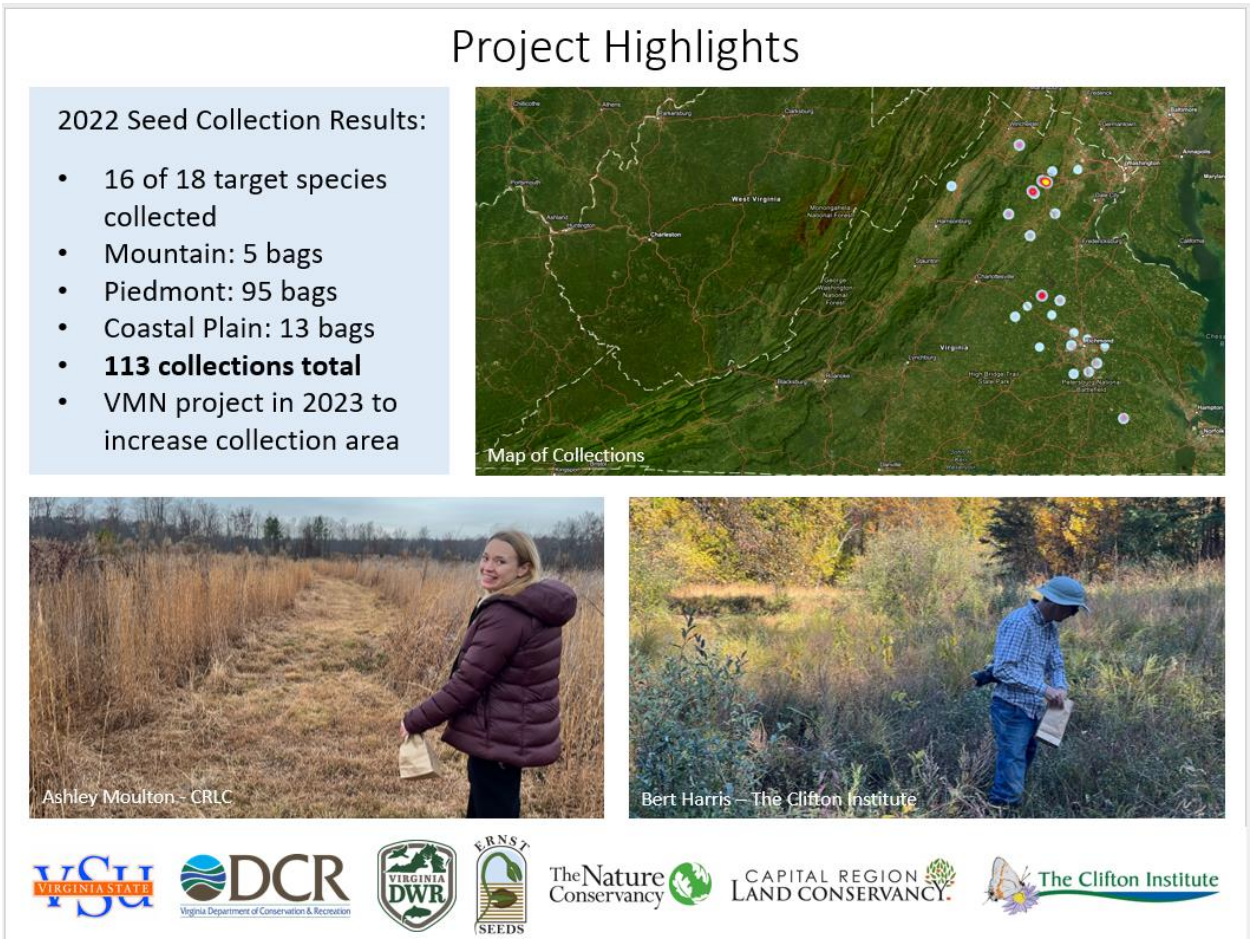


Figure 5. Native Seed Pilot Project- Year 1 Highlights



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.

Appendix J

NHDE Video Tutorial

Part Seven: Virginia Wildlife Action Corridor Plan

Appendix K

Quarterly Coastal Species Highlights

Natural Heritage Resource Highlight: Purple pitcher plant (*Sarracenia purpurea*)

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

Legal Status: Not Listed

© DCR-DNH, Darren Loomis

The Purple pitcher-plant is a perennial rare plant native to Virginia that flowers in April to May and fruits in June to July. Purple pitcher-plant inhabits thinly canopied acidic seepage swamps, streamhead pocosins, boggy depressions in pine flatwoods, sphagnous power-line seeps and other boggy clearing, while also persisting in forested seeps that were once more open (Weakley et al., 2012). With the help of digestive enzymes, this carnivorous plant absorbs nutrients from insects that get trapped within their rain filled pitchers, supplementing the nutrients that the plant absorbs from the soil.

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

As of 2022, 38 occurrences of this state rare plant were documented in Virginia, 25 extant and 13 historic, including from the coastal zone counties of Essex, Accomack, Spotsylvania, Chesterfield, Caroline, Hanover, James City, Surry and Isle of Wight, as well as the City of Williamsburg.

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. 928-929.

Natural Heritage Resource Highlight: Dukes' Skipper (*Euphyes dukesi)*

Global Rarity Rank: G3G4-Vulnerable to Apparently Secure **State Rarity Rank**: S2-Imperiled

Legal Status: Not Listed

© DCR-DNH, Allen Belden

Dukes' Skipper is a small, orange-brown and yellow butterfly species which ranges along coastal areas from southeastern Virginia to central Florida, and up the Mississippi River valley from Louisiana to Illinois, and with a pocket in northwestern Ohio and northeastern Indiana (Glassberg, 1999). Dukes' skippers prefer wet, marshy areas. They are found in swamps, open marshes, and wet roadside ditches, while expansive estuarine or coastal marshes are preferred. Dukes' skippers prefer broad-leaved sedges such as Shoreline sedge (*Carex hyalinolepis*) (VDCR, 2015). In Virginia, it is only recorded from the southeastern outer coastal plain. Females lay their eggs on the undersides of leaves of specific sedge (*Carex*) species; the larvae are dependent on these host sedges. The Dukes' skipper is primarily threatened by habitat destruction and fragmentation, especially the elimination of the host sedge species (Clark and Potter, 1995; NatureServe, 2009). Mosquito spraying may be a threat if Dibrome is used (NatureServe, 2009).

As of 2023, 13 occurrences of this state rare animal were documented in Virginia, 10 extant and 3 historic, including from the coastal zone localities of City of Chesapeake, City of Suffolk and City of Virginia Beach.

Literature Cited

Clark, K.H. and J.L. Potter. 1995. North Landing River Natural Area Preserve Resource Management Plan, First Edition. Natural Heritage Technical Document 95-9. Virginia Department of Conservation and Recreation, Richmond, Virginia. February 1995.

Glassberg, J. 1999. Butterflies through binoculars: A field guide to the butterflies of eastern North America. Oxford University Press. New York, NY. 242pp.

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Virginia Department of Conservation and Recreation - Division of Natural Heritage and Virginia Department of Game and Inland Fisheries. 2013. Atlas of Rare Butterflies, Skippers, Moths, Dragonflies, and Damselflies of Virginia. Accessed at**www.vararespecies.org** on April 13, 2015.

Natural Heritage Resource Highlight: Coastal Plain Calcareous Seepage Swamp

Global Rarity Rank: G2-Imperiled **State Rarity Rank**: S2-Imperiled

Legal Status: Not Listed

The Coastal Plain Calcareous Seepage Swamp significant natural community occurs in the Virginia Coastal Plain on groundwater-saturated stream bottoms in ravines that have cut into Tertiary shell deposits or limesands. These are naturally rare, small-patch communities. Habitats consist of mucky, braided ravine bottoms saturated by constant groundwater seepage, and soils with high base status. Hummock-and-hollow microtopography is prevalent, and exposed shells are common in springs and rills. Soils are highly calcareous. (NatureServe, 2014). The tree canopy is consistently codominated by green ash (*Fraxinus pennsylvanica*) and red maple (*Acer rubrum*) with a few other species locally important. The shrub layer is typically open. The damp, fertile habitats are particularly susceptible to invasion by the introduced Japanese stiltgrass (*Microstegium vimineum*) (Fleming, et al, 2021). The introduced forest pathogen Emerald Ash Borer (*Agrilus planipennis*) is a threat to this globally rare ecosystem, as it causes complete mortality of green ash in the forest canopy. This calcareous seepage swamp occurs in dissected terrain in the central Virginia Coastal Plain, and the 26 extant occurrences documented by the Virginia Natural Heritage Program are known only from calcareous ravines in the James and York River drainages, in James City, Surry, and York counties. (Fleming, et al., 2021)

Literature Cited

Fleming, G.P., K.D. Patterson, and K. Taverna. 2021. The Natural Communities of Virginia: a Classification of Ecological Community Groups and Community Types. Third approximation. Version 3.3. Virginia Department of Conservation and Recreation, Division of Natural Heritage, Richmond, VA. www.dcr.virginia.gov/natural-heritage/natural-communities/ (Accessed: May 10, 2023)

NatureServe. 2014. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available http://explorer.natureserve.org. (Accessed: July 23, 2014)

Natural Heritage Resource Highlight: Small whorled pogonia (*Isotria medeoloides*)

Global Rarity Rank: G2G3- Imperiled-Vulnerable **State Rarity Rank**: S2-Imperiled

Legal Status: Federal listing-Threatened, State listing-Endangered

© DCR-DNH, Allen Belden

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 principal 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).

As of 2023, 70 occurrences of this state rare plant were documented in Virginia, 60 extant and 10 historic, including from the coastal zone counties of Caroline, Fairfax, Gloucester, Hanover, James City, King William, Lancaster, New Kent, Prince William, Spotsylvania, Stafford and York, as well as the City of Petersburg and the City of Williamsburg.

Literature Cited

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