BRWA Ivy Creek Sewer Interceptor
Environmental Assessment

CHA Project Number: 064825

Prepared for:

Bedford Regional Water Authority

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1.0 PURPOSE AND PROJECT DESCRIPTION

The Bedford Regional Water Authority (BRWA) is located in Bedford, Virginia and provides area customers with high quality and reliable water and wastewater services. In 2020, a preliminary engineering report (PER) was updated that detailed the improvements needed on the BRWA interceptor system. The PER identified operational challenges, high pumping and operations expenses, odor issues, capacity limitations associated with the Lake Vista Pump Station (LVPS), and continued growth in the LVPS service area. To address these issues, it was proposed to construct two new sections of the Ivy Creek Sewer Interceptor, Division 5 and 6, to allow the Forest and New London areas to be served by gravity and to allow sufficient sewer capacity for economic development.

The Ivy Creek Interceptor project includes the decommissioning of the LVPS that is already operating at the capacity of the current pumps, temporary bypass pumping at LVPS, and the construction of approximately 7,500 linear feet of 30-inch sewer for Division 5 in the City of Lynchburg and 11,000 linear feet of 30-inch sewer for Division 6 in Bedford County. As part of the sewer line installation, there will be several crossings of Ivy Creek and its local tributaries. These will be performed in a manner to minimize instream impacts. A metering flume will also be placed at the City of Lynchburg and Bedford County boundary to measure flows conveyed from BRWA. The Environmental Assessment (EA) described herein was performed to support the project. Figure 1 shows the location of the proposed sewer interceptor and project extent.

0 0.125 0.25 0.5 0.75 1 Miles

Legend

- Maximum Project Extent
- Proposed Sewer Lines
- Existing BRWA Sewer Lines
- Existing City of Lynchburg Sewer System

Project Location in relation to the City of Lynchburg

Job No: 64825
FEB 2021

BRWA Ivy Creek Sewer Interceptor Project

Figure 1 - Project Area

2.0 ALTERNATIVES TO THE PROJECT ACTION

2.1 INITIAL ALTERNATIVES ANALYSIS

Prior to the development of the PER, several alternatives for addressing the operational and capacity issues at the current LVPS were considered. Each alternative was evaluated with respect to the technical feasibility, economic feasibility, longevity of the alternative, and the environmental impacts.

The alternatives considered included the expansion of the LVPS to increase capacity, but this alternative was not considered to be an acceptable approach due to the significant expense of increasing the pump station and force main capacities. Furthermore, this would not address the significant operational and maintenance costs as well as the potential for a continuation of odor issues and for system overflows. As such, this alternative was not selected.

The alternative of installing a gravity system was also considered, and this option was ultimately selected since it:

- Provided for an increase in system conveyance capacity;
- Eliminated the significant operation and maintenance expenses associated with a pump station;
- Reduced the potential for system overflows due to a pump station operational issue;
- Eliminated the current system odor issues; and
- Provided for a more reliable and cost-effective conveyance method.

The No Action alternative was also considered but was not selected. If no action is taken, the Lake Vista Pump Station, which is operating at the capacity of the current pumps, with growth of the service area continuing may become overloaded and sanitary overflows in this area could occur. In addition, the current operational and maintenance requirements and associated expenses as well as the odor issues would be expected to increase.

2.2 INTERCEPTOR ROUTE ALTERNATIVES AND EVALUATION

Based on the results of these initial evaluations and alternatives analyses, the BRWA is planning to install a gravity sewer interceptor in the area of Hawkins Mill Road along Ivy Creek. The general

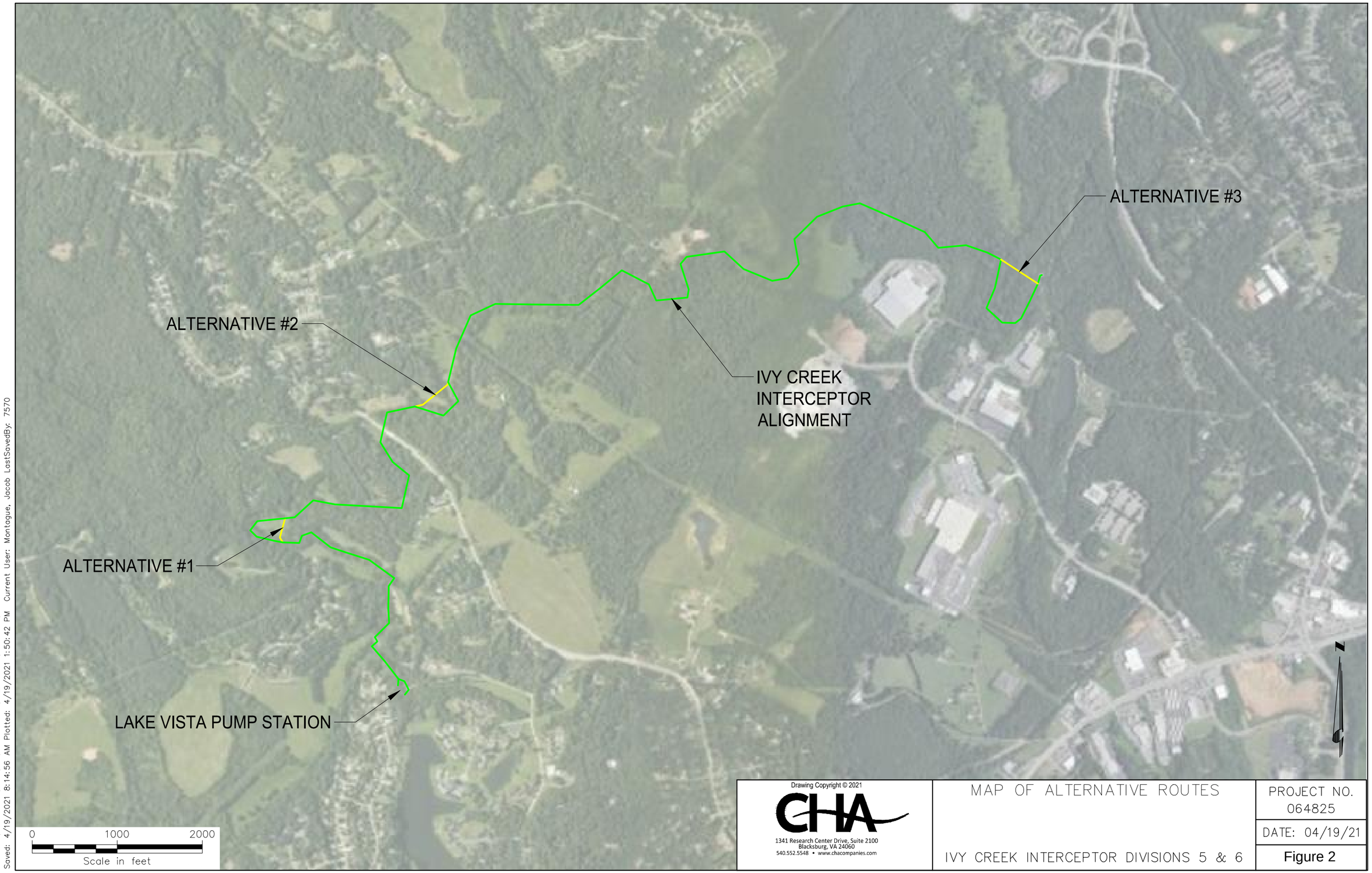
route of the interceptor was included in the 2020 PER. The original route from the PER is labeled as shown as a green line in the attached Figure 2. As part of the ongoing design, several alternative route locations along the interceptor route were evaluated to identify potential changes based on construction feasibility, costs, environmental impacts, easement acquisition, and other factors. A figure depicting the alternative routes is included in Figure 2, and a summary of each of these alternatives is discussed below.

Alternative 1: This alternative would reduce the length of sewer by approximately 600 feet while reducing construction along the stream bank. The limiting factor for this alternative will be easement negotiations. This alternative would not affect the service area.

Alternative 2: This deviation from the original alignment is located at parcel 8213600 in Bedford County, just downstream of Hawkins Mill Road. This alternative would reduce the length of sewer by approximately 350 feet while also reducing construction along the stream bank. The limiting factor for this alternative will be easement negotiations. This alternative would not affect the service area.

Alternative 3: Because of the existing 24-inch line serving the industrial park, this alternative would not impact the interceptor's service area. This alternative would reduce the length of sewer by approximately 1,150 feet, but it would require expensive jack & bore construction. This alternative may be desirable if geotechnical investigations determine that the soil in the original PER route is unfavorable.

The project design is ongoing, but as noted above, the preferred route will include both Alternatives 1 and 2. The preferred interceptor route alternatives were selected based on their technical and economic feasibility, ability to meet project goals, operation and maintenance requirements, and longevity. For all the alternative alignments, minimal environmental impacts were anticipated. All routes included several stream crossings which would require permitting and some temporary impacts to Waters of the U.S. All route alternatives are located within the same vicinity; none were anticipated to have greater impacts or other environmental concerns such as endangered and threatened species, land use, historic and archaeological resources, or water quality issues.



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MAP OF ALTERNATIVE ROUTES

IVY CREEK INTERCEPTOR DIVISIONS 5 & 6

PROJECT NO. 064825

DATE: 04/19/21

Figure 2

File: V:\PROJECTS\ANY\K5\064825.000\09_DESIGN\EXHIBITS\EA ALTERNATIVES MAP.DWG
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3.0 ENVIRONMENTAL CONSEQUENCES

Determining the degree of environmental impact caused by this project included using information about specific project plans, online databases and searches, and correspondence with State and Federal agencies to ensure that the project was examined from many angles. Once environmental impacts of the project were assessed, mitigation that would decrease any potential impacts was identified. Mitigation will be implemented during the construction phase of the project. The sections below summarize these potential environmental impacts and the resulting mitigation that will be needed.

3.1 BIOLOGICAL RESOURCES

3.1.1 Affected Environment

A project review was provided to the U.S. Fish and Wildlife Service (USFWS) via email on March 16, 2021. The *Official Species List* included in the submittal included the Northern Long-eared Bat (*Myotis septentrionalis*) (NLEB). The NLEB is not located within any 5.5-mile buffer of known hibernacula or near any known occupied maternity roosts based on the Virginia Department of Wildlife Resources' "Northern Long-Eared Bat Winter Habitat and Roost Trees Application" database which the USFWS references as part of the project review. As such, it was determined that although the project may affect this species, it is covered by the 4(d) Rule. As part of the review, a *Self-Certification Letter* was submitted to the agency; the USFWS responded on April 8, 2021 accepting the project review and indicating the agency had no questions or concerns regarding the work proposed, and the project can proceed.

The Virginia Department of Wildlife Resources (VDWR) was contacted to request a project review and the agency provided a response on February 10, 2021 that indicated that due to staffing limitations, a project review could not be completed. In addition, the agency's Virginia Fish and Wildlife Information Service (VAFWIS) database was searched and twelve federal and state threatened and endangered species are known or likely to occur within a three-mile radius of the project. Of these, four are birds, four are mussels, three are mammals (bats), and one is a fish. A copy of the information from this website is included in Appendix A. These species are included in the table below:

Table 1 – VDWR Endangered and Threatened Species Known or Likely to Occur within 3 Miles of the Project Area

Type	Common Name	Scientific Name
Birds	Peregrine Falcon	*Falco peregrinus*
	Loggerhead Shrike	*Lanius ludovicianus*
	Henslow's Sparrow	*Ammodramus henslowii*
	Migrant Loggerhead Shrike	*Lanius ludovicianus migrans*
Mussels	James Spinymussel	*Parvaspina collina*
	Yellow Lance	*Elliptio lanceolata*
	Green Floater	*Lasmigona subviridis*
	Pistolgrip	*Tritogonia verrucosa*
Bats	Northern Long-eared Bat	*Myotis septentrionalis*
	Little Brown Bat	*Myotis lucifugus lucifugus*
	Tri-colored Bat	*Perimyotis subflavus*
Fish	Roanoke Logperch	*Percina rex*

Significant tree-clearing is planned as part of the sewer line installation. As described in the USFWS submittal, the BRWA will rely on the USFWS's Programmatic Biological Opinion for the Northern Long-eared Bat (NLEB) which does not require a time-of-year restriction (TOYR). For the bat species, no caves or hibernacula are known to occur within the project area and no caves will be disturbed as part of this project. If required as a condition of any permit issued for this project, tree clearing will be performed in accordance with the applicable time-of-year restriction to protect bat species or after an approved survey(s) has been completed by a certified surveyor showing the species are not present. The bird species are not expected to be impacted due to their ability to avoid the construction areas.

Although the Roanoke logperch is described on the VDWR VAFWIS as known or likely to occur in Bedford County, the species appears to occur in hydrologic units west of the project site. The James spinymussel, green floater, and pistolgrip mussels are not identified as known or likely to occur in Bedford County. The yellow lance is identified as known or likely to occur in Bedford County, but it appears to only occur in hydrologic units north and east of the project. As described previously, the appropriate permits will be obtained for any instream work which should be protective of the fish and mussel species, and the project is not expected to adversely impact the listed fish and mussel species.

The Virginia Department of Conservation and Recreation (VDCR) responded on March 10, 2021, and the agency did not identify any threatened or endangered species within the proposed project

area. It should be noted that the correspondence with VDCR also represents contact with the Virginia Department of Agriculture and Consumer Services (VDACS) under a Memorandum of Agreement established between the two agencies. The VDCR represents VDACS in its comments regarding state-listed threatened and endangered species of plants and insects, and DCR included in its response that the project activity will not affect any documented State-listed plants or insects. As part of DCR's comments, the agency recommends the development and implementation of an emergency spill plan and the utilization of industry best management practices for hydrostatic testing and dewatering. DCR recommends efforts to minimize edge in remaining fragments, retain natural corridors that allow movement between fragments and designing the intervening landscape to minimize its hostility to native wildlife.

Copies of the correspondence with USFWS (which includes correspondence with VDWR and VDCR) are included in Appendix B.

3.1.2 Environmental Consequences

As stated above, the species listed as endangered and threatened within the area of the project are not expected to be impacted. Instream impacts are expected to be minimal and temporary. There are no anticipated major impacts, destruction and/or displacement to wildlife and marine life, their habitats, or the food chain including those of endangered and threatened species.

3.1.3 Mitigation

The construction will include implementation and adherence to applicable state and local erosion and sediment control and storm water management laws and regulations will be followed. This will be accomplished by following the standard practices outlined in the Virginia Erosion and Sediment Control Handbook during the construction activities. In addition, an Erosion and Sediment Control Plan will be developed, and the corresponding approvals will be obtained from Bedford County and/or the City of Lynchburg prior to the initiation of construction activities. The need for a general construction storm water permit will be evaluated, and if appropriate, the required permit and associated plan(s) developed and approved prior to construction. No invasive plant species will be introduced, and any reseeding needed will be completed with native plant species. A Joint Permit Application was submitted for the instream portions of the construction work and permits from the

United States Army Corps of Engineers (USACE), the Virginia Marine Resources Commission (VMRC), and the Virginia Department of Environmental Quality (VDEQ) will be acquired.

3.2 WETLANDS

3.2.1 Affected Environment

Within the project area, there are areas identified as riverine. Based on a review of the USFWS National Wetlands Inventory (NWI) map and a site walkover conducted on April 5, 2021, there are no wetlands located within the project area or adjacent to the project area. There will be multiple stream crossings of Ivy Creek and small unnamed tributaries that will result in temporary impacts. The NWI wetlands map is included in Appendix A.

3.2.2 Environmental Consequences

There will not be impacts to wetlands during construction. Upon completion of sewer line installation, all streams will be returned to pre-construction conditions.

3.2.3 Mitigation

Correspondence with VMRC dated March 3, 2021 indicated that the agency will require the submittal of a Joint Permit Application in order to determine if a permit is needed.

The USACE responded to the review request on March 31, 2021 indicating that portions of this project may result in discharges of dredged and/or fill material into waters of the United States. Both temporary and permanent discharges of dredged and/or fill material into waters of the United States are subject to the permitting requirements of Section 404 of the Clean Water Act (33 CFR 323). The proposed project may also impact navigable waters, subject to the permitting requirements of Section 10 of the Rivers and Harbors Act of 1899. There are multiple stream crossings associated with this project, and a Joint Permit Application (JPA) has been submitted prior to construction start-up to obtain updated authorization and permit(s) from the USACE for all instream work.

Both the Blue Ridge Regional Office and Central Office provided review and comment on this project. Both offices recommend that the amount of stream and wetland impacts be avoided to the maximum extent practicable. For unavoidable impacts, VDEQ encourages the following practices to minimize the impacts to wetlands and waterways: use of directional drilling from upland locations; operation of machinery and construction vehicles outside of stream-beds and wetlands; use of synthetic mats when in-stream work is unavoidable; stockpiling of material excavated from the trench for replacement if directional drilling is not feasible; and preservation of the top 12 inches of trench material removed from wetlands for use as wetland seed and root stock in the excavated area.

In addition to the general comments above from both VDEQ offices, VDEQ's Central Office provided the following specific comments regarding potential wetland impacts:

1. *Prior to commencing project work, all surface waters on the project site should be delineated by a qualified professional and verified by the U.S. Army Corps of Engineers (the Corps) for federal jurisdictional waters and by DEQ for state jurisdictional waters.*
2. *Wetland and stream impacts should be avoided and minimized to the maximum extent practicable.*
3. *If the scope of the project changes, additional review will be necessary by one or more offices in the Commonwealth's Secretariat of Natural Resources and/or the Corps.*
4. *At a minimum, any required compensation for impacts to State Waters, including the compensation for permanent conversion of forested wetlands to emergent wetlands, should be in accordance with all applicable state regulations and laws. Consider mitigating impacts to forested or converted wetlands by establishing new forested wetlands within the impacted watershed.*
5. *Any temporary impacts to surface waters associated with this project should be restored to pre-existing conditions.*
6. *No activity may substantially disrupt the movement of aquatic life indigenous to the water body, including those species, which normally migrate through the area, unless the primary purpose of the activity is to impound water. Culverts placed in streams must be installed to maintain low flow conditions. No activity may cause more than minimal adverse effect on navigation. Furthermore, the activity must not impede the passage of normal or expected high flows and the structure or discharge must withstand expected high flows.*
7. *Erosion and sedimentation controls should be designed in accordance with the Virginia Erosion and Sediment Control Handbook, Third Edition, 1992. These controls should be*

placed prior to clearing and grading and maintained in good working order to minimize impacts to state waters. These controls should remain in place until the area is stabilized and should then be removed. Any exposed slopes and streambanks should be stabilized immediately upon completion of work in each permitted area. All denuded areas should be properly stabilized in accordance with the Virginia Erosion and Sediment Control Handbook, Third Edition, 1992.

8. *No machinery may enter surface waters, unless authorized by a Virginia Water Protection (VWP) individual permit, general permit, or general permit coverage.*
9. *Heavy equipment in temporarily impacted surface waters should be placed on mats, geotextile fabric, or other suitable material, to minimize soil disturbance to the maximum extent practicable. Equipment and materials should be removed immediately upon completion of work.*
10. *Activities should be conducted in accordance with any Time-of-Year restriction(s) as recommended by the Department of Game and Inland Fisheries, the Department of Conservation and Recreation, or the Virginia Marine Resources Commission. The permittee should retain a copy of the agency correspondence concerning the Time-of-Year restriction(s), or the lack thereof, for the duration of the construction phase of the project.*
11. *All construction, construction access, and demolition activities associated with this project should be accomplished in a manner that minimizes construction materials or waste materials from entering surface waters, unless authorized by a Virginia Water Protection (VWP) individual permit, general permit, or general permit coverage. Wet, excess, or waste concrete should be prohibited from entering surface waters.*
12. *Herbicides used in or around any surface water should be approved for aquatic use by the United States Environmental Protection Agency (EPA) or the U.S. Fish & Wildlife Service. These herbicides should be applied according to label directions by a licensed herbicide applicator. A non-petroleum based surfactant should be used in or around any surface waters.*

As previously indicated, a Joint Permit Application (JPA) has been submitted to the permitting agencies to obtain coverage for the temporary stream impacts associated with this project. As such, the comments from the VDEQ Central Office will be addressed as part of that process as each of the permitting agencies review of the application and issue the appropriate permits.

All construction activities will follow the standard practices outlined in the Virginia Erosion and Sediment Control Handbook. Copies of the correspondences from VMRC, USACE, and both of the commenting VDEQ offices (Blue Ridge Regional Office and Central Office) are located in Appendix B.

3.3 DISPLACEMENT OF HOUSEHOLDS, BUSINESSES, OR SERVICES

3.3.1.1 Affected Environment

The work will occur in locations that are private easements that will be coordinated and completed with the landowners prior to construction. There will not be any residential or commercial land that will need to be purchased for this project. The planned sewer line installation has been designed so that construction will not impact any public utility services during construction.

3.3.1.2 Environmental Consequences

No homeowners or businesses will be displaced as part of this project. There will not be an interruption of public services as part of this project.

3.3.1.3 Mitigation

No mitigation is needed.

3.4 LAND USE AND FARMLAND

3.4.1 General Land Use

3.4.1.1 Affected Environment

According to the land cover classification performed as a part of the National Land Cover Dataset, the land use within the project area for all construction activities and nearby the construction area is predominately the following land classifications:

- Deciduous Forest
- Evergreen Forest
- Mixed Forest
- Hay/Pasture

- Developed (Open Space, Low Intensity, and Medium Intensity)

The lands that will be directly affected by the installation of the sewer line are predominantly forested areas, agricultural, and developed. A copy of the land cover map with the project boundaries is included in Appendix A. The project is expected to result in only limited loss of land use for those properties within the project area.

3.4.1.2 Environmental Consequences

During construction, there is a potential for increased erosion and sedimentation as well as temporary changes in traffic patterns. These effects will be addressed further in the Water Quality section (3.11) and Transportation section (3.8). Once installed, the sewer interceptor will not cause long-term, lasting impacts to land use. During construction approximately 12.1 acres of trees will be removed, and of this acreage, approximately 4.8 acres will be maintained as an easement with occasional mowing.

The sewer system improvements are likely to help stabilize the community by allowing BRWA to provide reliable long-term sewer service to meet demand. There is the potential that the project will indirectly support an increase in development due to additional capacity within the system. There will not be any open space areas that are directly converted as part of this project although long-term growth in the community due to development could increase those impacts. However, Bedford County has a comprehensive plan in place to plan for and control growth.

3.4.1.3 Mitigation

No mitigation is required.

3.4.2 Important Farmland, Prime Forest Land, and Prime Rangeland

3.4.2.1 Affected Environment

The United States Department of Agriculture - Natural Resources Conservation Service (USDA-NRCS) Web Soil Survey was reviewed for the area of the sewer interceptor alignment to determine if the project would have a Farmland Protection Policy Act (FFPA) impact. Based on information

from the soil report, the sewer interceptor alignment is located in areas where some of the soil units are identified as prime or important farmland and other soil units are identified as non-farmland. The report generated from this website is included in Appendix C.

3.4.2.2 Environmental Consequences

Based on the soil report, the project areas are mostly categorized as 'not prime farmland', 'prime farmland if protected from flooding or not frequently flooded during the growing season', or 'prime farmland if drained'. Only a very small soil unit is identified as "Prime Farmland" and this area is outside of the proposed alignment but was included in the overall project review area in case the alignment needs to be adjusted based on field conditions. The majority of the sewer interceptor alignment is not currently being used as agricultural land but is forested. Due to the nature of the project as a sewer installation, and subsequent conversion of the corridor from treed to a more open grass/shrub area lands, impacts to the agricultural lands are not expected. Similarly, any changes to the land use that would prevent agricultural use of this area if lands were to be converted in the future are not expected.

The Virginia Department of Agriculture and Consumer Services (VDACS) did not respond to a project review request. As previously described, VDCR's response indicated that VDCR represents VDACS in its comments regarding state-listed threatened and endangered species of plants and insects. A copy of the correspondences with VDACS are included in Appendix B. See also the Land Cover map (previously referenced in Appendix A).

3.4.2.3 Mitigation

The implementation and adherence to applicable state and local erosion and sediment control and storm water management laws and regulations will be followed. This will be accomplished by following the standard practices outlined in the Virginia Erosion and Sediment Control Handbook during the construction activities. The need for a general construction storm water permit will be evaluated, and if appropriate, the required permit and associated plan(s) developed and approved prior to construction.

3.4.3 Formally Classified Lands

3.4.3.1 Affected Environment

There are no state parks, national parks, national forests, state forests, or nature conservancy preserves in the project area. According to information available through the Wilderness.net, the proposed project area is about 10 miles southeast of Thunder Ridge Wilderness. Adjacent to, and northeast of Thunder Ridge Wilderness is James River Face Wilderness. The project should have no effects on any classified lands. A copy of the map from the Wilderness.net website is included in Appendix A.

According to correspondence with the Virginia Department of Conservation and Recreation (VDCR), there are no State Natural Area Preserves under the agency's jurisdiction in the project vicinity.

According to correspondence with the United States Army Corps of Engineers (USACE), if portions of this project will result in discharges of dredged and/or fill material into waters of the United States, a Joint Permit Application (JPA) will be required. A copy of the correspondence with VDCR (as part of the USFWS submittal) and USACE is located in Appendix B.

3.4.3.2 Environmental Consequences

All aspects of the sewer interceptor installation are not expected to directly affect either the state parks or recreational areas. Indirectly, the improved sewer system may be able to more adequately support tourists that stay in the service area while visiting surrounding parks and recreational areas.

3.4.3.3 Mitigation

As described in the correspondence by VDCR, the implementation and adherence to applicable state and local erosion and sediment control and storm water management laws and regulations will be followed. This will be accomplished by following the standard practices outlined in the Virginia Erosion and Sediment Control Handbook during the construction activities. The need for a general construction storm water permit will be evaluated, and if appropriate, the required permit and associated plan(s) developed and approved prior to construction. In accordance with the

correspondence with USACE, a JPA was prepared and submitted to acquire the appropriate permit(s) prior to initiating construction.

3.5 CULTURAL RESOURCES

3.5.1 Affected Environment

A Virginia Department of Historic Resources (VDHR) archives search performed for this Environmental Assessment revealed a single resource located within the project area. The historic bridge identified in the archives report (DHR# 009-5410) has recently been replaced and will not be impacted by this project.

3.5.2 Environmental Consequences

The DHR-Archives information was submitted to DHR headquarters as part of the review completed on the agency's Electronic Project Information Exchange (ePIX) system. The DHR office responded, indicating that DHR recommends that a Phase I archaeological study be conducted within the project area. The agency indicates that the survey must be conducted by qualified professionals in accordance with the *Archeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines (48 FR 44716-42)* and *DHR's Guidelines for Conducting Historic Resources Survey in Virginia (2017)*. Dovetail Cultural Resources Group conducted archaeological fieldwork from September 7–10, 2021 and submitted the report to DHR in October 2021. The survey did not locate any archaeological sites, and DHR responded on November 22, 2021 concurring with Dovetail's recommendation of no further work required and concluding No Historic Properties Affected. A copy of the correspondence with both DHR offices is included in Appendix B.

3.5.3 Mitigation

No further work required based on the results of the Phase I archaeological survey.

3.6 IRRETRIEVABLE RESOURCES

3.6.1.1 Affected Environment

Some of the planned work will occur in areas that have already been developed for use as agricultural land, residential land, and road rights-of-way. However, a significant portion of the project area will occur in forested areas. If the areas of proposed development were converted back to their natural state in the future, it is believed that no natural resources would have been permanently lost or converted as a result of this proposed project.

3.6.1.2 Environmental Consequences

There are not anticipated to be any environmental resources irretrievably lost or converted by this project.

3.6.1.3 Mitigation

No mitigation is needed.

3.7 NOISE INFORMATION

3.7.1.1 Affected Environment

Construction noise associated with the construction activities will occur in areas that are mainly forested, agricultural, and rural with limited residential and commercial activity. These areas are not noise sensitive.

3.7.1.2 Environmental Consequences

Construction will increase the noise because of the equipment necessary to excavate and install the sewer interceptor. After the construction is complete, there is not expected to be a change in the noise levels.

3.7.1.3 Mitigation

Work in the project areas will take place during the day (i.e., not in evening or night hours) so as to minimize the effect of the increased noise from the construction activities.

3.8 TRANSPORTATION

3.8.1.1 Affected Environment

The proposed construction improvements to the water system will not affect any airport flight paths. The construction activities for the sewer interceptor installation will involve work adjacent to and beneath roads, including some maintained by Virginia Department of Transportation (VDOT).

3.8.1.2 Environmental Consequences

The Virginia Department of Transportation (VDOT) was contacted to request comments on this project. The VDOT response dated February 12, 2021 indicated prior coordination with the BRWA that identified several jack and bore crossings of VDOT roads; the agency indicated that no adverse impacts to VDOT maintained assets are included in the reviewed scope. The agency also noted that the BRWA and its consultants are well versed in the requirements associated with construction, operation, and maintenance of their facilities within the right-of-way.

The correspondence from VDOT is located in Appendix B.

3.8.1.3 Mitigation

During the construction period, further coordination with the VDOT Bedford Residency will take place prior to construction to minimize the effects of the construction on traffic patterns. The construction activities requiring detours or other modifications to transportation operations will be conducted at times to minimize impacts. Road signs should be provided to alert drivers, bicyclists, and pedestrians of utility and construction work ahead, and any detours necessary to navigate around the utility work.

3.9 AIR QUALITY

3.9.1.1 Affected Environment

Air emissions during the project include emissions from machinery (such as excavators, etc.) during construction. There may be an increase in dust in the area surrounding the construction activities.

3.9.1.2 Environmental Consequences

In the short-term, as with all construction projects, there may be an increase in dust and emissions due to construction equipment and activities. Any air quality affected is expected to be localized to only areas where construction is actively taking place.

3.9.1.3 Mitigation

Fugitive dust caused by the movement of construction materials and construction equipment will be controlled by adherence to the Virginia Department of Environmental Quality regulations and 9 VAC 5-50-60 et. seq., which governs the abatement of visible emissions and fugitive dust emissions. Land clearing wastes (vegetative debris) generated during construction should be properly managed in accordance with applicable regulations and local ordinances. Shredding/chipping of vegetative debris and reuse on-site is recommended over open burning. Any open burning of vegetative debris must be performed in accordance with 9 VAC 5-40-5600 *et. seq.* and will be coordinated with the local fire official to ensure any local ordinances are met. Additionally, VDEQ included in its comment that there are requirements from the Virginia Department of Labor and Industry (DOLI) for 10-day notification for demolition work, lead-based paint (LBP), asbestos-containing materials (ACM), and National Emissions Standards for Hazardous Air Pollutants (NESHAPS), although these requirements are not applicable to this project.

3.10 ENVIRONMENTAL POLLUTION ISSUES

3.10.1 Solid and Hazardous Wastes

3.10.1.1 Affected Environment

Some wastes will be generated at the construction site of the sewer interceptor.

3.10.1.2 Environmental Consequences

Wastes produced during the construction process could be potentially dangerous and unattractive to residents. Some wastes may be hazardous.

3.10.1.3 Mitigation

Measures will be taken to reduce the wastes at the source, reuse materials, and recycle materials. Hazardous waste generation will be minimized, and any hazardous wastes generated will be properly handled, stored, and disposed. All material will be managed in accordance with applicable Federal, State, and Local environmental regulations.

3.10.2 Pesticides and Herbicides

3.10.2.1 Affected Environment

In construction areas, herbicides and pesticides may be used for construction and/or landscape maintenance.

3.10.2.2 Environmental Consequences

Excess chemicals could potentially pollute the lands and waters surrounding the construction areas.

3.10.2.3 Mitigation

Measures will be taken to apply these chemicals according to the principles of integrated pest management. The least toxic herbicides and pesticides for controlling the targeted species will be used.

3.10.3 Pollution Prevention and Energy Conservation

3.10.3.1 Affected Environment

The materials used in the construction project, the commitment of the contractors to the environment, and the level of sustainability of the design of the structure and project construction can all affect the amount of pollution created and energy used in this project.

3.10.3.2 Environmental Consequences

Use of materials with high toxicities or those made from non-recycled materials is more damaging to the environment. Contractors who do not have a commitment to the environment will not take the measures to protect it.

3.10.3.3 Mitigation

VDEQ recommends that the project should incorporate the principles of pollution prevention including the following recommendations:

- Consider environmental attributes when purchasing materials. For example, the extent of recycled material content and toxicity level should be considered.
- Consider contractors' commitments to the environment when choosing contractors. Also, specifications regarding raw material selection (alternative fuels and energy sources) and construction practices can be included in contract documents and requests for proposals.
- Choose sustainable practices and materials for infrastructure and construction and design. These could include asphalt and concrete containing recycled materials and integrated pest management in landscaping.
- Integrate pollution prevention techniques into maintenance and operation activities to include source reduction (fixing leaks, energy efficient products).

VDEQ recommends that the project should consider the following alternatives to enhance the energy efficiency of the structures:

- Thermally efficient building shell components (roof, wall, floor, and insulation);
- High efficiency heating, ventilation, air conditioning systems; and
- High efficiency lighting systems.

3.11 WATER QUALITY ISSUES

3.11.1 Affected Environment

According to VDEQ's Environmental Data Mapper (EDM) website which includes water quality information, the sewer interceptor alignment will cross Ivy Creek multiple times, cross several unnamed tributaries of Ivy Creek, and runs adjacent to Ivy Creek for a large portion of the alignment. This section of Ivy Creek is impaired and does not meet the general standard for aquatic life (benthic macroinvertebrates) and bacteria (*E. coli)*. There are several small tributaries in the project area that flow into Ivy Creek. None of these streams have any documented impairments. A copy of the map from the EDM website is included in Appendix A.

Correspondence with Virginia Marine Resources Commission (VMRC) indicated that the agency will require the submittal of a Joint Permit Application in order to determine if a permit is needed. The United States Army Corps of Engineers (USACE) responded to the review request indicating that if portions of the project will impact jurisdictional areas that consultation prior to construction will be required. A Joint Permit Application (JPA) has been submitted to obtain reauthorization and updated permit(s) from the USACE for all instream work prior to construction start up. A Joint Permit Application has been submitted for the instream portions of the construction work and permits from the United States Army Corps of Engineers (USACE), the Virginia Marine Resources Commission (VMRC), and the Virginia Department of Environmental Quality (VDEQ) obtained.

The VDEQ responded to the project review request and indicated that no long-term impacts to water quality are anticipated from the project, but potential short-term adverse impacts resulting from surface runoff due to construction must be minimized through use of Best Management Practices (BMPs). In addition, the agency indicated that stream and wetland impacts should be avoided to the maximum extent practicable.

All work should be conducted in accordance with the current edition of the Virginia Erosion and Sediment Control Handbook and the Virginia Erosion and Sediment Control Regulation. In addition, an Erosion and Sediment Control Plan will be developed, and the corresponding approvals will be obtained from Bedford County prior to the initiation on construction activities. The proposed work will not adversely impact groundwater quality or the potential for groundwater infiltration and

recharge. Correspondence with the VMRC, USACE and two VDEQ offices are included in Appendix B.

3.11.2 Environmental Consequences

A potential short-term adverse impact is increased surface runoff due to construction. The construction activities will include excavation and grading which will result in the possibility of localized soil erosion, although all construction work will be conducted as described in the Erosion and Sediment Control Plan and any other permit-required plans and controls. No impacts are anticipated to groundwater quality or quantity.

3.11.3 Mitigation

Since the project will impact water bodies, a JPA will be required. The VMRC serves as the clearinghouse for the JPA used by:

1. US Army Corps of Engineers for issuing permits pursuant to § 404 of the Clean Water Act and § 10 of the Rivers and Harbors Act;
2. Department of Environmental Quality for issuance of Virginia Water Protection Permit pursuant to § 401 of the Clean Water Act, Virginia Code § 62.1-44.2 et. seq., Virginia Code § 62.1-44.15:5, and Virginia Administrative Code 9 VAC 25-210-10 et. seq.; and
3. Virginia Marine Resources Commission regulates encroachments on or over state-owned subaqueous beds as well as tidal wetlands pursuant to Virginia Code § 28.2-1200 through 1400.

As indicated previously, correspondence with VMRC indicated that the agency will require a submittal of a Joint Permit Application to determine if a permit is needed.

An Erosion and Sediment Control Plan will be prepared in accordance with the latest revision of the Virginia Erosion and Sediment Control handbook. The plan will be submitted to the appropriate regulatory agencies for approval; once approved, it will be implemented.

3.12 COASTAL RESOURCES

There are no coastal resources in the area of the proposed project. Therefore, no contacts were made with any organizations seeking information on the environmental impact of this project on coastal resources.

3.13 VISUAL AESTHETICS

3.13.1 Affected Environment

There are no visually sensitive areas within the project area. Portions of the construction activity could be visible to residents during construction. During construction approximately 12.1 acres of trees will be removed. Of this acreage, approximately 4.8 acres will be maintained without trees as part of the long-term maintenance of the easement to provide access for any future maintenance or repairs, and to reduce the potential for any root impacts to the sewer line. This will be about 10-feet on either side of the alignment for those areas where tree removal occurred.

3.13.2 Environmental Consequences

During construction, the visual appearance of the land surrounding the project area may be negatively affected. The effects would be temporary, and there should be no lasting impacts to this site.

3.13.3 Mitigation

None needed. The major tree removal will be most noticeable during and right after installation of the sewer interceptor. Most of the cleared areas will not be maintained (i.e., new tree growth removed to allow vehicle access) along the alignment and regrowth of trees and other vegetation in these areas is expected to occur.

3.14 EFFECTS ON RIVERS

3.14.1.1 Affected Environment

The sewer line interceptor will not cross any major rivers. There are multiple stream crossings of Ivy Creek and unnamed tributaries along the proposed sewer interceptor alignment. All appropriate

permitting will be in place prior to construction through the submittal of a Joint Permit Application. No impacts to rivers are anticipated due to this project. The National Wild and Scenic Rivers website was reviewed, and there are no designated wild and scenic in Virginia. A copy of the map from this website is included in Appendix A.

3.14.1.2 Environmental Consequences

There are not anticipated to be any impacts to rivers as part of this project. Permit requirements including standard erosion and sediment control practices will be adhered to in order to decrease impacts to smaller water bodies during construction.

3.14.1.3 Mitigation

No mitigation is needed.

3.15 SOCIO-ECONOMIC ISSUES/ENVIRONMENTAL JUSTICE

3.15.1 Affected Environment

According to the most recent data from the U.S. Census Bureau, the population of Bedford County was 78,997, and the median household income was $64,199. This demographic profile is included in Appendix D.

3.15.2 Environmental Consequences

In the short-term, construction may have a positive effect on the economy by providing construction employment opportunities and opportunities to purchase some of the construction materials and supplies from the local community. The project is not expected to affect any economic or social class disproportionately to another. The sewer system improvements will better the quality of life for those living in Bedford County. Appendix D includes information from EPA's EJScreen program regarding the service and project areas in terms of people of color, education, and income. The entire project area has 11% of the population (24th percentile) categorized as people of color. In regard to education level, 7% of the population (41st percentile) is categorized as less than a high school education in the area of the proposed project. In regard to poverty level, 5% of the population (5th percentile) is categorized as low income in the area of the proposed project.

3.15.3 Mitigation

In order to avoid an increase in sewer rates beyond the financial sustainability of the water customers, the BRWA will be using low interest loans for the Virginia Department of Environmental Quality Revolving Loan fund to support the water system improvements project.

3.16 FLOODPLAINS

3.16.1 Affected Environment

The entire project area (including all construction activities) is located on the Flood Insurance Rate Maps (FIRMs) Community Panel Number 5100930036D and 51019C0220D. Portions of the project will be located within the 100-year floodplain, floodway, and 500-year floodplain of Ivy Creek. The sewer interceptor will be buried, and the surface elevations returned to the existing grade. Included in Appendix A is a map of the project location show on a FIRMETTE.

3.16.2 Environmental Consequences

The proposed sewer interceptor will be buried with surface elevations returned to the current grade; as such, no adverse impacts to flooding or the floodplain are anticipated. All other portions of the project are located outside of the floodplain and will have no impacts so there are no other direct, indirect, or cumulative effects on the floodplains due to this project.

3.16.3 Mitigation

No mitigation is required.

4.0 SUMMARY OF MITIGATION

In order to mitigate and prevent these adverse consequences, the following actions are proposed:

- An Erosion and Sediment Control Plan will be prepared in accordance with the latest version of the Virginia Erosion and Sediment Control handbook, submitted to and concurred with the appropriate regulatory agency, and strictly adhered to during all phases of construction.
- The need for a general construction storm water permit will be evaluated, and if appropriate, the required permit and associated plan(s) developed and approved prior to construction.
- No invasive plant species will be introduced, and any reseeding needed will be completed with native plant species.
- In accordance with the correspondence with VMRC, a Joint Permit Application (JPA) was submitted to obtain appropriate permit coverage for temporary stream impacts prior to construction.
- Work will take place during the day to minimize the effect of the increased noise from the construction activities.
- Coordination with local officials at the VDOT Bedford Residency will take place prior to construction to minimize the effects of the construction on traffic patterns. The construction activities requiring detours or other modifications to transportation operations will be conducted at times to minimize impacts. Road signs will be provided to alert drivers, bicyclists, and pedestrians of utility and construction work ahead, and any detours necessary to navigate around the utility work. Work in project areas will take place during the day (i.e., not in evening or night hours) so as to minimize the effect of the increased noise from the construction activities.
- During construction activities, compliance with open burning laws, odor control laws, and dust control regulations will be achieved to prevent public health and safety from being affected by adverse air quality from the construction activities.
- If applicable, the 10-day notification for demolition work, lead-based paint (LBP), asbestos-containing materials (ACM), and National Emissions Standards for Hazardous Air Pollutants (NESHAPS) will be completed.
- Measures will be taken to reduce the wastes at the source (at construction site), reuse materials, and recycle materials. Hazardous waste generation will be minimized. All material will be managed in accordance with applicable Federal, State, and Local environmental regulations.

- Measures will be taken to apply pesticides/insecticides according to the principles of integrated pest management. The least toxic pesticides for controlling the targeted species will be used.
- The principles of pollution prevention recommended by VDEQ will be followed including:
    - Consider environmental attributes when purchasing materials. For example, the extent of recycled material content and toxicity level should be considered.
    - Consider contractors' commitments to the environment when choosing contractors. Also, specifications regarding raw material selection (alternative fuels and energy sources) and construction practices can be included in contract documents and requests for proposals.
    - Choose sustainable practices and materials in infrastructure and construction and design. These could include asphalt and concrete containing recycled materials and integrated pest management in landscaping.
    - Integrate pollution prevention techniques into maintenance and operation activities to include source reduction (fixing leaks, energy efficient products).
- The project will consider the following alternatives to enhance the energy efficiency of the structures:
    - Thermally efficient building shell components (roof, wall, floor, and insulation);
    - High efficiency heating, ventilation, air conditioning systems; and
    - High efficiency lighting systems
- In order to avoid an increase in water rates beyond the financial sustainability of the water customers, the BRWA sought alternate funding such as low-interest loans to fund the water system improvements project.

5.0 REFERENCES

1. EPA's EJ SCREEN: Environmental Justice Screening and Mapping Tool: https://www.epa.gov/ejscreen/
2. Federal Emergency Management Agency. http://msc.fema.gov/portal
3. Natural Resources Conservation Service, Web Soil Survey: http://websoilsurvey.nrcs.usda.gov/app/
4. United States Census Bureau. https://www.census.gov/
5. United States Fish & Wildlife Service, National Wetlands Inventory: https://www.fws.gov/wetlands/index.html
6. United States National Wilderness Preservation System Map: Wilderness.net
7. Virginia Department of Environmental Quality... Environmental Data Mapper (EDM): https://apps.deq.virginia.gov/EDM/
8. Virginia Department of Game and Inland Fisheries. VA Fish and Wildlife Information Service (VAFWIS). http://vafwis.org/fwis/

APPENDIX A

MAPS AND DATABASE INFORMATION

VaFWIS Search Report Compiled on 2/16/2021, 12:29:49 PM

Help

Known or likely to occur within a **3 mile radius around point 37.4071389 -79.2559722** in **019 Bedford County, 680 Lynchburg City, VA**

View Map of Site Location

555 Known or Likely Species ordered by Status Concern for Conservation (displaying first 33) (33 species with Status* or Tier I** or Tier II**)

BOVA Code	Status*	Tier**	Common Name	Scientific Name
060017	FESE	Ia	Spinymussel, James	Parvaspina collina
010214	FESE	IIa	Logperch, Roanoke	Percina rex
050022	FTST	Ia	Bat, northern long-eared	Myotis septentrionalis
060029	FTST	IIa	Lance, yellow	Elliptio lanceolata
050020	SE	Ia	Bat, little brown	Myotis lucifugus
050027	SE	Ia	Bat, tri-colored	Perimyotis subflavus
040096	ST	Ia	Falcon, peregrine	Falco peregrinus
040293	ST	Ia	Shrike, loggerhead	Lanius ludovicianus
040379	ST	Ia	Sparrow, Henslow's	Centronyx henslowii
060173	FPST	Ia	Pigtoe, Atlantic	Fusconaia masoni
060081	ST	IIa	Floater, green	Lasmigona subviridis
040292	ST		Shrike, migrant loggerhead	Lanius ludovicianus migrans
030031	CC	IIIc	Kingsnake, scarlet	Lampropeltis elapsoides
030012	CC	IVa	Rattlesnake, timber	Crotalus horridus
010174		Ia	Bass, Roanoke	Ambloplites cavifrons
010077		Ia	Shiner, bridle	Notropis bifrenatus
040092		Ia	Eagle, golden	Aquila chrysaetos
040040		Ia	Ibis, glossy	Plegadis falcinellus
040306		Ia	Warbler, golden-winged	Vermivora chrysoptera
100248		Ia	Fritillary, regal	Speyeria idalia idalia
080216		Ib	Willowfly, cryptic	Taeniopteryx nelsoni
020039		Ic	Salamander, Peaks of Otter	Plethodon hubrichti
040213		Ic	Owl, northern saw-whet	Aegolius acadicus
040052		IIa	Duck, American black	Anas rubripes
040036		IIa	Night-heron, yellow-crowned	Nyctanassa violacea violacea
040320		IIa	Warbler, cerulean	Setophaga cerulea
040140		IIa	Woodcock, American	Scolopax minor
040203		IIb	Cuckoo, black-billed	Coccyzus erythropthalmus
040105		IIb	Rail, king	Rallus elegans

070138		IIc	Amphipod, Bland County	Crangonyx sp. 3
080336		IIc	Beetle, Gammon's stenelmis riffle	Stenelmis gammoni
100154		IIc	Butterfly, Persius duskywing	Erynnis persius persius
100256		IIc	Crescent, tawny	Phyciodes batesii batesii

To view **All 555 species** View 555

*FE=Federal Endangered; FT=Federal Threatened; SE=State Endangered; ST=State Threatened; FP=Federal Proposed; FC=Federal Candidate; CC=Collection Concern

**I=VA Wildlife Action Plan - Tier I - Critical Conservation Need;
II=VA Wildlife Action Plan - Tier II - Very High Conservation Need;
III=VA Wildlife Action Plan - Tier III - High Conservation Need;
IV=VA Wildlife Action Plan - Tier IV - Moderate Conservation Need
Virginia Widlife Action Plan Conservation Opportunity Ranking:
a - On the ground management strategies/actions exist and can be feasibly implemented.;
b - On the ground actions or research needs have been identified but cannot feasibly be implemented at this time.;
c - No on the ground actions or research needs have been identified or all identified conservation opportunities have been exhausted.

Anadromous Fish Use Streams

N/A

Impediments to Fish Passage (2 records)

View Map of All Fish Impediments

ID	Name	River	View Map
330	LAKE VISTA DAM #1, C/O BILL BERKELE	TR-IVY CREEK	Yes
333	LAKE VISTA DAM #2	IVY CREEK	Yes

Threatened and Endangered Waters

N/A

Managed Trout Streams

N/A

Bald Eagle Concentration Areas and Roosts

N/A

Bald Eagle Nests (1 records)

View Map of All Query Results
Bald Eagle Nests

Nest	N Obs	Latest Date	DGIF Nest Status	View Map

LY0701	1	Jan 1 2007	HISTORIC	Yes

Displayed 1 Bald Eagle Nests

Habitat Predicted for Aquatic WAP Tier I & II Species (2 Reaches)

View Map Combined Reaches from Below of Habitat Predicted for WAP Tier I & II Aquatic Species

Stream Name	Tier Species						View Map
	Highest TE*	BOVA Code, Status*, Tier**, Common & Scientific Name					
Blackwater Creek (20802031)	ST	060081	ST	IIa	Floater, green	Lasmigona subviridis	Yes
Ivy Creek (20802031)	ST	060081	ST	IIa	Floater, green	Lasmigona subviridis	Yes
Ivy Creek (20802031)	ST	060081	ST	IIa	Floater, green	Lasmigona subviridis	Yes

Habitat Predicted for Terrestrial WAP Tier I & II Species

N/A

Virginia Breeding Bird Atlas Blocks (5 records)

View Map of All Query Results
Virginia Breeding Bird Atlas Blocks

BBA ID	Atlas Quadrangle Block Name	Breeding Bird Atlas Species			View Map
		Different Species	Highest TE*	Highest Tier**	
36086	Boonsboro, SE	72		II	Yes
37071	City Farm, NW	3			Yes
36072	Forest, NE	14		IV	Yes
37083	Lynchburg, CW	2		III	Yes
37085	Lynchburg, SW	1			Yes

Public Holdings:

N/A

Summary of BOVA Species Associated with Cities and Counties of the Commonwealth of Virginia:

FIPS Code	City and County Name	Different Species	Highest TE	Highest Tier

019	Bedford	466	FESE	I
680	Lynchburg City	347	FTSE	I

USGS 7.5' Quadrangles:
Forest
Boonsboro
City Farm
Lynchburg

USGS NRCS Watersheds in Virginia:

N/A

USGS National 6th Order Watersheds Summary of Wildlife Action Plan Tier I, II, III, and IV Species:

HU6 Code	USGS 6th Order Hydrologic Unit	Different Species	Highest TE	Highest Tier
JM07	James River-Judith Creek	65	FESE	I
JM09	Ivy Creek-Cheese Creek	57	ST	I
JM10	Blackwater Creek	58	FTST	I

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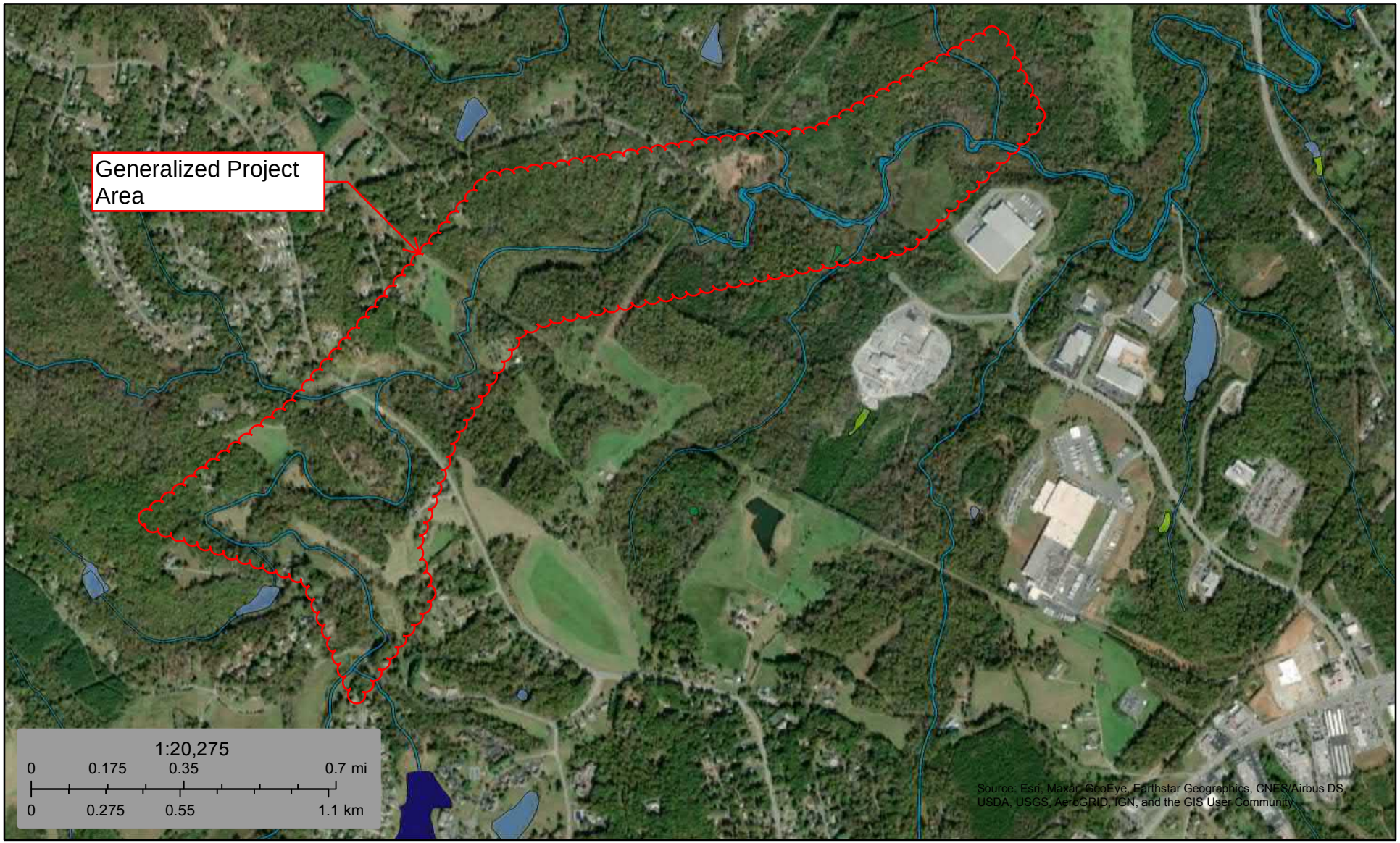
U.S. Fish and Wildlife Service
National Wetlands Inventory

National Wetlands Inventory



February 16, 2021

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

0 0.125 0.25 0.5 0.75 1 Miles

N

Legend

- Maximum Project Extent
- Proposed Sewer Lines
- Existing BRWA Sewer Lines
- Existing City of Lynchburg Sewer System

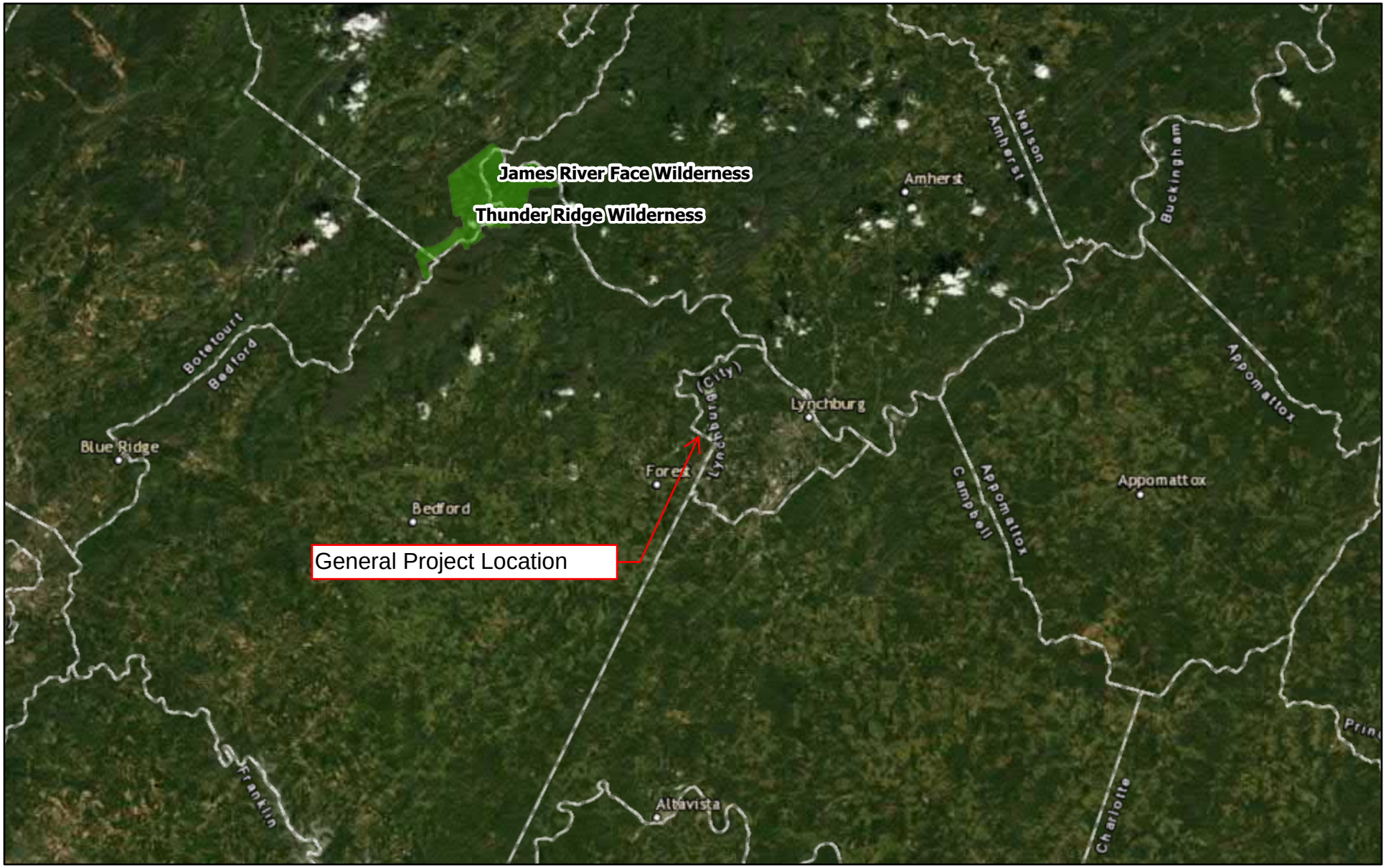
Land Cover

- Open Water
- Developed, Open Space
- Developed, Low Intensity
- Developed, Medium Intensity
- Developed, High Intensity
- Barren Land
- Deciduous Forest
- Evergreen Forest
- Mixed Forest
- Shrub/Scrub
- Herbaceuous
- Hay/Pasture
- Cultivated Crops
- Woody Wetlands
- Emergent Herbaceuous Wetlands

Job No: 64825
FEB 2021

BRWA Ivy Creek Sewer Interceptor Project
LAND USE MAP

Wilderness Map



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National Wilderness Preservation System

Bureau of Land Management

Fish and Wildlife Service

Forest Service

National Park Service

1:577,791

0 4 8 16 mi

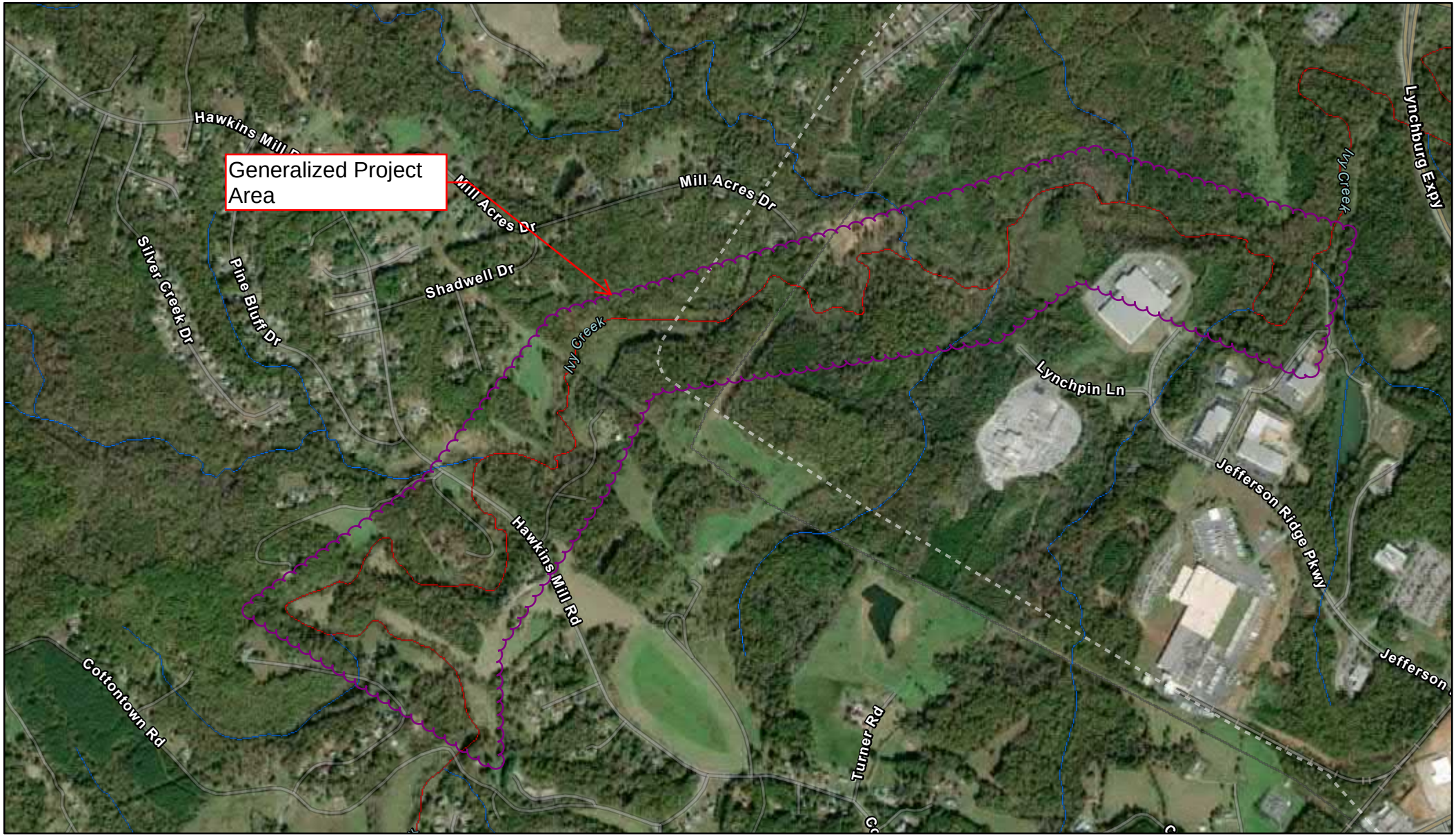
0 5 10 20 km

Esri, HERE, Garmin, Earthstar Geographics

Web AppBuilder for ArcGIS

Esri, HERE, Garmin | Earthstar Geographics |

Environmental Data Mapper Web Map



2/17/2021, 12:50:20 PM

Rivers (Final 2018)

- Fully Supporting
- Insufficient Information
- Not Supporting

Virginia County Boundaries

DEQ Offices (2020)

1:18,056

0 0.1 0.2 0.4 mi

0 0.17 0.35 0.7 km

Virginia

rivers.gov/virginia.php

Virginia has approximately 49,350 miles of river, but no designated wild & scenic rivers.

+ View larger map

Virginia does not have any designated rivers.

EXPLORE DESIGNATED RIVERS

Choose A State Go

Choose A River Go

While progress should never come to a halt, there are many places it should never come to at all. — Paul Newman

National Flood Hazard Layer FIRMette

FEMA

79°16'4"W 37°24'10"N

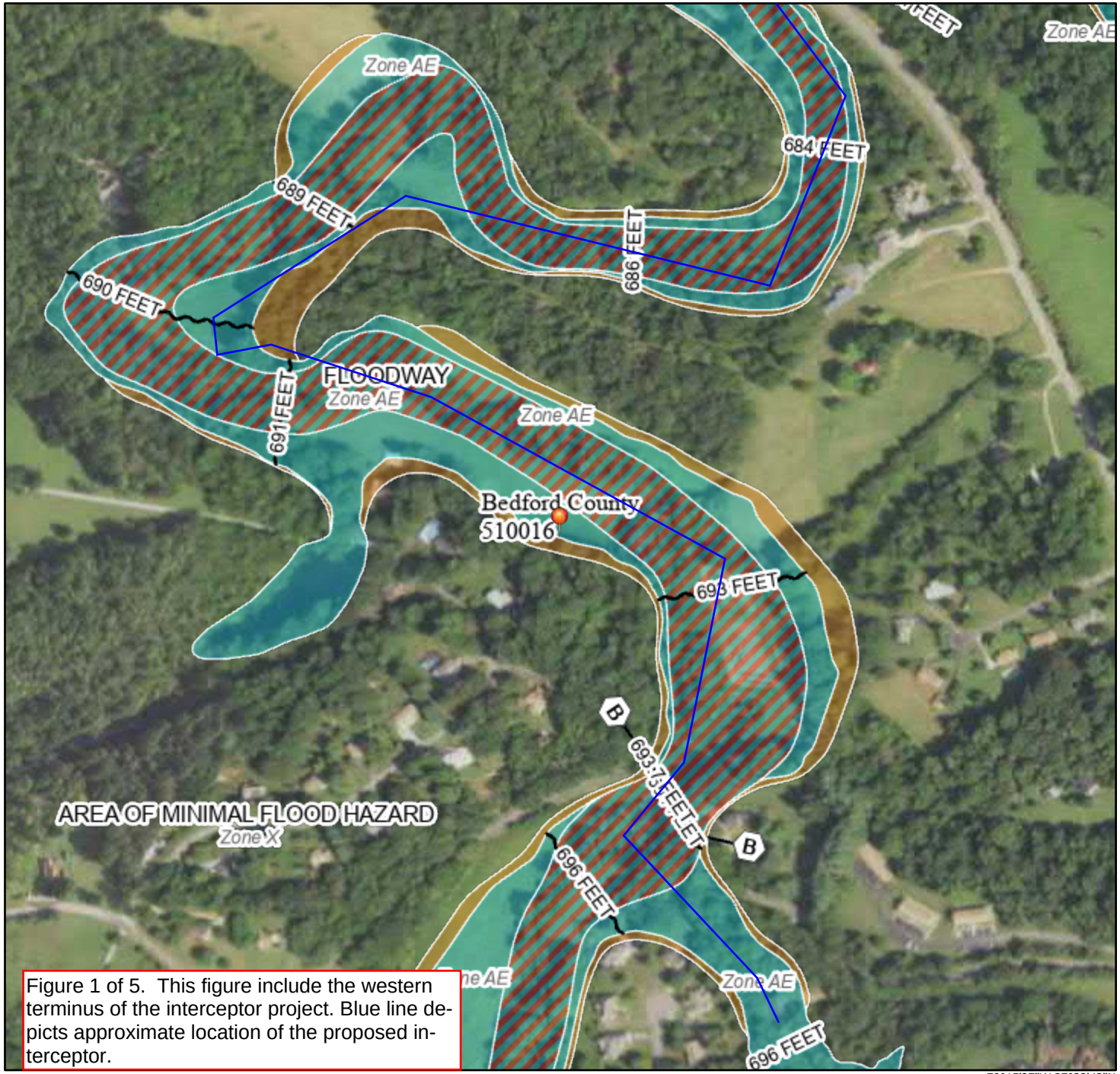


Figure 1 of 5. This figure include the western terminus of the interceptor project. Blue line depicts approximate location of the proposed interceptor.

79°15'27"W 37°23'42"N

Feet

0 250 500 1,000 1,500 2,000

1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

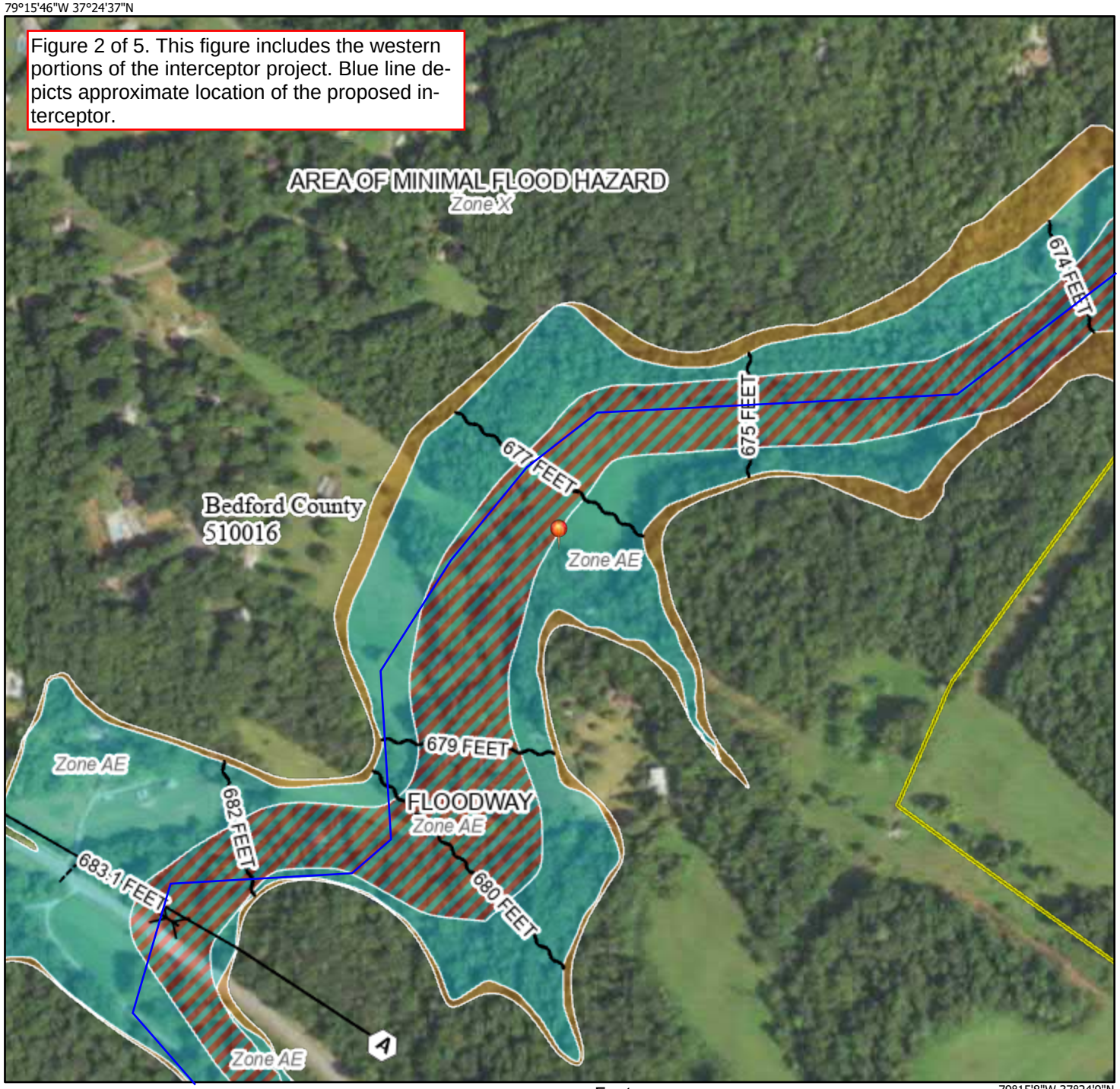
This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 3/31/2021 at 11:31 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette

79°15'46"W 37°24'37"N



79°15'8"W 37°24'9"N

Feet

0 250 500 1,000 1,500 2,000

1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 3/31/2021 at 11:34 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette

FEMA

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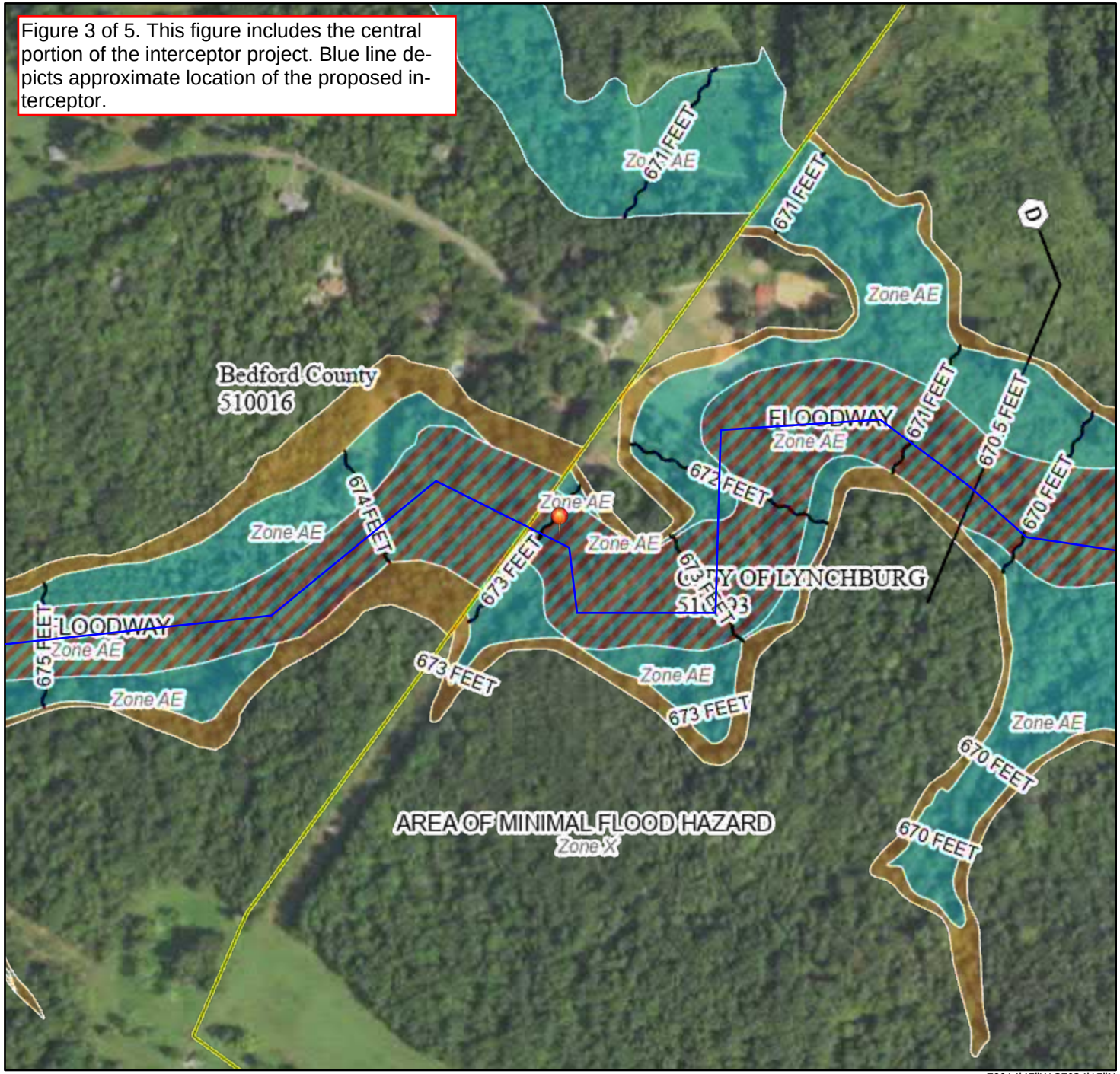

79°14'45"W 37°24'15"N

Feet

0 250 500 1,000 1,500 2,000

1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

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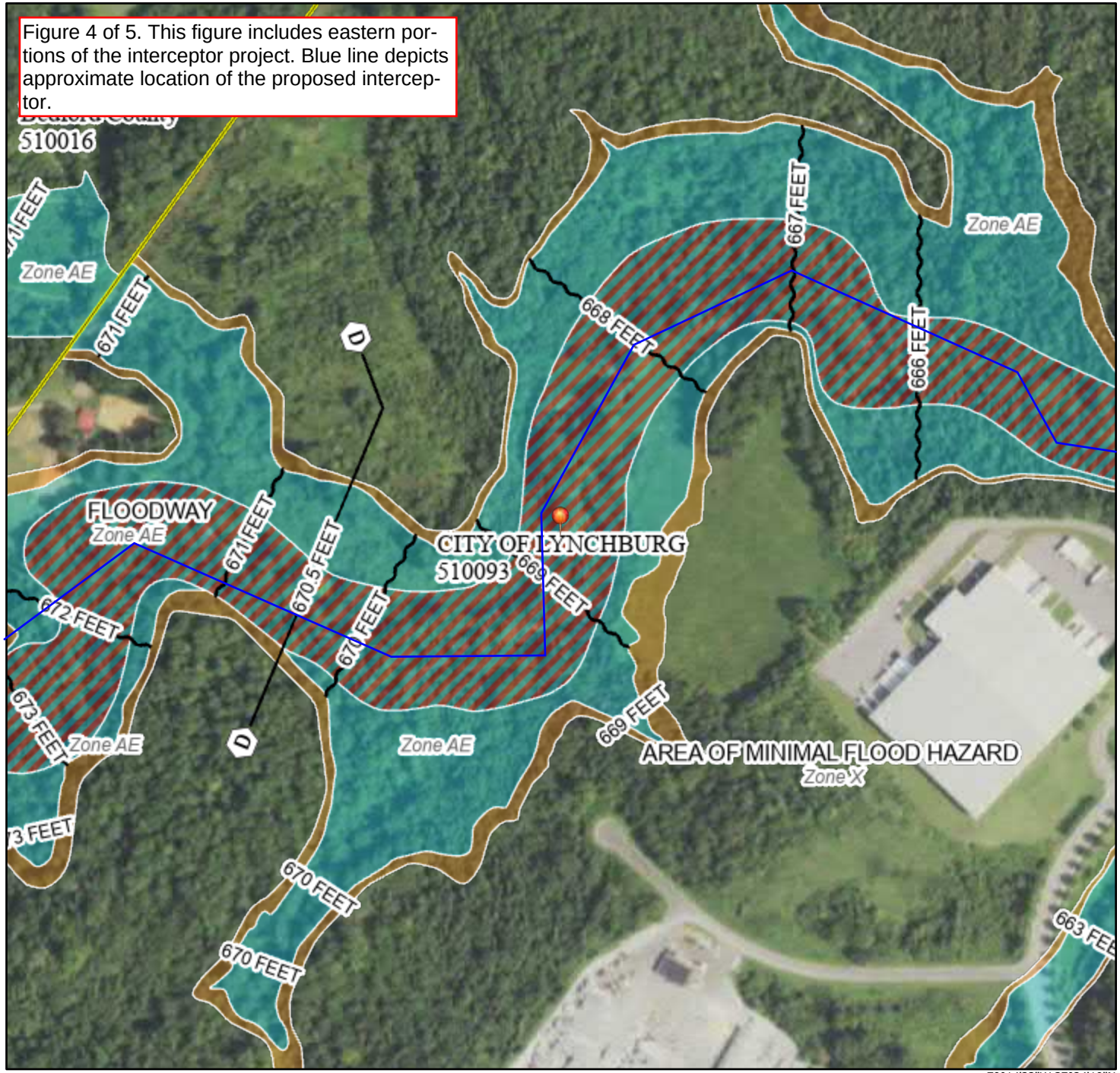
National Flood Hazard Layer FIRMette

FEMA

79°14'59"W 37°24'47"N



79°14'22"W 37°24'19"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
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- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

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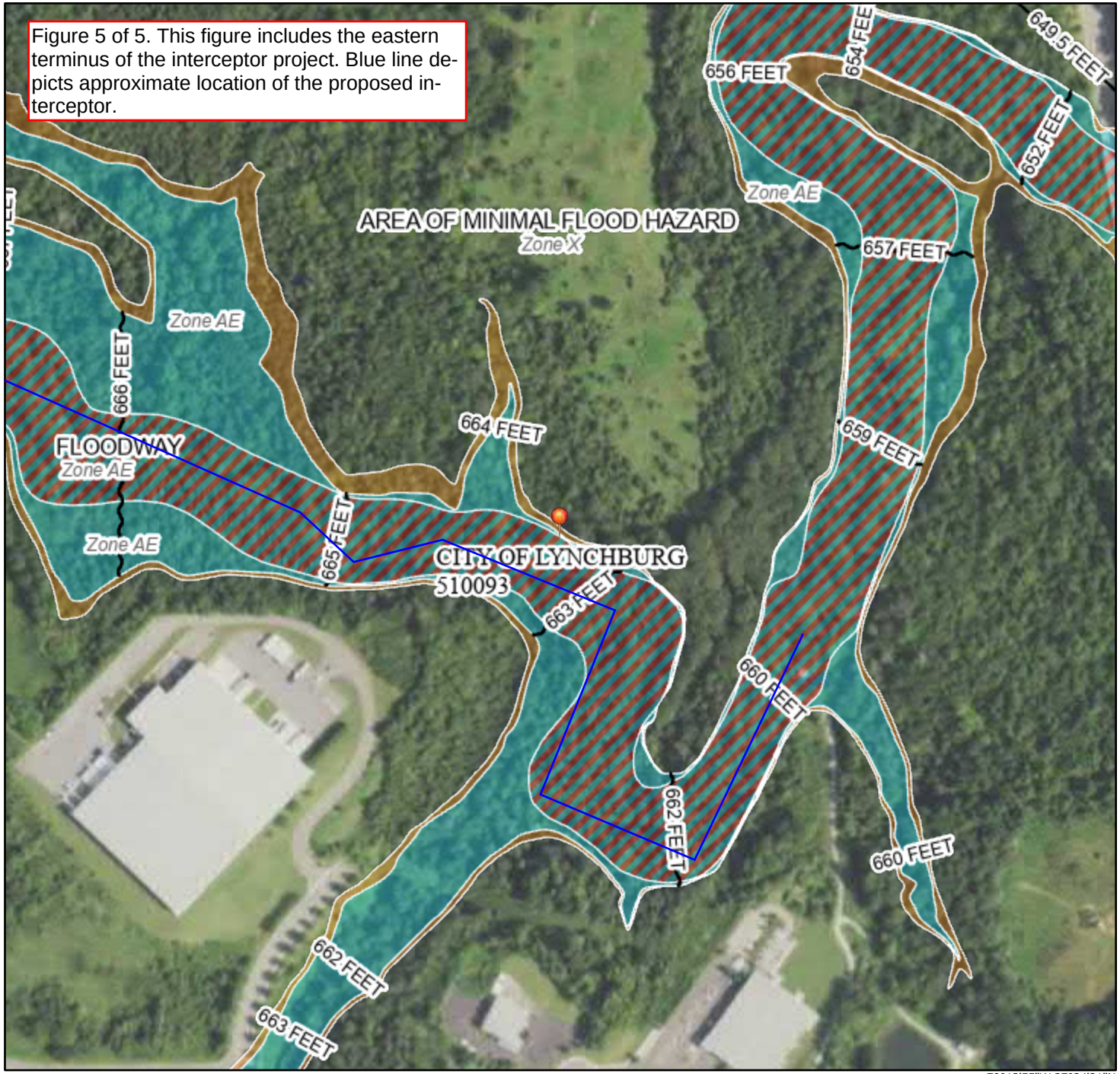
National Flood Hazard Layer FIRMette

79°14'32"W 37°24'50"N



79°13'55"W 37°24'21"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
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- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
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- Levee, Dike, or Floodwall

OTHER FEATURES
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- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

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APPENDIX B

CORRESPONDENCE

U.S. Fish and Wildlife Service
(Includes Virginia Department of Conservation and Recreation's Initial Response and Virginia Department of Game and Inland Fisheries Review Request)

Marsh, Amanda

From: Hoffman, Lawrence
Sent: Thursday, April 8, 2021 9:49 AM
To: Marsh, Amanda
Subject: FW: [--EXTERNAL--]: Re: [EXTERNAL] Bedford Regional Water Authority - Consultation Code 05E2VA00-2021-SLI-2580

Please see below.

R. Lawrence Hoffman, Associate Vice President
Sr. Project Manager I / Principal Scientist
CHA
Office: (540) 257-6685
Receptionist: (540) 552-5548
Cell: (540) 230-2335
rhoffman@chacompanies.com
www.chacompanies.com

Responsibly Improving the World We Live In

From: Case, Rachel L <rachel_case@fws.gov>
Sent: Thursday, April 8, 2021 9:47 AM
To: Hoffman, Lawrence <RHoffmanII@chacompanies.com>
Subject: [--EXTERNAL--]: Re: [EXTERNAL] Bedford Regional Water Authority - Consultation Code 05E2VA00-2021-SLI-2580

Hi Lawrenece,

I have completed my review of Amanda's submission for the referenced project and have no questions or concerns regarding the work proposed. The project is fine to proceed.

Thanks,
Rachel

Rachel Case
Biological Science Technician
Virginia Field Office
6669 Short Lane
Gloucester, VA 23061
804-824-2416

From: Hoffman, Lawrence <RHoffmanII@chacompanies.com>
Sent: Tuesday, April 6, 2021 5:53 PM
To: Case, Rachel L <rachel_case@fws.gov>
Subject: [EXTERNAL] Bedford Regional Water Authority - Consultation Code 05E2VA00-2021-SLI-2580

Hi Rachel,

On March 16 Amanda Marsh submitted the above referenced self-certification letter and supporting documents for a project in Bedford County. The project has a tight schedule and I was hoping that the review could be performed sooner rather than later. I am sure you and the other staff hear such requests frequently, and I try to avoid such requests unless absolutely necessary. Anything that can be doe to expedite the review is greatly appreciated. Thanks!

Lawrence

R. Lawrence Hoffman, Associate Vice President
Sr. Project Manager I / Principal Scientist
CHA
Office: (540) 257-6685
Receptionist: (540) 552-5548
Cell: (540) 230-2335
rhoffman@chacompanies.com
www.chacompanies.com

Responsibly Improving the World We Live In

March 16, 2021

U.S. Fish and Wildlife Service
VirginiaFieldOffice@fws.gov

VIA EMAIL

RE: Self-Certification Letter for Bedford Regional Water Authority Ivy Creek Sewer Interceptor Installation Project; CHA Project No. 064825; Consultation Code: 05E2VA00-2021-SLI-2580

To Whom It May Concern:

CHA Consulting, Inc. is working with the Bedford Regional Water Authority (BRWA) to prepare an environmental assessment (EA) to fulfill the Virginia Department of Environmental Quality's requirements pursuant to the National Environmental Policy Act. This assessment will evaluate the potential for environmental impacts from proposed improvements to the BRWA's sanitary sewer system in Bedford County and the City of Lynchburg. A summary of the background and description of the proposed BRWA Ivy Creek Sewer Interceptor Installation Project and supporting information are provided below for your review and preparation of the agency response.

Project Background

The BRWA is located in Bedford, Virginia and provides area customers with high quality and reliable water and wastewater services. In 2020, a preliminary engineering report (PER) was updated that detailed the improvements needed to the BRWA wastewater interceptor system. In the Forest and New London areas, the existing sewer system collects wastewater through a series of gravity sewers and conveys it to the Lake Vista Pump Station (LVPS). The LVPS pumps the wastewater through the Lake Vista force main to the Lake Vista gravity sewer, where it then crosses into the City of Lynchburg and is conveyed to the City's regional wastewater treatment plant (WWTP). The LVPS has historically not been able to convey design flow and has experienced continuous odor and maintenance issues.

The construction of two new sections of the Ivy Creek Sewer Interceptor, Division 5 and 6, was proposed in the PER to allow the Forest area to be served by a gravity sewer system and eliminate the problems associated with the current pumping system. This will also provide sufficient sewer capacity for future growth and economic development in this service area.

1341 Research Center Dr., Suite 2100, Blacksburg, VA 24060-5548
T 540.552.5548 • F 540.552.5577 • www.chacompanies.com

Project Description

The Ivy Creek Interceptor project includes the decommissioning of the (LVPS) and the construction of approximately 7,500 linear feet of 24 or 30-inch gravity sewer for Division 5 in the City of Lynchburg and 11,000 linear feet of 24 or 30-inch sewer for Division 6 in Bedford County. A metering flume will also be placed at the City of Lynchburg and Bedford County boundary to measure flows conveyed from BRWA.

The attached map shows the proposed alignment of the new interceptor. As depicted, the general alignment is along or near Ivy Creek. The actual alignment may be adjusted based on the final design, easement acquisition and other factors, but is expected to remain within the project extent shown on the figure. The installation of the new sewer line will require the removal of trees along the final alignment, but the tree removal is expected to be limited to a distance of approximately 25 feet on either side of the pipe. The project also includes multiple crossings of Ivy Creek and its tributaries within the project area. A joint permit application will be submitted to obtain permit coverage for these stream crossings.

We request that your office review the proposed project for any issues that may occur in the project area. Please provide any recommendations you may have to mitigate or avoid any impacts. We would appreciate a response at your earliest opportunity. If you need any further information or wish to discuss the project further, please contact me at amarsh@chacompanies.com or Lawrence Hoffman at lhoffman@chacompanies.com. We can both be reached by phone at 540-552-5548. We appreciate your assistance in this matter.

Sincerely,

Amanda C. Marsh

Amanda Marsh
Senior Scientist

ACM/egl
Enclosures
cc: R. Lawrence Hoffman, Senior Project Manager, CHA Consulting, Inc.

ESA DETERMINATION TABLE

Endangered Species Act (ESA) Section 7 Determination Table

Project Name: Bedford Regional Water Authority Ivy Creek Sewer Interceptor Installation Project

Date: 3-15-2021

Consultation Code: 05E2VA00-2021-SLI-2580

Species / Resource Name	Habitat/Species Presence in Action Area	Sources of Info	ESA Section 7 Determination	Project Elements that Support Determination
Northern Long-eared Bat (Myotis septentrionalis)	Habitat may be present; species not present.	No documentation by DCR. No documentation in DWR VaFWIS database. Determination key (see attached)	May affect; Covered by 4(d) Rule	Not within an NLEB area; see attached map.
Critical Habitat	No critical habitat present	Virginia Field Office Critical Habitat Map Tool (see attached)	No effect	Project not within federally designated critical habitat

OFFICIAL SPECIES LIST

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Virginia Ecological Services Field Office
6669 Short Lane
Gloucester, VA 23061-4410
Phone: (804) 693-6694 Fax: (804) 693-9032
http://www.fws.gov/northeast/virginiafield/

In Reply Refer To: March 12, 2021
Consultation Code: 05E2VA00-2021-SLI-2580
Event Code: 05E2VA00-2021-E-07478
Project Name: BRWA Ivy Creek Sewer Interceptor Project

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*). Any activity proposed on National Wildlife Refuge lands must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered

species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Virginia Ecological Services Field Office
6669 Short Lane
Gloucester, VA 23061-4410
(804) 693-6694

Project Summary

Consultation Code: 05E2VA00-2021-SLI-2580
Event Code: 05E2VA00-2021-E-07478
Project Name: BRWA Ivy Creek Sewer Interceptor Project
Project Type: WASTEWATER PIPELINE
Project Description: The Ivy Creek Interceptor project includes the decommissioning of the (LVPS) and the construction of approximately 7,500 linear feet of 24 or 30-inch sewer for Division 5 in the City of Lynchburg and 11,000 linear feet of 24 or 30-inch sewer for Division 6 in Bedford County. A metering flume will also be placed at the City of Lynchburg and Bedford County boundary to measure flows conveyed from BRWA.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@37.4032324,-79.26145340582619,14z

Counties: Bedford and Lynchburg counties, Virginia

Endangered Species Act Species

There is a total of 1 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis*	Threatened

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/9045

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

USFWS National Wildlife Refuge Lands And Fish Hatcheries

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

DETERMINATION KEY VERIFICATION LETTER – NORTHERN LONG-EARED BAT CONSULTATION AND 4(d) RULE CONSISTENCY

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Virginia Ecological Services Field Office
6669 Short Lane
Gloucester, VA 23061-4410
Phone: (804) 693-6694 Fax: (804) 693-9032
http://www.fws.gov/northeast/virginiafield/

IPaC Record Locator: 006-100244114 March 16, 2021

Subject: Consistency letter for the 'BRWA Ivy Creek Sewer Interceptor Project' project indicating that any take of the northern long-eared bat that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR §17.40(o).

Dear Amanda Marsh:

The U.S. Fish and Wildlife Service (Service) received on March 16, 2021 your effects determination for the 'BRWA Ivy Creek Sewer Interceptor Project' (the Action) using the northern long-eared bat (*Myotis septentrionalis*) key within the Information for Planning and Consultation (IPaC) system. You indicated that no Federal agencies are involved in funding or authorizing this Action. This IPaC key assists users in determining whether a non-Federal action may cause "take"[1] of the northern long-eared bat that is prohibited under the Endangered Species Act of 1973 (ESA) (87 Stat.884, as amended; 16 U.S.C. 1531 et seq.).

Based upon your IPaC submission, any take of the northern long-eared bat that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR §17.40(o). Unless the Service advises you within 30 days of the date of this letter that your IPaC-assisted determination was incorrect, this letter verifies that the Action is not likely to result in unauthorized take of the northern long-eared bat.

Please report to our office any changes to the information about the Action that you entered into IPaC, the results of any bat surveys conducted in the Action area, and any dead, injured, or sick northern long-eared bats that are found during Action implementation.

If your Action proceeds as described and no additional information about the Action's effects on species protected under the ESA becomes available, no further coordination with the Service is required with respect to the northern long-eared bat.

[1]Take means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct [ESA Section 3(19)].

Action Description
You provided to IPaC the following name and description for the subject Action.

1. Name

BRWA Ivy Creek Sewer Interceptor Project

2. Description

The following description was provided for the project 'BRWA Ivy Creek Sewer Interceptor Project':

> The Ivy Creek Interceptor project includes the decommissioning of the (LVPS) and the construction of approximately 7,500 linear feet of 24 or 30-inch sewer for Division 5 in the City of Lynchburg and 11,000 linear feet of 24 or 30-inch sewer for Division 6 in Bedford County. A metering flume will also be placed at the City of Lynchburg and Bedford County boundary to measure flows conveyed from BRWA.

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@37.4032324,-79.26145340582619,14z

Determination Key Result

This non-Federal Action may affect the northern long-eared bat; however, any take of this species that may occur incidental to this Action is not prohibited under the final 4(d) rule at 50 CFR §17.40(o).

Determination Key Description: Northern Long-eared Bat 4(d) Rule
This key was last updated in IPaC on **May 15, 2017**. Keys are subject to periodic revision.

This key is intended for actions that may affect the threatened northern long-eared bat.

The purpose of the key for non-Federal actions is to assist determinations as to whether proposed actions are excepted from take prohibitions under the northern long-eared bat 4(d) rule.

If a non-Federal action may cause prohibited take of northern long-eared bats or other ESA-listed animal species, we recommend that you coordinate with the Service.

Determination Key Result

Based upon your IPaC submission, any take of the northern long-eared bat that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR §17.40(o).

Qualification Interview

1. Is the action authorized, funded, or being carried out by a Federal agency?

   No

2. Will your activity purposefully **Take** northern long-eared bats?

   No

3. [Semantic] Is the project action area located wholly outside the White-nose Syndrome Zone?

   Automatically answered
   No

4. Have you contacted the appropriate agency to determine if your project is near a known hibernaculum or maternity roost tree?

   Location information for northern long-eared bat hibernacula is generally kept in state Natural Heritage Inventory databases – the availability of this data varies state-by-state. Many states provide online access to their data, either directly by providing maps or by providing the opportunity to make a data request. In some cases, to protect those resources, access to the information may be limited. A web page with links to state Natural Heritage Inventory databases and other sources of information on the locations of northern long-eared bat roost trees and hibernacula is available at www.fws.gov/midwest/endangered/mammals/nleb/nhisites.html.

   Yes

5. Will the action affect a cave or mine where northern long-eared bats are known to hibernate (i.e., hibernaculum) or could it alter the entrance or the environment (physical or other alteration) of a hibernaculum?

   No

6. Will the action involve Tree Removal?

   Yes

7. Will the action only remove hazardous trees for the protection of human life or property?

   No

8. Will the action remove trees within 0.25 miles of a known northern long-eared bat hibernaculum at any time of year?

   No

9. Will the action remove a known occupied northern long-eared bat maternity roost tree or any trees within 150 feet of a known occupied maternity roost tree from June 1 through July 31?

   No

Project Questionnaire

If the project includes forest conversion, report the appropriate acreages below. Otherwise, type '0' in questions 1-3.

1. Estimated total acres of forest conversion:

8.5

2. If known, estimated acres of forest conversion from April 1 to October 31

0

3. If known, estimated acres of forest conversion from June 1 to July 31

0

If the project includes timber harvest, report the appropriate acreages below. Otherwise, type '0' in questions 4-6.

4. Estimated total acres of timber harvest

0

5. If known, estimated acres of timber harvest from April 1 to October 31

0

6. If known, estimated acres of timber harvest from June 1 to July 31

0

If the project includes prescribed fire, report the appropriate acreages below. Otherwise, type '0' in questions 7-9.

7. Estimated total acres of prescribed fire

0

8. If known, estimated acres of prescribed fire from April 1 to October 31

0

9. If known, estimated acres of prescribed fire from June 1 to July 31

0

If the project includes new wind turbines, report the megawatts of wind capacity below. Otherwise, type '0' in question 10.

10. What is the estimated wind capacity (in megawatts) of the new turbine(s)?

0

AGENCY COORDINATION

Matthew J. Strickler
Secretary of Natural Resources

Clyde E. Cristman
Director

COMMONWEALTH of VIRGINIA
DEPARTMENT OF CONSERVATION AND RECREATION

Rochelle Altholz
Deputy Director of Administration and Finance

Russell W. Baxter
Deputy Director of Dam Safety & Floodplain Management and Soil & Water Conservation

Nathan Burrell
Deputy Director of Government and Community Relations

Thomas L. Smith
Deputy Director of Operations

March 10, 2021

Amanda Marsh
CHA Consulting, Inc.
1341 Research Center Drive, Suite 2100
Blacksburg, VA 24060

Re: 064825, Bedford Regional Water Authority Ivy Creek Sewer Interceptor Installation Project

Dear Ms. Marsh:

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

DCR recommends the development and implementation of an emergency spill plan and the utilization of industry best management practices for hydrostatic testing and dewatering.

Furthermore, the proposed project will fragment Ecological Cores (**C5**) as identified in the Virginia Natural Landscape Assessment (https://www.dcr.virginia.gov/natural-heritage/vaconvisvnla), one of a suite of tools in Virginia ConservationVision that identify and prioritize lands for conservation and protection.

Ecological Cores are areas of unfragmented natural cover with at least 100 acres of interior that provide habitat for a wide range of species, from interior-dependent forest species to habitat generalists, as well as species that utilize marsh, dune, and beach habitats. Cores also provide benefits in terms of open space, recreation, water quality (including drinking water protection and erosion prevention), and air quality (including carbon sequestration and oxygen production), along with the many associated economic benefits of these functions. The cores are ranked from C1 to C5 (C5 being the least ecologically relevant) using many prioritization criteria, such as the proportions of sensitive habitats of natural heritage resources they contain.

Fragmentation occurs when a large, contiguous block of natural cover is dissected by development, and other forms of permanent conversion, into one or more smaller patches. Habitat fragmentation results in biogeographic

changes that disrupt species interactions and ecosystem processes, reducing biodiversity and habitat quality due to limited recolonization, increased predation and egg parasitism, and increased invasion by weedy species.

Therefore minimizing fragmentation is a key mitigation measure that will reduce deleterious effects and preserve the natural patterns and connectivity of habitats that are key components of biodiversity. DCR recommends efforts to minimize edge in remaining fragments, retain natural corridors that allow movement between fragments and designing the intervening landscape to minimize its hostility to native wildlife (natural cover versus lawns). Mapped cores in the project area can be viewed via the Virginia Natural Heritage Data Explorer, available here: http://vanhde.org/content/map.

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

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

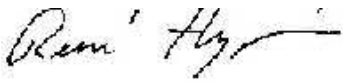
New and updated information is continually added to Biotics. Please re-submit a completed order form and project map for an update on this natural heritage information if the scope of the project changes and/or six months has passed before it is utilized.

A fee of $90.00 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 Ernie Aschenbach at 804-367-2733 or Ernie.Aschenbach@dwr.virginia.gov.

Should you have any questions or concerns, feel free to contact me at 804-371-2708. Thank you for the opportunity to comment on this project.

Sincerely,



S. René Hypes
Natural Heritage Project Review Coordinator

Marsh, Amanda

From: Greenway, Frances <frances.greenway@dwr.virginia.gov>
Sent: Wednesday, February 10, 2021 10:02 AM
To: Marsh, Amanda
Subject: [--EXTERNAL--]: Bedford Regional Water Authority Ivy Creek Sewer Interceptor Installation Project Review Request

To: Whom It May Concern

Subject: DWR Instructions in Response to Request for Preliminary Scoping Review and Comments

We appreciate that you submitted your project(s) for review by VDWR to ensure the protection of sensitive wildlife resources during project development. Due to current staffing limitations within our Fish and Wildlife Information Services (FWIS) and Environmental Services sections, we are unable to review and provide comments on projects that are not currently involved in one of the regulatory review processes for which we are a consultative agency see https://www.dwr.virginia.gov/environmental-programs/environmental-services-section/.

Please note that no response from VDWR does not constitute "no comment" nor does it imply support of the project or associated activities. It simply means that VDWR has not been able to respond to your request.

To assist you in determining which, if any, wildlife resources under our jurisdiction, including threatened and endangered wildlife, may be present on or near your project site, we recommend that you access the Virginia Fish and Wildlife Information System (VAFWIS) at http://vafwis.org/fwis/.

If you should have further questions or need additional information about VDWR's Environmental Programs, please visit: https:/www.dwr.virginia.gov/environmental-programs/.

Please feel free to attach a copy of this correspondence and any reports from VAFWIS with your project paperwork to document your correspondence with us regarding this project.

Thank you,

Frances Greenway
Administrative Assistant
P 804.367.4335
Virginia Department of Wildlife Resources
CONSERVE. CONNECT. PROTECT.
A 7870 Villa Park Drive, P.O. Box 90778, Henrico, VA 23228-0778
www.dwr.virginia.gov

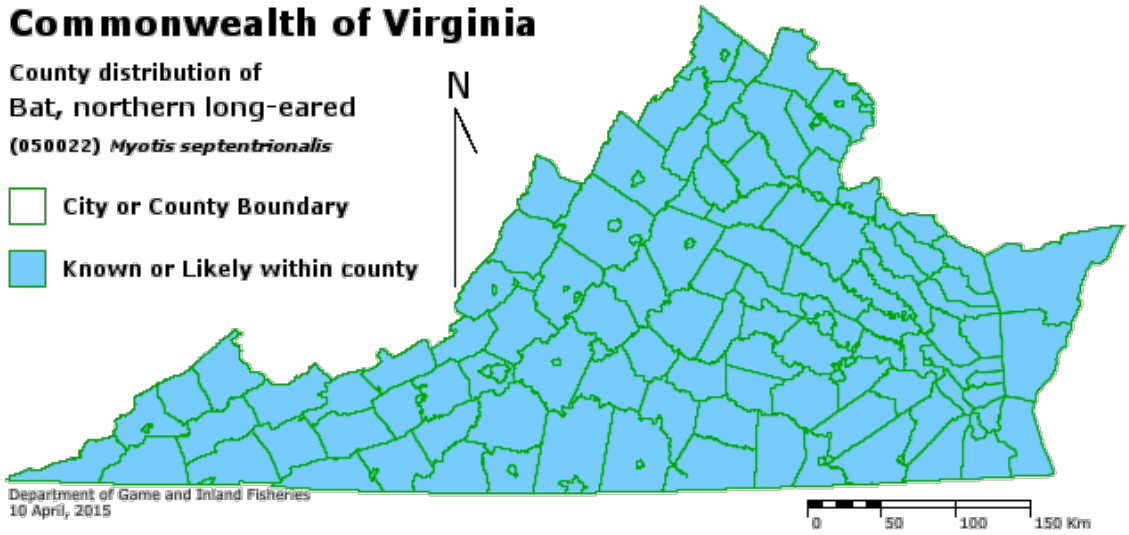
VaFWIS DATABASE INFORMATION

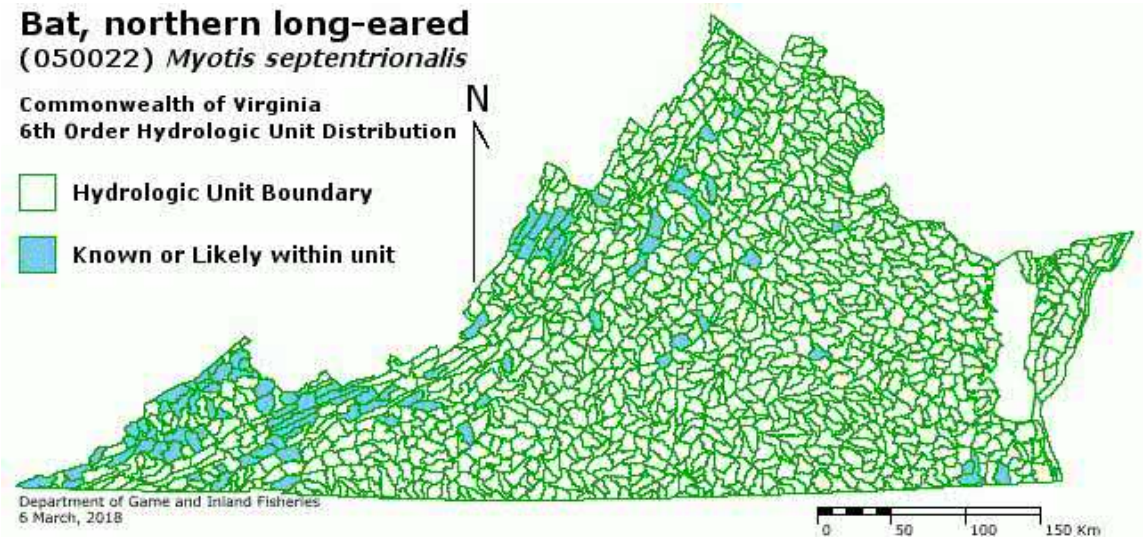
- All Chapters
-

- Show This Page as Printer Friendly

Occurence chapter for Bat, northern long-eared (050022)

4/10/2015 2:09:12 PM2/24/2015 9:52:32 AM





County Occurrences

County	County Name	General Occurrence	Resident Occurrence	Seasonal Occurrence
001	Accomack	2 - Likely		
003	Albemarle	1 - Known		
005	Alleghany	2 - Likely		
007	Amelia	2 - Likely		
009	Amherst	2 - Likely		
011	Appomattox	1 - Known		
013	Arlington	2 - Likely		
015	Augusta	1 - Known	1 - Known	
017	Bath	1 - Known	1 - Known	
019	Bedford	2 - Likely		
021	Bland	1 - Known	1 - Known	
023	Botetourt	1 - Known		
025	Brunswick	2 - Likely		
027	Buchanan	1 - Known		
029	Buckingham	1 - Known		
031	Campbell	2 - Likely		
033	Caroline	1 - Known		
035	Carroll	2 - Likely		
036	Charles City	2 - Likely		
037	Charlotte	2 - Likely		
041	Chesterfield	1 - Known		

043	Clarke	2 - Likely		
045	Craig	1 - Known	1 - Known	
047	Culpeper	2 - Likely		
049	Cumberland	2 - Likely		
051	Dickenson	1 - Known	1 - Known	
053	Dinwiddie	2 - Likely		
057	Essex	2 - Likely		
059	Fairfax	2 - Likely		
061	Fauquier	2 - Likely		
063	Floyd	1 - Known		
065	Fluvanna	2 - Likely		
067	Franklin	2 - Likely		
069	Frederick	2 - Likely		
071	Giles	1 - Known	1 - Known	
073	Gloucester	2 - Likely		
075	Goochland	2 - Likely		
077	Grayson	2 - Likely		
079	Greene	1 - Known		
081	Greensville	2 - Likely		
083	Halifax	2 - Likely		
085	Hanover	2 - Likely		
087	Henrico	2 - Likely		
089	Henry	2 - Likely		
091	Highland	1 - Known	1 - Known	
093	Isle of Wight	2 - Likely		
095	James City	2 - Likely		
097	King and Queen	2 - Likely		
099	King George	2 - Likely		
101	King William	2 - Likely		
103	Lancaster	2 - Likely		
105	Lee	1 - Known	1 - Known	
107	Loudoun	2 - Likely		
109	Louisa	1 - Known		
111	Lunenburg	2 - Likely		
113	Madison	1 - Known		
115	Mathews	2 - Likely		
117	Mecklenburg	2 - Likely		

119	Middlesex	2 - Likely		
121	Montgomery	2 - Likely		
125	Nelson	2 - Likely		
127	New Kent	2 - Likely		
131	Northampton	2 - Likely		
133	Northumberland	2 - Likely		
135	Nottoway	2 - Likely		
137	Orange	2 - Likely		
139	Page	1 - Known		
141	Patrick	2 - Likely		
143	Pittsylvania	2 - Likely		
145	Powhatan	2 - Likely		
147	Prince Edward	2 - Likely		
149	Prince George	2 - Likely		
153	Prince William	2 - Likely		
155	Pulaski	1 - Known		
157	Rappahannock	2 - Likely		
159	Richmond	2 - Likely		
161	Roanoke	1 - Known		
163	Rockbridge	1 - Known	1 - Known	
165	Rockingham	1 - Known	1 - Known	
167	Russell	2 - Likely		
169	Scott	1 - Known		
171	Shenandoah	2 - Likely		
173	Smyth	1 - Known		
175	Southampton	2 - Likely		
177	Spotsylvania	2 - Likely		
179	Stafford	2 - Likely		
181	Surry	2 - Likely		
183	Sussex	2 - Likely		
185	Tazewell	1 - Known	1 - Known	
187	Warren	1 - Known		
191	Washington	1 - Known		
193	Westmoreland	2 - Likely		
195	Wise	1 - Known	1 - Known	
197	Wythe	1 - Known		
199	York	2 - Likely		

510	Alexandria City	2 - Likely		
515	Bedford City	2 - Likely		
520	Bristol City	2 - Likely		
530	Buena Vista City	2 - Likely		
540	Charlottesville City	2 - Likely		
550	Chesapeake City	1 - Known		
560	Clifton Forge City	2 - Likely		
570	Colonial Heights City	2 - Likely		
580	Covington City	2 - Likely		
590	Danville City	2 - Likely		
595	Emporia City	2 - Likely		
600	Fairfax City	2 - Likely		
610	Falls Church City	2 - Likely		
620	Franklin City	2 - Likely		
630	Fredericksburg City	2 - Likely		
640	Galax City	2 - Likely		
650	Hampton City	2 - Likely		
660	Harrisonburg City	2 - Likely		
670	Hopewell City	2 - Likely		
678	Lexington City	2 - Likely		
680	Lynchburg City	2 - Likely		
683	Manassas City	2 - Likely		
685	Manassas Park City	2 - Likely		
690	Martinsville City	2 - Likely		
700	Newport News City	2 - Likely		
710	Norfolk City	2 - Likely		
720	Norton City	2 - Likely		
730	Petersburg City	2 - Likely		
735	Poquoson City	2 - Likely		
740	Portsmouth City	2 - Likely		
750	Radford City	2 - Likely		
760	Richmond City	2 - Likely		
770	Roanoke City	2 - Likely		
775	Salem City	2 - Likely		
780	South Boston City	2 - Likely		
790	Staunton City	1 - Known	1 - Known	
800	Suffolk City	1 - Known		

810	Virginia Beach City	2 - Likely		
820	Waynesboro City	1 - Known		
830	Williamsburg City	2 - Likely		
840	Winchester City	2 - Likely		

General Occurrence Comments: Most of the bat surveying has been done in the caves of western Virginia and therefore the list of confirmed counties occurs in those counties. Most sources say that this bat is statewide (11321,147,152) but there is very little data to back this up. It is not collected often mainly because the habit of roosting singly or in very small groups in the very darkest cracks and crevices makes them difficult to survey *9261*.

Resident Occurrence Comments: Most of the bat surveying has been done in the caves of southwestern Virginia and therefore that is where the concentration of confirmed counties is. Most sources say that this bat is statewide (11321,147,152) but there is very little data to back this up. It is not collected often mainly because its habits of roosting singly or in very small groups in the very darkest cracks and crevices, makes them difficult to survey *9261*.

Seasonal Occurrence Comments: Most of the bat surveying has been done in the caves of southwestern Virginia and therefore that is where the concentration of confirmed counties is. Most sources say that this bat is statewide (11321,147,152) but there is very little data to back this up. It is not collected often mainly because its habits of roosting singly or in very small groups in the very darkest cracks and crevices, makes them difficult to survey *9261*. This species is found year round in all the counties previously mentioned *8867*.

References for County Occurrence

Ref.Id	Citation
20	Barbour, R.W., W.H. Davis, 1969, Bats of America, 286 pgs., Univ. Kentucky Press, Lexington, Ky.
89	Douglas, H.H., 1964, Caves of Virginia, 761 pgs., VA Reg. of the Nat'l Speleological Soc.
109	Fitch, J.H., Shump, K.A., Jr., 1979, Myotis keenii, Mammalian Species, Num. 121, 3 pgs., Am. Soc. Mammal.
147	Handley, C.O., Jr., Linzey, D.W. (Ed.), 1979, The untroubled fauna, Proc. Symp. on Endangered and Threatened Plants and Animals of Virginia, pg. 593-594, 665 pgs., Ext. Div., VA Tech, Blacksburg, VA
152	Handley, C.O., Jr., Patton, C.P., 1947, Wild Mammals of Virginia, 220 pgs., Virginia Commission of Game and Inland Fisheries, Richmond, VA
215	Meanley, B., 1971, Great Dismal Swamp mammals, Atlantic Natl., Vol. 26, Num. 1, pg. 17-18
219	Miller, G.S., Jr., Allen, G.M., 1928, The American bats of the genera Myotis and Pizonyx, United States Natl. Mus. Bull., Num. 144, 218 pgs., United States Natl. Museum, Washington, D.C
5110	Easterla, D.A., 1968, Parturition of keen's myotis in southwestern Missouri, J. Mammal., Vol. 49, pg. 770
5323	Laval, R.K., Laval, M.L., 1980, Ecological Studies and Management of Missouri Bats, with Emphasis on Cave-Dwelling Species, Terrestrial Series # 8, Ser. 8, 53 pgs., Mo. Dept. Conserv Mo., Jefferson City, MO
5668	Hall, E.R., 1981, The Mammals of North America, 2nd Ed. Vol.1 & 2, 1181 pgs., John WI Sons, Inc., NY
6037	Schwartz, C.W., Schwartz, E.R., 1981, The Wild Mammals of Missouri (2nd Ed.), 356 pgs., Univ. MO Press & MO Conserv. Dept., Columbia, MO
6203	Elder, W.H., Collection records., UNPB., Univ. of MO
9806	Virginia Dept. Game and Inland Fisheries, 1989, Virginia nongame and endangered wildlife investigations-annual report July 1, 1989-June 30, 1990, 140 pgs., Richmond, Va.
10865	Virginia Dept. of Game and Inland Fisheries, 1992, Nongame and Endangered Wildlife Program Annual Report, 99 pgs., VDGIF, Richmond, VA
10949	Virginia Department of Game and Inland Fisheries, 1995, Collections Database
11161	VA Dept. of Game and Inland Fisheries, 1995, Caves database
11185	Schwab, D., 1996, Health Dept. bat identification specimens

11321 Linzey, D.W., 1998, The mammals of Virginia, 459 pp. pgs., McDonald and Woodward Publishing Comp., Blacksburg, VA

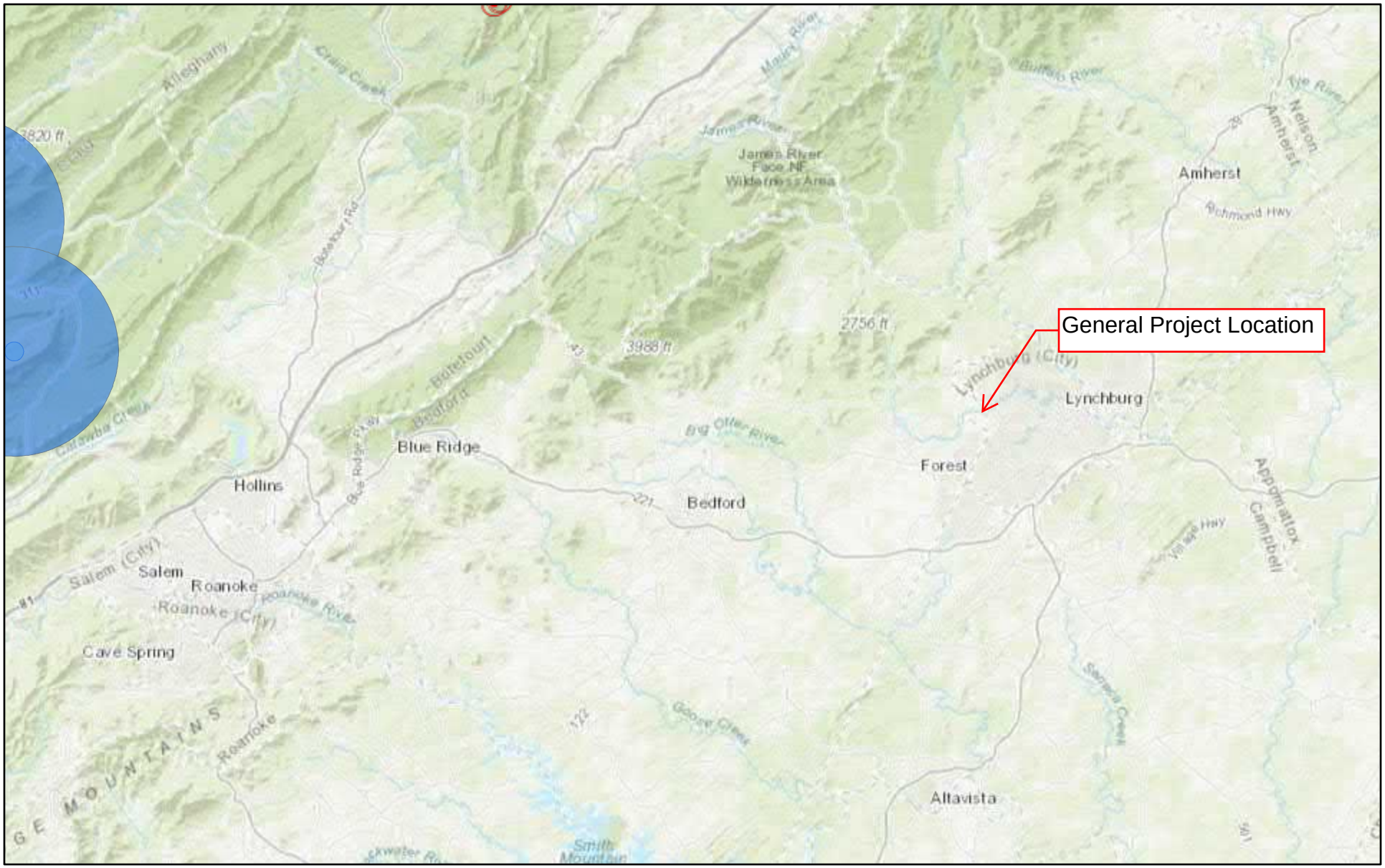
11325 Virginia Dept. of Health, 1998, Bats captured and tested for rabies, bats identified by Don Schwab

11359 Nongame and Endangered Wildlife, Program, VDGIF, 1995, Nongame Annual Report, 1994-1995, 123 pgs., VDGIF

11621 Rick Reynolds, 2001, DGIF Nongame Biologist, Comments on species profiles

ADDITIONAL MAPPING

NLEB Locations and Roost Trees



3/12/2021, 2:48:15 PM

NLEB Known Occupied Maternity Roost (Summer Habitat)

NLEB Hibernaculum 5.5 Mile Buffer

NLEB Hibernaculum Half Mile Buffer

1:577,791

0 4 8 16 mi

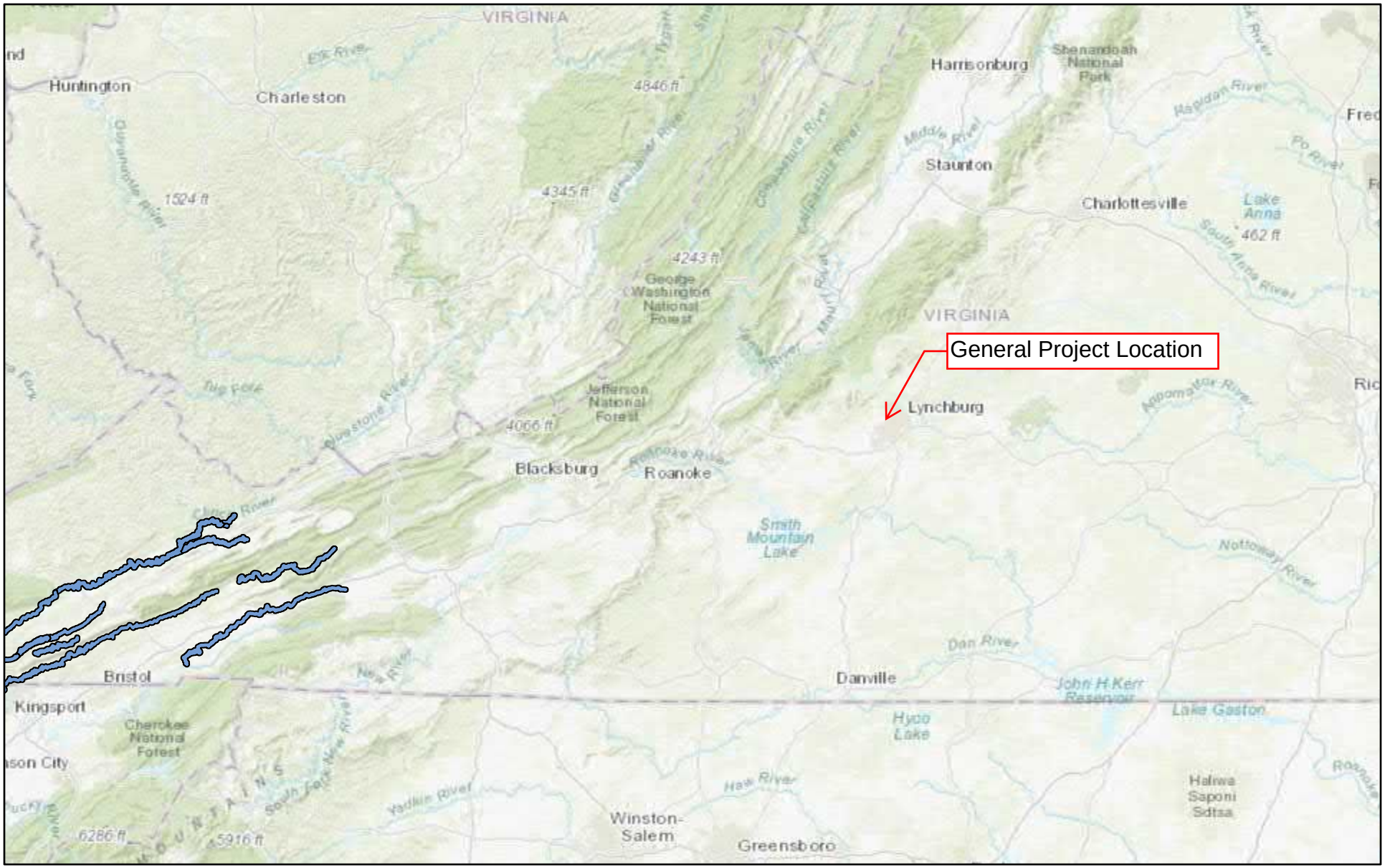
0 5 10 20 km

Esri, HERE, Garmin, USGS, NGA, EPA, USDA, NPS

VA Dept. Game & Inland Fisheries

Esri, HERE, Garmin, USGS, NGA, EPA, USDA, NPS |

Critical Habitat in Virginia



March 12, 2021

Virginia Critical Habitat (published)

1:2,311,162

0 15 30 60 mi

0 25 50 100 km

Esri, HERE, Garmin, FAO, USGS, EPA, NPS

Virginia Marine Resources Commission

COMMONWEALTH of VIRGINIA

Marine Resources Commission
380 Fenwick Road
Bldg 96
Fort Monroe, VA 23651-1064

Matthew J. Strickler
Secretary of Natural Resources

Steven G. Bowman
Commissioner

March 3, 2021

CHA Consulting, Inc.
Attn: Amanda Marsh
1341 Research Center Drive, Suite 2100
Blacksburg, Virginia 24060-5548

Re: Bedford Regional Water Authority Ivy Creek Sewer Interceptor Installation Project

Dear Ms. Marsh,

This will respond to the request for comments regarding the Bedford Regional Water Authority Ivy Creek Sewer Interceptor Installation Project, prepared by CHA Consultants, Inc., on behalf of the Bedford Regional Water Authority (BRWA). Specifically, the BRWA has proposed to decommission the current Lake Vista Pump Station (LVPS) and construct approximately 7,500 linear feet of 24 or 30-inch sewer for Division 5 in the City of Lynchburg and 11,000 linear feet of 24 or 30-inch sewer for Division 6 in Bedford County with multiple proposed crossings of Ivy Creek. The project is located along or near Ivy Creek in the City of Lynchburg and Bedford County, Virginia. We reviewed the provided project documents and found the proposed project is within the jurisdictional areas of the Virginia Marine Resources Commission (VMRC) and will require a permit from this agency for the proposed submerged land encroachments.

Please be advised that the VMRC, pursuant to §28.2-1200 et seq of the Code of Virginia, has jurisdiction over any encroachments in, on, or over the beds of the bays, ocean, rivers, streams, or creeks which are the property of the Commonwealth. Accordingly, if any portion of the subject project involves any encroachments channelward of ordinary high water along non-tidal, natural rivers and streams with a drainage area greater than 5-square miles, a permit may be required from our agency. Any jurisdictional impacts will be reviewed by the VMRC during the JPA process. Should the proposed project change, a new review by this agency may be required relative to these jurisdictional areas.

If you have any questions please contact me at (757) 247-2255 or by email at mike.johnson@mrc.virginia.gov. Thank you for the opportunity to comment.

Sincerely,

Mike Johnson

Environmental Engineer, Habitat Management

JMJ/tlb
HM

Virginia Department of Agriculture and Consumer Services

February 9, 2021

Mr. Keith Tignor
Office of Policy, Planning and Agricultural Development
Department of Agriculture & Consumer Services
P.O. Box 1163
Richmond, VA 23219
keith.tignor@vdacs.virginia.gov

VIA EMAIL

Re: Environmental Report for Bedford Regional Water Authority Ivy Creek Sewer Interceptor Installation Project; CHA Project No. 064825

Dear Mr. Tignor:

CHA Consulting, Inc. is working with the Bedford Regional Water Authority (BRWA) to prepare an environmental assessment (EA) to fulfill the Virginia Department of Environmental Quality's requirements pursuant to the National Environmental Policy Act. This assessment will evaluate the potential for environmental impacts from proposed improvements to the BRWA's sanitary sewer system in Bedford County and the City of Lynchburg. A summary of the background and description of the proposed BRWA Ivy Creek Sewer Interceptor Installation Project and supporting information are provided below for your review and preparation of the agency response.

Project Background

The BRWA is located in Bedford, Virginia and provides area customers with high quality and reliable water and wastewater services. In 2020, a preliminary engineering report (PER) was updated that detailed the improvements needed to the BRWA wastewater interceptor system. In the Forest and New London areas, the existing sewer system collects wastewater through a series of gravity sewers and conveys it to the Lake Vista Pump Station (LVPS). The LVPS pumps the wastewater through the Lake Vista force main to the Lake Vista gravity sewer, where it then crosses into the City of Lynchburg and is conveyed to the City's regional wastewater treatment plant (WWTP). The LVPS has historically not been able to convey design flow and has experienced continuous odor and maintenance issues.

The construction of two new sections of the Ivy Creek Sewer Interceptor, Division 5 and 6, was proposed In the PER to allow the Forest area to be served by a gravity sewer system and eliminate the problems associated with the current pumping system. This will also provide sufficient sewer capacity for future growth and economic development in this service area.

Project Description

The Ivy Creek Interceptor project includes the decommissioning of the (LVPS) and the construction of approximately 7,500 linear feet of 24 or 30-inch sewer for Division 5 in the City of Lynchburg and 11,000 linear feet of 24 or 30-inch sewer for Division 6 in Bedford County. A metering flume will also be placed at the City of Lynchburg and Bedford County boundary to measure flows conveyed from BRWA.

The attached map shows the proposed alignment of the new interceptor. As depicted, the general alignment is along or near Ivy Creek. The actual alignment may be adjusted based on the final design, easement acquisition and other factors, but is expected to remain within the project extent shown on the figure. The installation of new sewer line will require the removal of trees along the final alignment, but the tree removal is expected to be limited to a distance of approximately 25 feet on either side of the pipe. The project also includes multiple crossings of Ivy Creek and its tributaries within the project area. A joint permit application will be submitted to obtain permit coverage for these stream crossings.

We request that your office review the proposed project for any issues that may occur in the project area. Please provide any recommendations you may have to mitigate or avoid any impacts. We would appreciate a response at your earliest opportunity. If you need any further information or wish to discuss the project further, please contact me at amarsh@chacompanies.com or Lawrence Hoffman at lhoffman@chacompanies.com. We can both be reached by phone at 540-552-5548. We appreciate your assistance in this matter.

Sincerely,

Amanda C. Marsh

Amanda Marsh
Senior Scientist

ACM/egl
Enclosures
cc: R. Lawrence Hoffman, Senior Project Manager, CHA Consulting, Inc.

0 0.125 0.25 0.5 0.75 1 Miles

Legend

- Maximum Project Extent
- Proposed Sewer Lines
- Existing BRWA Sewer Lines
- Existing City of Lynchburg Sewer System

Lynchburg (city)

Project Location in relation to the City of Lynchburg

Job No: 64825
FEB 2021

BRWA Ivy Creek Sewer Interceptor Project

CHA

Virginia Department of Historical Resources

COMMONWEALTH of VIRGINIA

Ann Jennings
Secretary of Natural and Historic Resources

Department of Historic Resources
2801 Kensington Avenue, Richmond, Virginia 23221

Julie V. Langan
Director

Tel: (804) 367-2323
Fax: (804) 367-2391
TDD: (804) 367-2386
www.dhr.virginia.gov

November 22, 2021

Kerri Barile
Dovetail Cultural Resource Group
11905 Bowman Drive, Suite 502
Fredericksburg, Virginia 22408

Re: Bedford Regional Water Authority Ivy Creek Sewer Interceptor Installation Project
Lynchburg, Bedford County, VA
DHR File No. 2021-3408

Dear Dr. Barile,

We have received for review the report, *Phase I Archaeological Survey of the Ivy Creek Sewer Project Area, City of Lynchburg and Bedford County, Virginia*, prepared by Dovetail Cultural Resources Group (Dovetail on behalf of CHA Companies. The undertaking, as presented, involves the construction of approximately 7,500 linear feet of 24 or 30-inch sewer in the City of Lynchburg and 11,000 linear feet of 24 or 30-inch sewer in Bedford County. Our comments are provided as assistance to the Environmental Protection Agency (EPA) in meeting their responsibilities under Section 106 of the National Historic Preservation Act.

The report documents an archaeological survey of approximately 20 acres along the proposed sewer line corridor. During the course of the survey, no archaeological sites were identified. Dovetail recommends no additional work and that *No Historic Properties Will Be Affected* by this undertaking. DHR concurs with these recommendations.

Thank you for seeking our comments on this project. If you have any questions at this time, please do not hesitate to contact me at jennifer.bellville-marrion@dhr.virginia.gov.

Sincerely,

Jenny Bellville-Marrion, Project Review Archaeologist
Review and Compliance Division

Cc: Amanda Marsh, CHA Companies

Western Region Office
962 Kime Lane
Salem, VA 24153
Tel: (540) 387-5443
Fax: (540) 387-5446

Northern Region Office
5357 Main Street
PO Box 519
Stephens City, VA 22655
Tel: (540) 868-7029
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Eastern Region Office
2801 Kensington Avenue
Richmond, VA 23221
Tel: (804) 367-2323
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COMMONWEALTH of VIRGINIA

Matthew Strickler
Secretary of Natural Resources

Department of Historic Resources
2801 Kensington Avenue, Richmond, Virginia 23221

Julie V. Langan
Director

Tel: (804) 367-2323
Fax: (804) 367-2391
TDD: (804) 367-2386
www.dhr.virginia.gov

April 13, 2021

Amanda Marsh
1341 Research Center Drive, Suite 2100
Blacksburg, VA 24060

Re: Bedford Regional Water Authority Ivy Creek Sewer Interceptor Installation Project
Lynchburg, Bedford County, VA
DHR File No. 2021-3408

Dear Ms. Marsh,

We have received your request for comments on the project referenced above. The undertaking, as presented, involves the construction of approximately 7,500 linear feet of 24 or 30-inch sewer in the City of Lynchburg and 11,000 linear feet of 24 or 30-inch sewer in Bedford County. The general alignment is along or near Ivy Creek. The installation of new sewer line will require the removal of trees along the final alignment, 25 feet on either side of the pipe. Our comments are provided as assistance to the Environmental Protection Agency (EPA) in meeting their responsibilities under Section 106 of the National Historic Preservation Act.

According to our records, the project area has not been systematically surveyed for archaeological resources and given the proximity to Ivy Creek, has the potential to contain archaeological resources.

In order to identify historic properties that may be affected by this undertaking, DHR recommends that a Phase I archaeological study be conducted within the project area. This survey must be conducted by qualified professionals in accordance to the *Archeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines* (48 FR 44716-42) and DHR's *Guidelines for Conducting Historic Resources Survey in Virginia* (2017). One bound copy and one digital copy of the resulting report should be submitted to our office for review.

Thank you for seeking our comments on this project. If you have any questions at this time, please do not hesitate to contact me at jennifer.bellville-marrion@dhr.virginia.gov.

Sincerely,

Jenny Bellville-Marrion, Project Review Archaeologist
Review and Compliance Division

Western Region Office
962 Kime Lane
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Tel: (540) 387-5443
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Fax: (540) 868-7033

Eastern Region Office
2801 Kensington Avenue
Richmond, VA 23221
Tel: (804) 367-2323
Fax: (804) 367-2391

Property Information

Property Names

Name Explanation	Name
Function/Location	Bridge #6031, Cottontown Road (Route 621), Ivy Creek

Property Evaluation Status

DHR Staff: Not Eligible

Property Addresses

Current - Cottontown Road Route 621

County/Independent City(s): Bedford (County)
Incorporated Town(s): Forest
Zip Code(s): 24551
Magisterial District(s): *No Data*
Tax Parcel(s): *No Data*
USGS Quad(s): BOONSBORO

Additional Property Information

Architecture Setting: Rural
Acreage: *No Data*
Site Description:

May 2015: This bridge is surrounded by farmland to the southwest and recent housing developments in other directions. A power transmission line crosses southwest/northeast.

Surveyor Assessment:

May 2015: In the opinion of the surveyor this bridge should not be considered individually eligible for the NRHP under Criteria A, B, C, or D. There is no known association with important people or events and the resource is typical of this time period. The resource type is common and the workmanship and materials are not unique. The Historic Structures Task Group recommended the structure not eligible for the NRHP in January 2001.

Surveyor Recommendation: Recommended Not Eligible

Ownership

Ownership Category	Ownership Entity
State Govt	Virginia Department of Transportation

Primary Resource Information

Resource Category: Transportation
Resource Type: Bridge
NR Resource Type: Structure
Historic District Status: *No Data*
Date of Construction: Ca 1932
Date Source: Local Records
Historic Time Period: World War I to World War II (1917 - 1945)
Historic Context(s): Transportation/Communication
Other ID Number: *No Data*
Architectural Style: No discernible style
Form: *No Data*
Number of Stories: *No Data*
Condition: Fair
Threats to Resource: Demolition
Architectural Description:

May 2015: Bridge #6031 carries Route 621 (Cottontown Rd) over Ivy Creek. It is steel beam timber deck, one-span, and has wood railing and curbing. The abutments are from a former bridge and are large cut limestone blocks. The bridge is 45 feet long and 20 feet wide.

Bridge Information

Structure Number:	2707
VDOT Bridge ID:	6031
Entity Crossed Name:	Ivy Creek
Entity Crossed Type:	Water
Bridge Type:	Beam - Steel
Current Use:	Road
Number of Spans:	1
Number of Lanes:	1

Secondary Resource Information

Historic District Information

Historic District Name:	*No Data*
Local Historic District Name:	*No Data*
Historic District Significance:	*No Data*

CRM Events

Event Type: DHR Staff: Not Eligible

DHR ID:	009-5410
Staff Name:	Marc Holma
Event Date:	6/1/2015

Staff Comment

DHR File No. 2015-0540

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number:	2015-0540
Investigator:	Jana Bean
Organization/Company:	Virginia Department of Transportation
Photographic Media:	Digital
Survey Date:	5/12/2015
Dhr Library Report Number:	*No Data*

Project Staff/Notes:

No Data

Project Bibliographic Information:

VDOT Project 97711 to replace Bridge #6031

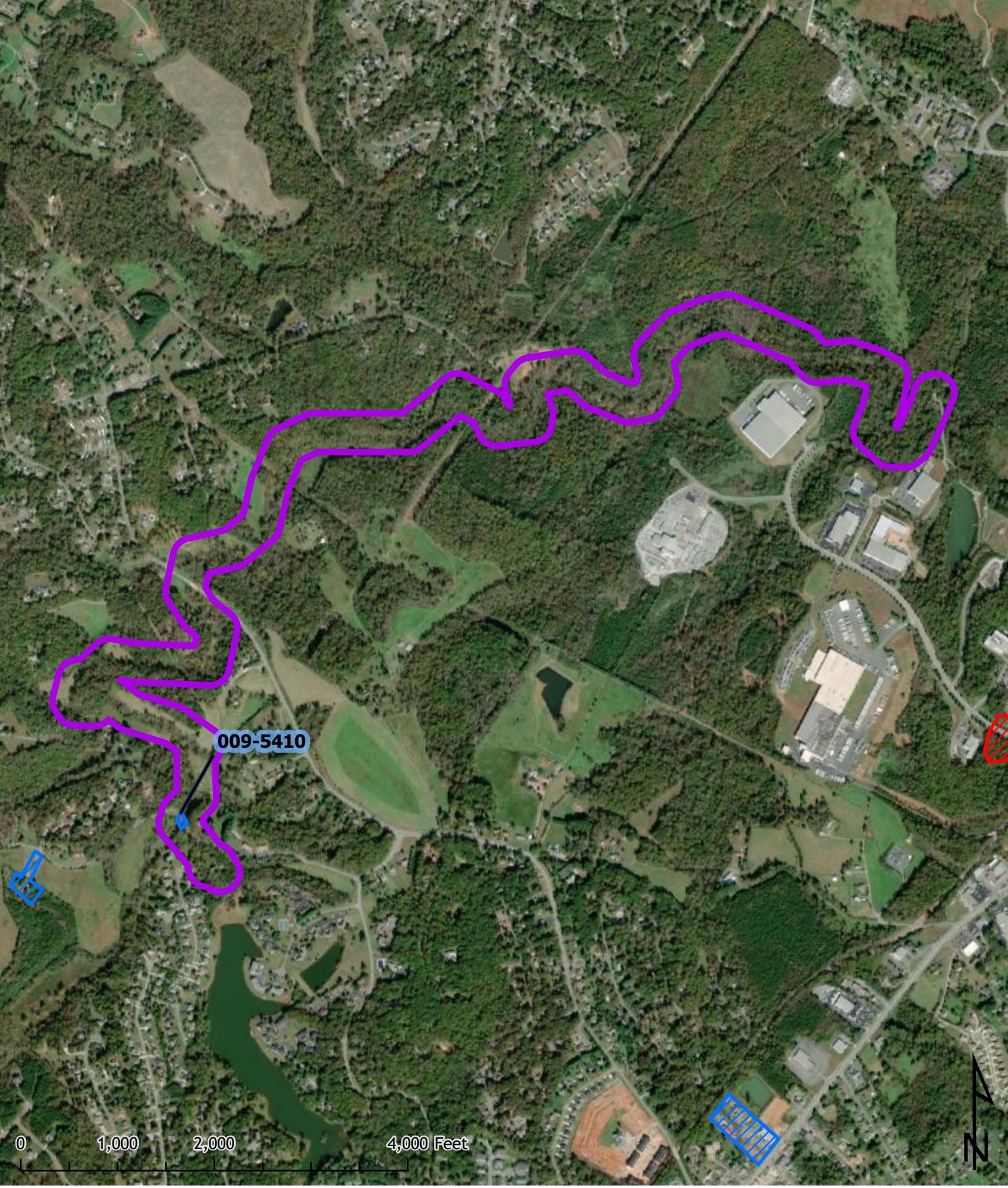
Bibliographic Information

Bibliography:

No Data

Property Notes:

VDOT project to replace bridge and slightly realign road.



Project: BRWA Ivy Creek Sewer Interceptor
Location: Bedford County, VA 24551
Date: 2/10/2021
Created by: Kristina Donnally

APE - 200ft buffer
Architecture Resources
Archaeological Resources

Sources: VDHR 2021, ESRI 2021
Records of the Virginia Department of Historic Resources (DHR) have been gathered over many years and the representation depicted is based on the field observation date and may not reflect current ground conditions. The map is for general illustration purposes and is not intended for engineering, legal or other site-specific uses. The map may contain errors and is provided "as-is". Contact DHR for the most recent information as data is updated continually.

DHR
Department of Historic Resources

Virginia Department of Transportation

COMMONWEALTH of VIRGINIA

DEPARTMENT OF TRANSPORTATION
731 Harrison Ave.
Salem, VA 24153-0560

STEPHEN C. BRICH, P.E.
COMMISSIONER

February 12, 2021

Amanda Marsh
Senior Scientist
CHA Consulting, Inc.
1341 Research Center Dr. Suite 2100
Blacksburg, VA 24060-5548

Subject: VDOT – Bedford Residency Review Comments
Environmental Report for Bedford Regional Water Authority Ivy Creek Sewer Interceptor Installation Project; CHA Project No. 064825

Dear Ms. Marsh,

The Bedford Residency has completed a review for the correspondence dated February 9, 2021 regarding the NEPA process associated with the project noted above. We have previously coordinated with the BRWA and understand impacts to VDOT maintained roadways will likely be limited to two jack-and-bore operations to install the interceptor under Rte. 621 (Cottontown Rd.) and Rte. 660 (Hawkins Mill Rd.). Given this information we find no adverse impacts to VDOT maintained assets in the exhibit as presented. The BRWA and its consultants are well versed in the requirements associated with construction, operation, and maintenance of their facilities within the right of way and we anticipate an engineered solution that will address these requirements.

We trust this letter sufficiently addresses your request. If we can be of any further assistance on this matter, please feel free to contact me at (540) 586-7941.

Sincerely,

Assistant Resident Engineer - Land Use
Bedford Residency

Cy: BRWA – Rhonda English
Correspondence File

U.S. Army Corps of Engineers

DEPARTMENT OF THE ARMY
US ARMY CORPS OF ENGINEERS
NORFOLK DISTRICT
FORT NORFOLK
803 FRONT STREET
NORFOLK VA 23510-1011

March 31, 2021

Western Virginia Regulatory Section
Action ID Number: NAO-2021-00411

Ms. Amanda Marsh
CHA Consulting
1341 Research Center Drive, Suite 2100
Blacksburg, Virginia 24060

Dear Ms. Marsh:

This letter is in response to your request for an environmental review of the Ivy Creek Sewer Interceptor Project. The proposed project includes improvements to the Bedford Regional Water Authority sanitary sewer system. The improvements include approximately 7,500 linear feet of 24- or 30-inch sewer for the City of Lynchburg and 11,000 linear feet of 24- or 30-inch sewer for Bedford County, Virginia. The project is assigned Action ID Number: NAO-2021-00411; please reference this number on any future correspondence.

Your letter dated February 9, 2021, states that majority of the work will occur along Ivy Creek, with multiple crossings of the creek. Upon review of the maps you provided, as well as, electronic and online resources, it appears that portions of this project may result in discharges of dredged and/or fill material into waters of the United States. As you are probably aware, both temporary and permanent discharges of dredged and/or fill material into waters of the United States are subject to the permitting requirements of Section 404 of the Clean Water Act (33 CFR 323). The proposed project may also impact navigable waters, subject to the permitting requirements of Section 10 of the Rivers and Harbors Act of 1899.

We recommend that the proponent of this project submit a request to the U.S. Army Corps of Engineers, Norfolk District for an approved jurisdictional determination for the proposed project area prior to any construction activities. In addition, we recommend that, should this project involve any potential impacts to waters of the U.S., the proponent consider directionally drilling the water crossings in an effort to avoid impacts to the waters.

Please be aware that through the Corps permitting processes, we must ensure that your project complies with other Federal Laws, such as the Endangered Species Act, the National Environmental Policy Act, and the National Historic Preservation Act. Based on our cursory review of the project area and a potential for the presence of

CENAO-WRR-W
NAO-2021-00411

Federally-listed Threatened and/or Endangered Species and cultural resources within our scope of analysis, the Corps would most likely initiate consultation with both the U.S. Fish and Wildlife Service (USFWS) and the Virginia Department of Historic Resources (VDHR). We strongly recommend that you coordinate this proposal with not only the USFWS and VDHR, but also the Virginia Department of Environmental Quality (VDEQ), the Virginia Marine Resources Commission (VMRC) and the Virginia Department of Wildlife Resources (VDWR).

We appreciate the opportunity to provide comments on your proposed project. Should you have any questions or concerns, please do not hesitate in contacting me at (540) 344-1409 or at dana.m.heston@usace.army.mil.

Sincerely,

Dana Heston
Environmental Scientist
Western Virginia Regulatory Section

Department of Environmental Quality

Commonwealth of Virginia

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

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Ann F. Jennings
Secretary of Natural and Historic Resources

David K. Paylor
Director
(804) 698-4000

January 5, 2022

Ms. Rhonda B. English
Director of Engineering
Bedford Regional Water Authority
1723 Falling Creek Road
Bedford, VA 24523

Re: Environmental Assessment – BRWA Ivy Creek Sewer Interceptor Project
VCWRLF Project C-515718

Dear Ms. English:

This office has received an Environmental Assessment for the above-referenced project. Based on information presented in the Environmental Assessment and evaluations of the project area, DEQ staff has the following specific comments concerning the Bedford Regional Water Authority's proposed plans for the Ivy Creek Sewer Interceptor Project.

DEQ's Office of Wetlands and Stream Protection Review and Comments

The DEQ's Office of Wetlands and Stream Protection (OWSP) has reviewed the information concerning the above-referenced project. According to the information provided with the Environmental Assessment (EA), the proposed project consists decommissioning the Lake Vista Pump Station (LVPS) and construction of approximately 7,500 linear feet of 30-inch sewer for Division 5 in the City of Lynchburg and 11,000 linear feet of 30-inch sewer for Division 6 in Bedford County. The project will allow the Forest and New London areas to be served by gravity and to allow sufficient sewer capacity for economic development.

According to the report, "there are areas identified as riverine. Based on a review of the USFWS National Wetlands Survey (NWI) map and site walkover conducted on April 5, 2021, there are no wetlands located within the project area or adjacent to the project area. There will be multiple stream crossings of Ivy Creek and small unnamed tributaries that will result in temporary impacts."

If the project qualifies for a Nationwide Permit that DEQ has provided 401 certification, then a

Virginia Water Protection (VWP) permit is not necessary. If the applicant does not obtain a NWP, then a VWP permit may be necessary. The DEQ Blue Ridge Regional Office (BRRO) will make the final permitting decision for state waters.

Water Quality and Wetlands. Measures must be taken to avoid and minimize impacts to surface waters and wetlands during construction activities. The disturbance of surface waters or wetlands may require prior approval by DEQ and/or the U.S. Army Corps of Engineers. The Army Corps of Engineers is the final authority for an official confirmation of whether there are federal jurisdictional wetlands or other surface waters that may be impacted by the proposed project. DEQ may confirm additional waters as jurisdictional beyond those under federal authority. Review of National Wetland Inventory maps or topographic maps for locating wetlands or streams may not be sufficient; there may need to be a site-specific review of the site by a qualified professional. Even if there will be no intentional placement of fill material in jurisdictional waters, potential water quality impacts resulting from construction site surface runoff must be minimized. This can be achieved by using Best Management Practices (BMPs). If construction activities will occur in or along any streams (perennial, intermittent, or ephemeral), open water or wetlands, the applicant should contact the DEQ-BRRO.

Erosion and Sediment Control and Storm Water Management. DEQ has regulatory authority for the Virginia Pollutant Discharge Elimination System (VPDES) programs related to municipal separate storm sewer systems (MS4s) and construction activities. Erosion and sediment control measures are addressed in local ordinances and State regulations. Additional information is available at http://www.deq.virginia.gov/Programs/Water/StormwaterManagement.aspx. Non-point source pollution resulting from this project should be minimized by using effective erosion and sediment control practices and structures. Consideration should also be given to using permeable paving for parking areas and walkways where appropriate, and denuded areas should be promptly revegetated following construction work. If the total land disturbance exceeds 10,000 square feet, an erosion and sediment control plan will be required. Some localities also require an E&S plan for disturbances less than 10,000 square feet. A stormwater management plan may also be required. For any land disturbing activities equal to one acre or more, you are required to apply for coverage under the VPDES General Permit for Discharges of Storm Water from Construction Activities. The Virginia Stormwater Management Permit Authority may be DEQ or the locality.

Based upon review of the information provided, DEQ's OWSP offers the following general recommendations concerning potential surface water impacts:

1. Prior to commencing project work, all surface waters on the project site should be delineated by a qualified professional and verified by the U.S. Army Corps of Engineers (the Corps) for federal jurisdictional waters and by DEQ for state jurisdictional waters.
2. Wetland and stream impacts should be avoided and minimized to the maximum extent practicable.
3. If the scope of the project changes, additional review will be necessary by one or more offices in the Commonwealth's Secretariat of Natural Resources and/or the Corps.
4. At a minimum, any required compensation for impacts to State Waters, including the compensation for permanent conversion of forested wetlands to emergent wetlands, should be in accordance with all applicable state regulations and laws. Consider mitigating impacts

to forested or converted wetlands by establishing new forested wetlands within the impacted watershed.

5. Any temporary impacts to surface waters associated with this project should be restored to pre-existing conditions.
6. No activity may substantially disrupt the movement of aquatic life indigenous to the water body, including those species, which normally migrate through the area, unless the primary purpose of the activity is to impound water. Culverts placed in streams must be installed to maintain low flow conditions. No activity may cause more than minimal adverse effect on navigation. Furthermore the activity must not impede the passage of normal or expected high flows and the structure or discharge must withstand expected high flows.
7. Erosion and sedimentation controls should be designed in accordance with the Virginia Erosion and Sediment Control Handbook, Third Edition, 1992. These controls should be placed prior to clearing and grading and maintained in good working order to minimize impacts to state waters. These controls should remain in place until the area is stabilized and should then be removed. Any exposed slopes and streambanks should be stabilized immediately upon completion of work in each permitted area. All denuded areas should be properly stabilized in accordance with the Virginia Erosion and Sediment Control Handbook, Third Edition, 1992.
8. No machinery may enter surface waters, unless authorized by a Virginia Water Protection (VWP) individual permit, general permit, or general permit coverage.
9. Heavy equipment in temporarily impacted surface waters should be placed on mats, geotextile fabric, or other suitable material, to minimize soil disturbance to the maximum extent practicable. Equipment and materials should be removed immediately upon completion of work.
10. Activities should be conducted in accordance with any Time-of-Year restriction(s) as recommended by the Department of Game and Inland Fisheries, the Department of Conservation and Recreation, or the Virginia Marine Resources Commission. The permittee should retain a copy of the agency correspondence concerning the Time-of-Year restriction(s), or the lack thereof, for the duration of the construction phase of the project.
11. All construction, construction access, and demolition activities associated with this project should be accomplished in a manner that minimizes construction materials or waste materials from entering surface waters, unless authorized by a Virginia Water Protection (VWP) individual permit, general permit, or general permit coverage. Wet, excess, or waste concrete should be prohibited from entering surface waters.
12. Herbicides used in or around any surface water should be approved for aquatic use by the United States Environmental Protection Agency (EPA) or the U.S. Fish & Wildlife Service. These herbicides should be applied according to label directions by a licensed herbicide applicator. A non-petroleum based surfactant should be used in or around any surface waters.

Permits:
Based on DEQ's review of the EA dated December 2021 provided by CHA Consulting, Inc., the proposed project may require a Virginia Water Protection (VWP) individual permit or general permit coverage. The applicant may submit a Joint Permit Application (JPA) in accordance with form instructions for further evaluation and final permit need determination by DEQ.

DEQ's Division of Land Protection and Revitalization Review and Comments
The Division of Land Protection & Revitalization (DLPR) has completed its review of the Bedford Regional Water Authority's December 3, 2021 Environmental Assessment for Ivy Creek Sewer Interceptor in Bedford County, Virginia.

DLPR staff conducted a search (200 ft. radius) of the project area of solid and hazardous waste databases (including petroleum releases) to identify waste sites in close proximity to the project area. DLPR search did not identify any waste sites within the project area which might impact the project.

DLPR staff has reviewed the submittal and offers the following comments:

Hazardous Waste/RCRA Facilities – none in close proximity to the project areas.

CERCLA Sites – none in close proximity to the project areas.

Formerly Used Defense Sites (FUDS) – none in close proximity to the project areas.

Solid Waste – none in close proximity to the project areas.

Virginia Remediation Program (VRP) – none in close proximity to the project areas.

Petroleum Releases – none in close proximity to the project areas.

Project Specific Comments:
None

General Comments:
Soil, Sediment, Groundwater, and Waste Management. Any soil, sediment or groundwater that is suspected of contamination or wastes that are generated must be tested and disposed of in accordance with applicable Federal, State, and local laws and regulations. Some of the applicable state laws and regulations are: Virginia Waste Management Act, Code of Virginia Section 10.1-1400 *et seq.*; Virginia Hazardous Waste Management Regulations (VHWMR) (9VAC 20-60); Virginia Solid Waste Management Regulations (VSWMR) (9VAC 20-81); Virginia Regulations for the Transportation of Hazardous Materials (9VAC 20-110). Some of the applicable Federal laws and regulations are: the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. Section 6901 *et seq.*, and the applicable regulations contained in Title 40 of the Code of Federal Regulations; and the U.S. Department of Transportation Rules for Transportation of Hazardous Materials, 49 CFR Part 107.

Asbestos and/or Lead-based Paint. Any structures being demolished/renovated/removed should be checked for asbestos-containing materials (ACM) and lead-based paint (LBP) prior to demolition. If ACM or LBP are found, in addition to the federal waste-related regulations mentioned above, State regulations 9VAC 20-81-620 for ACM and 9VAC 20-60-261 for LBP must be followed. Questions may be directed to the DEQ's Blue Ridge Regional Office at (540) 562-6700.

Pollution Prevention – Reuse – Recycling. Please note that DEQ encourages all construction projects and facilities to implement pollution prevention principles, including the reduction, reuse, and recycling of all solid wastes generated. All generation of hazardous wastes should be minimized and handled appropriately.

If you have any questions or need further information, please contact Carlos A. Martinez by phone at (804) 350-9962 or email carlos.martinez@deq.virginia.gov.

DEQ's Office of Air Data Analysis and Planning Review and Comments
State air pollution control board regulations that may apply: 9 VAC 5-130 et seq. – Open Burning and 9 VAC 5-50-60 et seq. – Fugitive Dust Emissions.

If you have any questions, please contact Drew Miller at (540) 759-8410 or by email at richard.miller@deq.virginia.gov.

Sincerely,

Mike Crocker, Regional Team Manager
Clean Water Financing and Assistance Program

cc: Drew Miller, BRRO-CWFAP
Lauren Linville, CO-CWFAP
Lawrence Hoffman, CHA Companies, Inc.

Commonwealth of Virginia

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

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Matthew J. Strickler
Secretary of Natural Resources

David K. Paylor
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Robert J. Weld
Regional Director

May 18, 2021

Ms. Amanda Marsh
CHA Consulting, Inc. **<via email only>**
1341 Research Center Dr., Suite 2100
Blacksburg, VA 24060-5548

RE: Bedford Regional Water Authority – Ivy Creek Interceptor Project

Dear Ms. Marsh:

The Office of Environmental Impact Review is responsible for coordinating the Department of Environmental Quality's (DEQ's) review of environmental documents submitted pursuant to Executive Order 12372, and responding to appropriate local government agencies. As described in your correspondence dated May 11, 2021, the Bedford Regional Water Authority is proposing improvements needed to the BRWA wastewater interceptor system in the Forest and New London areas to eliminate problems associated with the Lake Vista Pump Station. The Ivy Creek Interceptor project includes the decommissioning of the (LVPS) and the construction of approximately 7,500 linear feet of 24 or 30-inch sewer for Division 5 in the City of Lynchburg and 11,000 linear feet of 24 or 30-inch sewer for Division 6 in Bedford County. A metering flume will also be placed at the City of Lynchburg and Bedford County boundary to measure flows conveyed from BRWA.

The DEQ Blue Ridge Regional Office has no objection to this project provided its construction is carried out in strict accordance with all applicable state, federal, and local laws and regulations. Special attention should be given to Items #1, #2, and #13 below. Prior to implementing project construction, all applicable permits and approvals must be obtained. In general, development must incorporate features which prevent significant adverse impacts on ambient air quality, water quality, wetlands, historic structures, fish, wildlife, and species of plants, animals, or insects listed by state agencies as rare, threatened, or endangered.

The following discussion is provided as a guideline of programs administered by the Department of Environmental Quality and other agencies of the Commonwealth, which could be applicable. Final determination concerning potential impacts on these programs rests with the DEQ's Blue Ridge Regional Office and the appropriate agency administering each program. It is the responsibility of the applicant to coordinate development with these agencies.

1. **Water Quality and Wetlands**. Although no long-term adverse impacts to water quality are anticipated from this project, potential short-term adverse impacts resulting from surface runoff due to construction must be minimized. This can be achieved by using Best Management Practices (BMPs).

Federal and state governments regulate impacts to streams and wetlands. The Virginia Marine Resources Commission serves as the clearinghouse for the Joint Permit Application (JPA) used by: (1) U.S. Army Corps of Engineers for issuing permits pursuant to *§ 404 of the Clean Water Act* and *§ 10 of the Rivers and Harbors Act*; (2) Department of Environmental Quality for issuance of Virginia Water Protection Permit pursuant to *§ 401 of the Clean Water Act*, Virginia Code *§ 62.1-44.2 et seq*., Virginia Code *§ 62.1-44.15:5*, and Virginia Administrative Code *9 VAC 25-210-10 et seq*.; (3) Virginia Marine Resources Commission regulates encroachments on or over state-owned subaqueous beds as well as tidal wetlands pursuant to Virginia Code *§28.2-1200* through *1400*; and (4) the local wetlands board for impacts to wetlands. Contact VMRC at (757) 247-2200 to determine the need for a JPA for this project. VMRC will distribute the application to the appropriate agencies. Each agency will conduct its review and respond. Please contact Jeanne Richardson with the USACE at 434-384-0182 or Jeanne.C.Richardson@usace.army.mil for determination of applicability.

In general, DEQ recommends that the amount of stream and wetland impacts be avoided to the maximum extent practicable. For unavoidable impacts, DEQ encourages the following practices to minimize the impacts to wetlands and waterways: use of directional drilling from upland locations; operation of machinery and construction vehicles outside of stream-beds and wetlands; use of synthetic mats when in-stream work is unavoidable; stockpiling of material excavated from the trench for replacement if directional drilling is not feasible; and preservation of the top 12 inches of trench material removed from wetlands for use as wetland seed and root stock in the excavated area.

2. **Erosion and Sediment Control and Storm Water Management**. Non-point source pollution resulting from this project should be minimal provided that effective erosion and sediment control practices and structures are employed. Denuded areas should be vegetated. Erosion and sediment control measures must be implemented in accordance with current erosion and sediment control regulations, which are reflected in the current edition of the Virginia Erosion and Sediment Control Handbook. If the total land disturbance exceeds 10,000 square feet, an erosion and sediment control plan will be required. A storm water management plan may also be required.

Effective 1 July 2013, regulatory oversight of the Erosion and Sediment Control, Virginia Stormwater Management Programs and the Chesapeake Bay Preservation Act has been transferred to DEQ from Department of Conservation and Recreation (DCR). This includes the Virginia Pollutant Discharge Elimination System (VPDES) programs related to municipal separate storm sewer systems (MS4s) and construction activities. As such, DEQ is responsible for the issuance, denial, revocation,

termination and enforcement of VPDES permits for the control of storm water discharges from MS4s and land disturbing activities under the Virginia Storm Water Management Program. Specific questions regarding the Storm Water Management Program requirements should be directed to Jay Roberts, Stormwater and VWP Manager at (540) 562-6785.

3. **Air Quality**. This project is not likely to adversely affect air quality. However, during construction fugitive dust must be kept at a minimum. This requires, but is not limited to, measures such as application of water to suppress dust and washing down construction vehicles and paved roadways immediately adjacent to the construction site. The following sections of Virginia Administrative Code (VAC) may be applicable: *9 VAC 5-50-60 et. seq.*, governs abatement of visible emissions and fugitive dust emissions, and *9 VAC 5-40-5600 et. seq.* addresses open burning. For additional information, please contact Frank Adams, Air Compliance Manager, at (540) 562-6773.

4. **Solid and Hazardous Wastes, and Hazardous Substances.** DEQ administers the Virginia Solid Waste Management Regulations and the Virginia Hazardous Waste Management Regulations. We recommend that all solid wastes generated at the site be reduced at the source, reused, or recycled. All hazardous wastes should be minimized. Otherwise, all solid waste, hazardous waste, and hazardous material must be managed in accordance with all applicable federal, state, and local environmental regulations. Contact Nikki Herschler, BRRO Land Protection Manager, at (540) 562-6851, concerning location and availability of waste management facilities in the project area.

5. **10 Day Notification for Demolition Work, Lead-Based Paint (LBP), Asbestos-Containing Materials (ACM) and National Emissions Standards for Hazardous Air Pollutants (NESHAPS).** The Virginia Department of Labor and Industry (DOLI) regulates asbestos and lead paint abatement and removal through enforcement of the Virginia Occupational Safety and Health (VOSH) regulations, enforcement of the Environmental Protection Agency's National Emission Standards for Hazardous Air Pollutants (NESHAPS), and enforcement of the Asbestos Notification regulations found in the Labor Laws of Virginia (§40.1-51.20).

Under Virginia regulations, 10 Day Notifications to DOLI are required for **all** demolition projects, regardless of a structure's size or purpose and whether asbestos containing materials are or are not present in the structure. An owner or operator planning the abatement or removal of ACM must notify the Virginia DOLI at least 10 days prior to start of removal/abatement activities.

For more information/assistance with regulations, making a 10 Day Notification or locating qualified testing firms and abatement contractors, contact the Department of Labor and Industry, Doug Wiggins, Health Compliance Officer Senior, Asbestos/Lead, at 540-562-3580, ext. 131.

6. **Pesticides and Herbicides**. DEQ recommends that the use of herbicides or pesticides for construction or landscape maintenance should be in accordance with the principles of integrated pest management. The least toxic pesticides that are effective in controlling the target species should be used. Please contact the Department of Agriculture and Consumer Services, Office of Pesticide Services at (804) 371-6558 for more information.

7. **Pollution Prevention**. DEQ recommends that construction projects incorporate the principles of pollution prevention including the following recommendations:

- Consider environmental attributes when purchasing materials. For example, the extent of recycled material content and toxicity level should be considered.
- Consider contractors' commitments to the environment when choosing contractors. Also, specifications regarding raw material selection (alternative fuels and energy sources) and construction practices can be included in contract documents and requests for proposals.
- Choose sustainable practices and materials in infrastructure and construction and design. These could include asphalt and concrete containing recycled materials and integrated pest management in landscaping.
- Integrate pollution prevention techniques into maintenance and operation activities to include source reduction (fixing leaks, energy efficient products).

Pollution prevention measures are likely to reduce potential environmental impacts and reduce costs for material purchasing and waste disposal. For more information, contact DEQ's Office of Pollution Prevention, Ms. Sharon Baxter at (804) 698-4344.

8. **Energy Conservation**. The structure should be planned and designed to comply with state and federal guidelines and industry standards for energy conservation and efficiency. For example, energy efficiency of the structures can be enhanced by maximizing the use of the following:

- thermally-efficient building shell components (roof, wall, floor, and insulation);
- high efficiency heating, ventilation, air conditioning systems; and
- high efficiency lighting systems.

The Department of Mines, Minerals and Energy should be contacted for assistance in meeting this challenge. Point-of-contact is Matt Heller at (434) 951-6351 or matt.heller@dmme.virginia.gov.

9. **Natural Heritage Resources**. The Department of Conservation and Recreation's Division of Natural Heritage (DNH) can search its Biotics Data System (BDS) 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 animal and plant species, unique or exemplary natural communities, and significant geologic communities.

Under a Memorandum of Agreement established between the Virginia Department of Agriculture and Consumer Services (VDACS) and the Department of Conservation and Recreation (DCR), DCR has the authority to report for VDACS on state-listed plant and insect species. We recommend that the DNH be contacted at (804) 786-7951, to secure updated information on natural heritage resources before the project is implemented.

10. **Wildlife Resources**. The Department of Game and Inland Fisheries (DGIF), as the Commonwealth's wildlife and freshwater fish management agency, exercises enforcement and regulatory jurisdiction over wildlife and freshwater fish, including state or federally listed endangered or threatened species, but excluding listed insects (*Virginia Code* Title 29.1). DGIF is a

consulting agency under the U.S. Fish and Wildlife Coordination Act (16 U.S.C. sections 661 *et seq*.), and provides environmental analysis of projects or permit applications coordinated through DEQ and several other state and federal agencies. DGIF determines likely impacts upon fish and wildlife resources and habitat, and recommends appropriate measures to avoid, reduce, or compensate for those impacts. For more information, see the DGIF website at www.dgif.state.va.us or contact Gladys Cason at (804) 367-0909.

11. **Historic and Archaeological Resources.** *Section 106 of the National Historic and Preservation Act of 1966*, as amended, requires that activities that receive federal funding must consider effects to properties that are listed or eligible for listing on the National Register of Historic Places. The Department of Historic Resources (DHR) conducts reviews of projects to determine their effect on historic structures or cultural resources. If applicable, contact Roger Kirchen at (804) 482-6091.

In the event that archaeological resources are encountered during construction, stop work immediately and contact DHR at (804) 367-2323.

12. **Waterworks Operation**. Installation of new water lines and appurtenances must comply with the State's Waterworks Regulations. The Virginia Department of Health administers both federal and state laws governing waterworks operation. For more information, contact the Department of Health, Office of Drinking Water, Susan Douglas, P.E. at (804) 864-7490.

13. **Sewerage Regulations**. DEQ has approval authority over plans and specifications for sewage collection systems and treatment works. This authority is contained in the Sewage Collection and Treatment (SCAT) Regulations (12 VAC 5-581). Plans and specifications for actions related to this project may require submission for review and approval. For additional information and coordination, contact Mr. Kip Foster at Kip.Foster@deq.virginia.gov or (540) 562-6782.

Thank you for your inquiry. We appreciate your interest in complying with Virginia's environmental legislation. If you have any further questions please do not hesitate to contact me at (540) 562-6788 or Kevin.Harlow@deq.virginia.gov.

Sincerely,

Kevin A. Harlow
Regional EIR Coordinator

APPENDIX C

WEB SOIL SURVEY REPORT

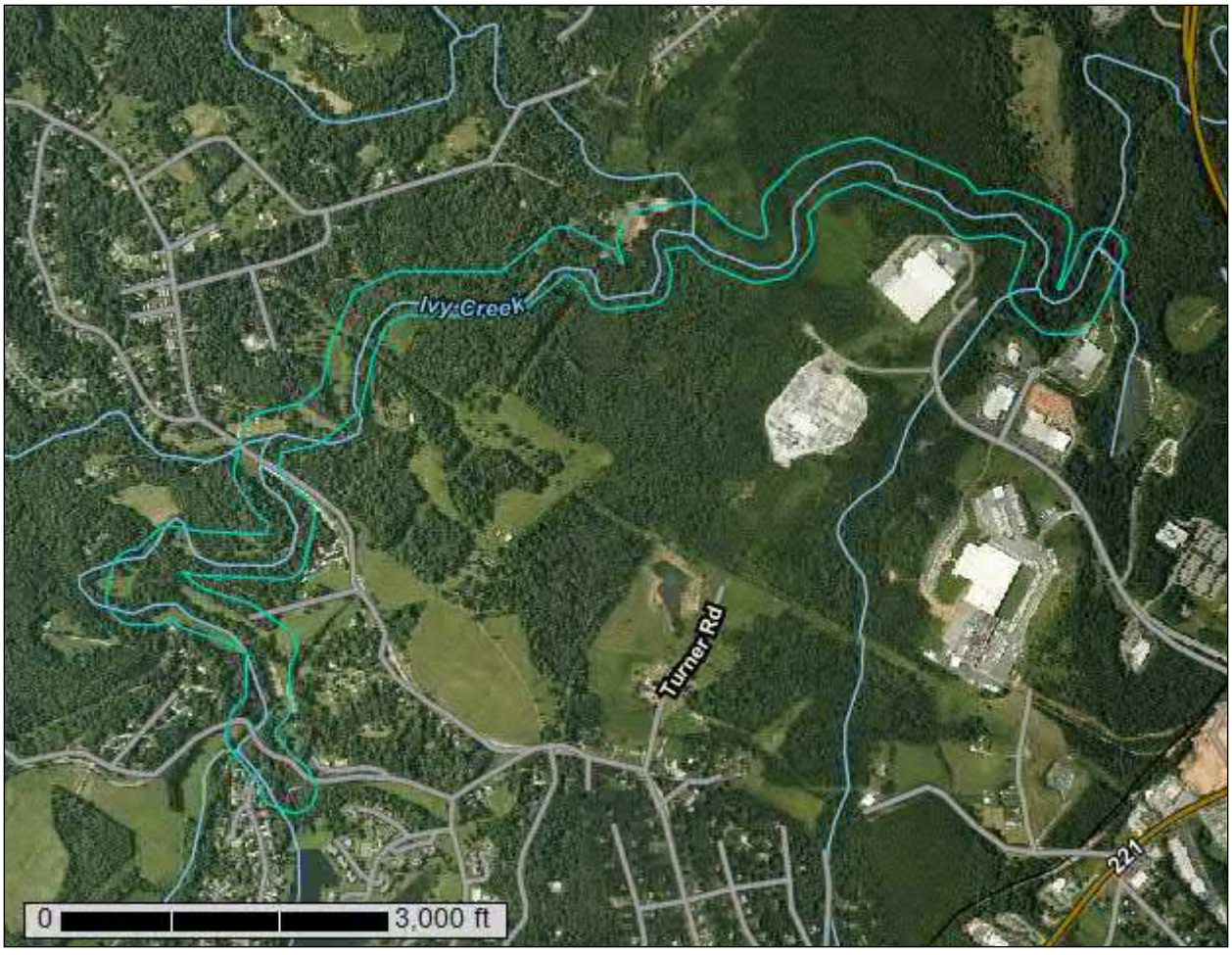
United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Bedford County, Virginia, and Campbell County and the City of Lynchburg, Virginia



February 17, 2021

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

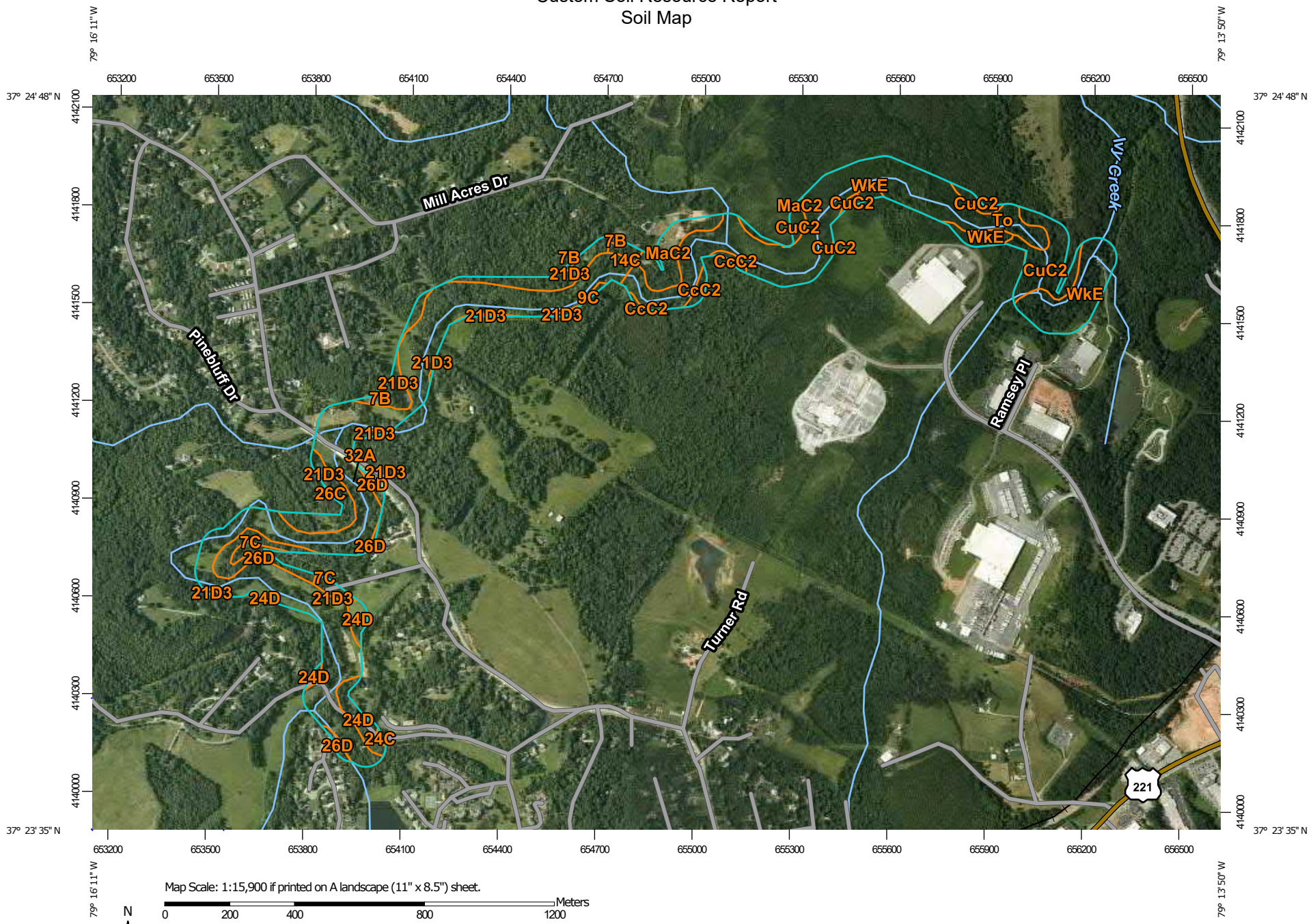
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at scales ranging from 1:15,800 to 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Bedford County, Virginia
Survey Area Data: Version 16, Jun 3, 2020

Soil Survey Area: Campbell County and the City of Lynchburg, Virginia
Survey Area Data: Version 15, Jun 15, 2020

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Dec 1, 2018—Jan 18, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND

MAP INFORMATION

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
7B	Clifford fine sandy loam, 2 to 7 percent slopes	0.3	0.2%
7C	Clifford fine sandy loam, 7 to 15 percent slopes	1.0	0.6%
9C	Minnieville loam, 7 to 15 percent slopes	0.3	0.2%
14C	Huddleston fine sandy loam, 7 to 15 percent slopes	0.9	0.6%
21D3	Poplar Forest sandy clay loam, 15 to 25 percent slopes, severely eroded	15.2	9.5%
24C	Oak Level loam, 7 to 15 percent slopes	0.2	0.1%
24D	Oak Level loam, 15 to 25 percent slopes	4.7	2.9%
26C	Spriggs fine sandy loam, 7 to 15 percent slopes	0.1	0.1%
26D	Spriggs fine sandy loam, 15 to 25 percent slopes	5.9	3.6%
32A	Colvard sandy loam, 0 to 2 percent slopes, frequently flooded	63.2	39.3%
Subtotals for Soil Survey Area		**91.7**	**57.1%**
Totals for Area of Interest		**160.7**	**100.0%**

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
CcC2	Cecil fine sandy loam, 6 to 15 percent slopes, eroded	1.8	1.1%
CuB	Cullen loam, 2 to 6 percent slopes	0.0	0.0%
CuC2	Cullen loam, 6 to 15 percent slopes, eroded	11.1	6.9%
MaC2	Madison loam, 6 to 15 percent slopes, eroded	5.8	3.6%
To	Toccoa fine sandy loam	37.5	23.3%
WkE	Wilkes loam, 15 to 25 percent slopes	12.8	8.0%
Subtotals for Soil Survey Area		**69.0**	**42.9%**
Totals for Area of Interest		**160.7**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas

shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Bedford County, Virginia

7B—Clifford fine sandy loam, 2 to 7 percent slopes

Map Unit Setting

National map unit symbol: 2xx5x
Elevation: 200 to 1,400 feet
Mean annual precipitation: 23 to 59 inches
Mean annual air temperature: 45 to 64 degrees F
Frost-free period: 168 to 222 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Clifford and similar soils: 80 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Clifford

Setting

Landform: Hillslopes
Landform position (two-dimensional): Shoulder, summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from granite and gneiss

Typical profile

A - 0 to 6 inches: fine sandy loam
E - 6 to 9 inches: sandy clay loam
Bt - 9 to 56 inches: clay
C - 56 to 79 inches: loam

Properties and qualities

Slope: 2 to 7 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 8.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Hydric soil rating: No

7C—Clifford fine sandy loam, 7 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2vy6s
Elevation: 160 to 1,310 feet
Mean annual precipitation: 37 to 51 inches
Mean annual air temperature: 54 to 57 degrees F
Frost-free period: 180 to 225 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Clifford and similar soils: 95 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Clifford

Setting

Landform: Interfluves
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from mica schist residuum weathered from granite and gneiss

Typical profile

A - 0 to 6 inches: fine sandy loam
Bt - 6 to 42 inches: clay
BC - 42 to 56 inches: clay loam
C - 56 to 72 inches: loam

Properties and qualities

Slope: 7 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 7.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Hydric soil rating: No

9C—Minnieville loam, 7 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2xx60
Elevation: 300 to 1,200 feet
Mean annual precipitation: 23 to 59 inches
Mean annual air temperature: 45 to 64 degrees F
Frost-free period: 168 to 222 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Minnieville and similar soils: 75 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Minnieville

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Mixed mafic residuum weathered from hornblende gneiss

Typical profile

A - 0 to 9 inches: loam
Bt1 - 9 to 50 inches: clay
Bt2 - 50 to 55 inches: clay
C - 55 to 79 inches: clay loam

Properties and qualities

Slope: 7 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 7.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Hydric soil rating: No

14C—Huddleston fine sandy loam, 7 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2xx62
Elevation: 540 to 1,360 feet
Mean annual precipitation: 23 to 59 inches
Mean annual air temperature: 45 to 64 degrees F
Frost-free period: 168 to 222 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Huddleston and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Huddleston

Setting

Landform: Hillslopes
Landform position (two-dimensional): Shoulder, summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from mica schist

Typical profile

A - 0 to 9 inches: fine sandy loam
Bt - 9 to 36 inches: sandy clay loam
C - 36 to 79 inches: sandy loam

Properties and qualities

Slope: 7 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 7.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Hydric soil rating: No

21D3—Poplar Forest sandy clay loam, 15 to 25 percent slopes, severely eroded

Map Unit Setting

National map unit symbol: 2xx6b
Elevation: 540 to 1,360 feet
Mean annual precipitation: 23 to 59 inches
Mean annual air temperature: 45 to 64 degrees F
Frost-free period: 168 to 222 days
Farmland classification: Not prime farmland

Map Unit Composition

Poplar forest, severely eroded, and similar soils: 75 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Poplar Forest, Severely Eroded

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Residuum weathered from mica schist

Typical profile

Ap - 0 to 7 inches: sandy clay loam
Bt - 7 to 25 inches: clay
BC - 25 to 30 inches: loam
C - 30 to 79 inches: sandy loam

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 8.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: B
Hydric soil rating: No

24C—Oak Level loam, 7 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2xx6k
Elevation: 540 to 1,360 feet
Mean annual precipitation: 23 to 59 inches
Mean annual air temperature: 45 to 64 degrees F
Frost-free period: 168 to 222 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Oak level and similar soils: 75 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Oak Level

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Mixed mafic residuum weathered from hornblende gneiss

Typical profile

Ap - 0 to 5 inches: loam
Bt - 5 to 17 inches: clay
BC - 17 to 26 inches: clay loam
C - 26 to 79 inches: fine sandy loam

Properties and qualities

Slope: 7 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 8.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Hydric soil rating: No

24D—Oak Level loam, 15 to 25 percent slopes

Map Unit Setting

National map unit symbol: 2xx6l
Elevation: 540 to 1,360 feet
Mean annual precipitation: 23 to 59 inches
Mean annual air temperature: 45 to 64 degrees F
Frost-free period: 168 to 222 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Oak level and similar soils: 80 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Oak Level

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Mixed mafic residuum weathered from hornblende gneiss

Typical profile

Ap - 0 to 5 inches: loam
Bt - 5 to 17 inches: clay
BC - 17 to 26 inches: clay loam
C - 26 to 79 inches: fine sandy loam

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 8.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Hydric soil rating: No

26C—Spriggs fine sandy loam, 7 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2xx6q
Elevation: 540 to 1,360 feet
Mean annual precipitation: 23 to 59 inches
Mean annual air temperature: 45 to 64 degrees F
Frost-free period: 168 to 222 days
Farmland classification: Not prime farmland

Map Unit Composition

Spriggs and similar soils: 75 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Spriggs

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Mixed mafic residuum weathered from hornblende gneiss

Typical profile

A - 0 to 9 inches: fine sandy loam
Bt - 9 to 22 inches: sandy clay loam
Cr - 22 to 41 inches: fine sandy loam
R - 41 to 79 inches: bedrock

Properties and qualities

Slope: 7 to 15 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock; 40 to 60 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 3.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Hydric soil rating: No

26D—Spriggs fine sandy loam, 15 to 25 percent slopes

Map Unit Setting

National map unit symbol: 2xx6r
Elevation: 540 to 1,360 feet
Mean annual precipitation: 23 to 59 inches
Mean annual air temperature: 45 to 64 degrees F
Frost-free period: 168 to 222 days
Farmland classification: Not prime farmland

Map Unit Composition

Spriggs and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Spriggs

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Mixed mafic residuum weathered from hornblende gneiss

Typical profile

A - 0 to 9 inches: fine sandy loam
Bt - 9 to 22 inches: sandy clay loam
Cr - 22 to 41 inches: fine sandy loam
R - 41 to 79 inches: bedrock

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock; 40 to 60 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 3.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Hydric soil rating: No

32A—Colvard sandy loam, 0 to 2 percent slopes, frequently flooded

Map Unit Setting

National map unit symbol: 2xx70
Elevation: 470 to 1,500 feet
Mean annual precipitation: 23 to 59 inches
Mean annual air temperature: 45 to 67 degrees F
Frost-free period: 168 to 222 days
Farmland classification: Prime farmland if protected from flooding or not frequently flooded during the growing season

Map Unit Composition

Colvard, frequently flooded, and similar soils: 80 percent
Minor components: 8 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Colvard, Frequently Flooded

Setting

Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from igneous and metamorphic rock

Typical profile

A - 0 to 7 inches: sandy loam
C - 7 to 79 inches: sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: About 36 to 60 inches
Frequency of flooding: FrequentNone
Frequency of ponding: None
Available water capacity: Moderate (about 6.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Hatboro, frequently flooded

Percent of map unit: 8 percent
Landform: Flood plains

Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Campbell County and the City of Lynchburg, Virginia

CcC2—Cecil fine sandy loam, 6 to 15 percent slopes, eroded

Map Unit Setting

National map unit symbol: 41kz
Elevation: 200 to 1,400 feet
Mean annual precipitation: 34 to 52 inches
Mean annual air temperature: 46 to 67 degrees F
Frost-free period: 180 to 220 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Cecil and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cecil

Setting

Landform: Hillslopes
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from granite and gneiss

Typical profile

H1 - 0 to 5 inches: fine sandy loam
H2 - 5 to 44 inches: clay
H3 - 44 to 86 inches: loam

Properties and qualities

Slope: 6 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 8.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Hydric soil rating: No

CuB—Cullen loam, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 41l8
Elevation: 300 to 1,200 feet
Mean annual precipitation: 34 to 52 inches
Mean annual air temperature: 46 to 67 degrees F
Frost-free period: 180 to 220 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Cullen and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cullen

Setting

Landform: Hillslopes
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Mixed mafic residuum

Typical profile

H1 - 0 to 5 inches: loam
H2 - 5 to 36 inches: clay
H3 - 36 to 53 inches: clay loam
H4 - 53 to 68 inches: loam

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 8.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Hydric soil rating: No

CuC2—Cullen loam, 6 to 15 percent slopes, eroded

Map Unit Setting

National map unit symbol: 41l9
Elevation: 300 to 1,200 feet
Mean annual precipitation: 34 to 52 inches
Mean annual air temperature: 46 to 67 degrees F
Frost-free period: 180 to 220 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Cullen and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cullen

Setting

Landform: Hillslopes
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Mixed mafic residuum

Typical profile

H1 - 0 to 5 inches: loam
H2 - 5 to 36 inches: clay
H3 - 36 to 53 inches: clay loam
H4 - 53 to 68 inches: loam

Properties and qualities

Slope: 6 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 8.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Hydric soil rating: No

MaC2—Madison loam, 6 to 15 percent slopes, eroded

Map Unit Setting

National map unit symbol: 41mf
Elevation: 480 to 1,030 feet
Mean annual precipitation: 34 to 52 inches
Mean annual air temperature: 46 to 67 degrees F
Frost-free period: 180 to 220 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Madison and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Madison

Setting

Landform: Hillslopes
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from mica schist

Typical profile

H1 - 0 to 8 inches: loam
H2 - 8 to 20 inches: clay
H3 - 20 to 48 inches: loam
H4 - 48 to 58 inches: bedrock

Properties and qualities

Slope: 6 to 15 percent
Depth to restrictive feature: 36 to 60 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to low (0.00 to 0.01 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 6.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Hydric soil rating: No

To—Toccoa fine sandy loam

Map Unit Setting

National map unit symbol: 41ns
Elevation: 470 to 1,500 feet
Mean annual precipitation: 34 to 52 inches
Mean annual air temperature: 46 to 67 degrees F
Frost-free period: 180 to 220 days
Farmland classification: Not prime farmland

Map Unit Composition

Toccoa and similar soils: 85 percent
Minor components: 7 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Toccoa

Setting

Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

H1 - 0 to 23 inches: fine sandy loam
H2 - 23 to 64 inches: fine sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: About 36 to 60 inches
Frequency of flooding: OccasionalFrequent
Frequency of ponding: None
Available water capacity: Moderate (about 6.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Chewacla

Percent of map unit: 4 percent
Landform: Flood plains
Landform position (three-dimensional): Tread

Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Frequently flooded soills
Percent of map unit: 3 percent
Landform: Flood plains
Hydric soil rating: Yes

WkE—Wilkes loam, 15 to 25 percent slopes

Map Unit Setting
National map unit symbol: 41pf
Elevation: 380 to 970 feet
Mean annual precipitation: 34 to 52 inches
Mean annual air temperature: 46 to 67 degrees F
Frost-free period: 180 to 220 days
Farmland classification: Farmland of statewide importance

Map Unit Composition
Wilkes and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wilkes

Setting
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Mixed mafic residuum

Typical profile
H1 - 0 to 4 inches: loam
H2 - 4 to 11 inches: clay
H3 - 11 to 29 inches: loam
H4 - 29 to 39 inches: bedrock

Properties and qualities
Slope: 15 to 25 percent
Depth to restrictive feature: 20 to 48 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to low (0.00 to 0.01 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 4.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C
Hydric soil rating: No

Soil Information for All Uses

Suitabilities and Limitations for Use

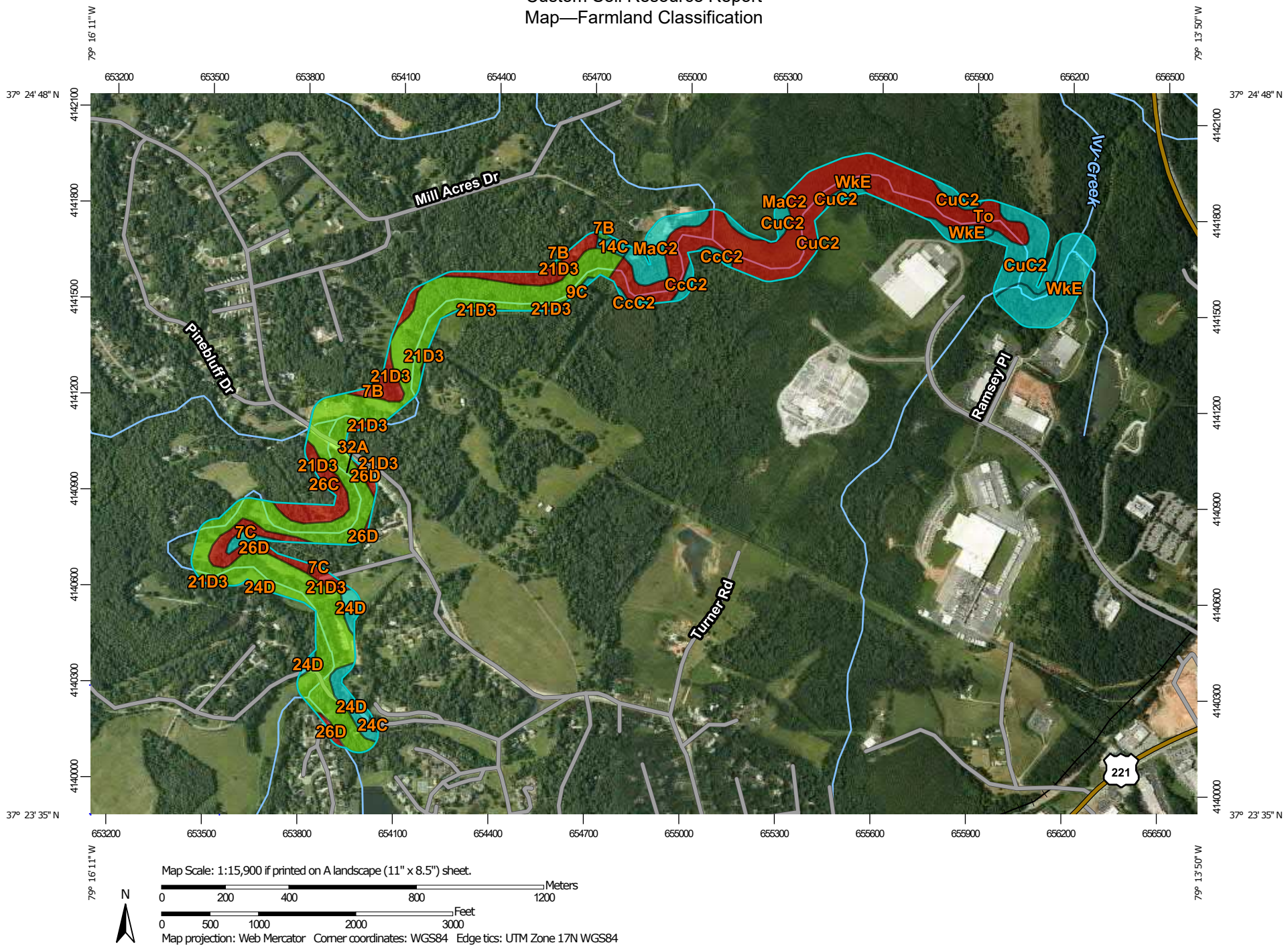
The Suitabilities and Limitations for Use section includes various soil interpretations displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each interpretation.

Land Classifications

Land Classifications are specified land use and management groupings that are assigned to soil areas because combinations of soil have similar behavior for specified practices. Most are based on soil properties and other factors that directly influence the specific use of the soil. Example classifications include ecological site classification, farmland classification, irrigated and nonirrigated land capability classification, and hydric rating.

Farmland Classification

Farmland classification identifies map units as prime farmland, farmland of statewide importance, farmland of local importance, or unique farmland. It identifies the location and extent of the soils that are best suited to food, feed, fiber, forage, and oilseed crops. NRCS policy and procedures on prime and unique farmlands are published in the "Federal Register," Vol. 43, No. 21, January 31, 1978.


79° 16' 11" W
79° 13' 50" W
37° 24' 48" N
37° 23' 35" N
653200
653500
653800
654100
654400
654700
655000
655300
655600
655900
656200
656500
4142100
4141800
4141500
4141200
4140900
4140600
4140300
4140000
Mill Acres Dr
Pinebluff Dr
Ivy Creek
Ramsey Pl
Turner Rd
221
WkE
MaC2
CuC2
To
7B
14C
21D3
9C
CcC2
32A
26C
26D
7C
24D
24C
Map Scale: 1:15,900 if printed on A landscape (11" x 8.5") sheet.
N
Meters
0 200 400 800 1200
Feet
0 500 1000 2000 3000
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

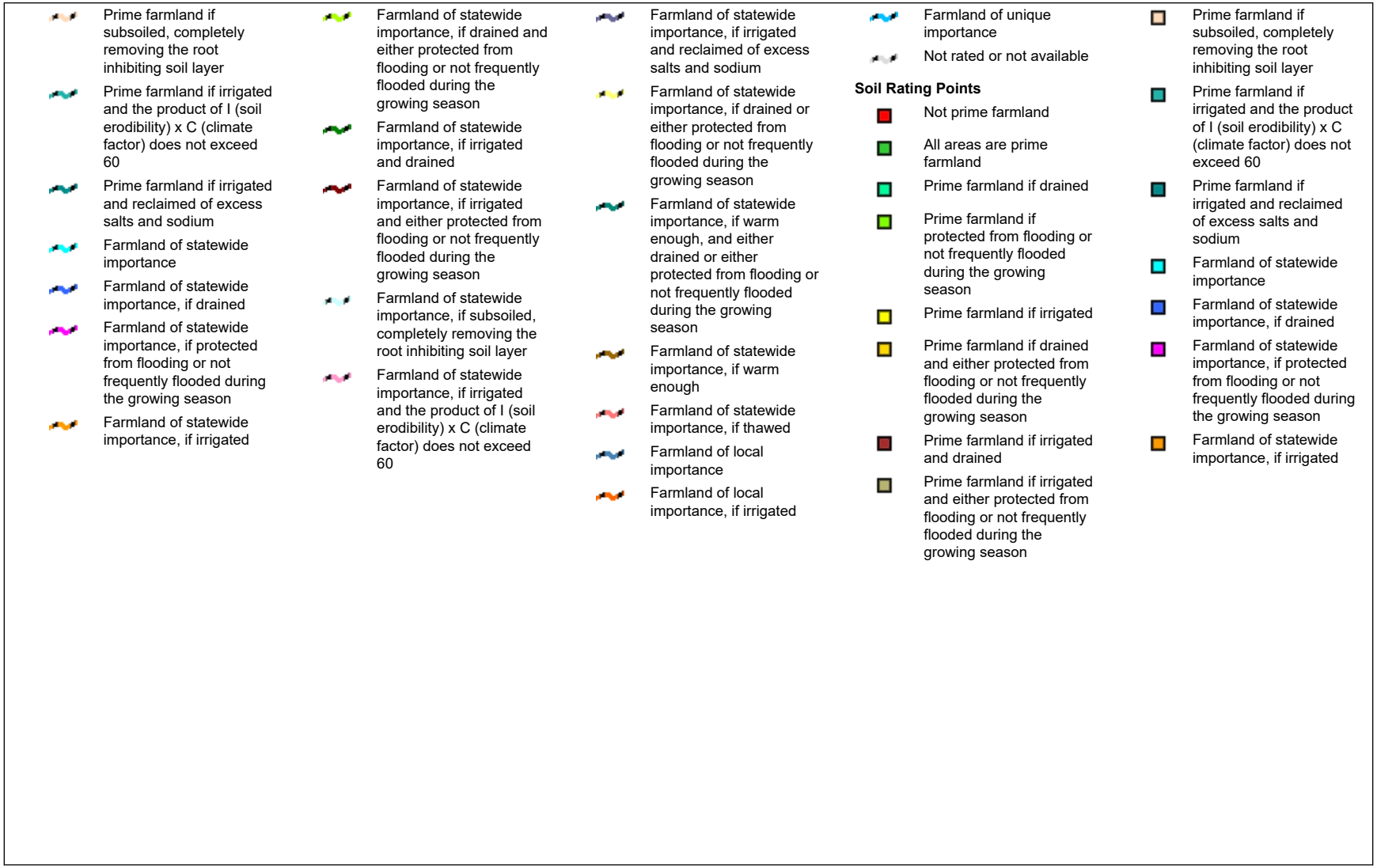
Soils

Soil Rating Polygons

- Not prime farmland
- All areas are prime farmland
- Prime farmland if drained
- Prime farmland if protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated and drained
- Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if subsoiled, completely removing the root inhibiting soil layer
- Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Prime farmland if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance
- Farmland of statewide importance, if drained
- Farmland of statewide importance, if protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if irrigated
- Farmland of statewide importance, if drained and either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if irrigated and drained
- Farmland of statewide importance, if irrigated and either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if subsoiled, completely removing the root inhibiting soil layer
- Farmland of statewide importance, if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Farmland of statewide importance, if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance, if drained or either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if warm enough, and either drained or either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if warm enough
- Farmland of statewide importance, if thawed
- Farmland of local importance
- Farmland of local importance, if irrigated
- Farmland of unique importance
- Not rated or not available

Soil Rating Lines

- Not prime farmland
- All areas are prime farmland
- Prime farmland if drained
- Prime farmland if protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated and drained
- Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season


Prime farmland if subsoiled, completely removing the root inhibiting soil layer
Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
Prime farmland if irrigated and reclaimed of excess salts and sodium
Farmland of statewide importance
Farmland of statewide importance, if drained
Farmland of statewide importance, if protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if irrigated
Farmland of statewide importance, if drained and either protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if irrigated and drained
Farmland of statewide importance, if irrigated and either protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if subsoiled, completely removing the root inhibiting soil layer
Farmland of statewide importance, if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
Farmland of statewide importance, if irrigated and reclaimed of excess salts and sodium
Farmland of statewide importance, if drained or either protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if warm enough, and either drained or either protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if warm enough
Farmland of statewide importance, if thawed
Farmland of local importance
Farmland of local importance, if irrigated
Farmland of unique importance
Not rated or not available
Soil Rating Points
Not prime farmland
All areas are prime farmland
Prime farmland if drained
Prime farmland if protected from flooding or not frequently flooded during the growing season
Prime farmland if irrigated
Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
Prime farmland if irrigated and drained
Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
Prime farmland if subsoiled, completely removing the root inhibiting soil layer
Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
Prime farmland if irrigated and reclaimed of excess salts and sodium
Farmland of statewide importance
Farmland of statewide importance, if drained
Farmland of statewide importance, if protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if irrigated

- Farmland of statewide importance, if drained and either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if irrigated and drained
- Farmland of statewide importance, if irrigated and either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if subsoiled, completely removing the root inhibiting soil layer
- Farmland of statewide importance, if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Farmland of statewide importance, if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance, if drained or either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if warm enough, and either drained or either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if warm enough
- Farmland of statewide importance, if thawed
- Farmland of local importance
- Farmland of local importance, if irrigated
- Farmland of unique importance
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

The soil surveys that comprise your AOI were mapped at scales ranging from 1:15,800 to 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Bedford County, Virginia
Survey Area Data: Version 16, Jun 3, 2020

Soil Survey Area: Campbell County and the City of Lynchburg, Virginia
Survey Area Data: Version 15, Jun 15, 2020

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Dec 1, 2018—Jan 18, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Farmland Classification

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
7B	Clifford fine sandy loam, 2 to 7 percent slopes	All areas are prime farmland	0.3	0.2%
7C	Clifford fine sandy loam, 7 to 15 percent slopes	Farmland of statewide importance	1.0	0.6%
9C	Minnieville loam, 7 to 15 percent slopes	Farmland of statewide importance	0.3	0.2%
14C	Huddleston fine sandy loam, 7 to 15 percent slopes	Farmland of statewide importance	0.9	0.6%
21D3	Poplar Forest sandy clay loam, 15 to 25 percent slopes, severely eroded	Not prime farmland	15.2	9.5%
24C	Oak Level loam, 7 to 15 percent slopes	Farmland of statewide importance	0.2	0.1%
24D	Oak Level loam, 15 to 25 percent slopes	Farmland of statewide importance	4.7	2.9%
26C	Spriggs fine sandy loam, 7 to 15 percent slopes	Not prime farmland	0.1	0.1%
26D	Spriggs fine sandy loam, 15 to 25 percent slopes	Not prime farmland	5.9	3.6%
32A	Colvard sandy loam, 0 to 2 percent slopes, frequently flooded	Prime farmland if protected from flooding or not frequently flooded during the growing season	63.2	39.3%
Subtotals for Soil Survey Area			**91.7**	**57.1%**
Totals for Area of Interest			**160.7**	**100.0%**

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
CcC2	Cecil fine sandy loam, 6 to 15 percent slopes, eroded	Farmland of statewide importance	1.8	1.1%
CuB	Cullen loam, 2 to 6 percent slopes	All areas are prime farmland	0.0	0.0%
CuC2	Cullen loam, 6 to 15 percent slopes, eroded	Farmland of statewide importance	11.1	6.9%
MaC2	Madison loam, 6 to 15 percent slopes, eroded	Farmland of statewide importance	5.8	3.6%
To	Toccoa fine sandy loam	Not prime farmland	37.5	23.3%
WkE	Wilkes loam, 15 to 25 percent slopes	Farmland of statewide importance	12.8	8.0%
Subtotals for Soil Survey Area			**69.0**	**42.9%**
Totals for Area of Interest			**160.7**	**100.0%**

Rating Options—Farmland Classification

Aggregation Method: No Aggregation Necessary

Tie-break Rule: Lower

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APPENDIX D

CENSUS AND ENVIRONMENTAL JUSTICE DOCUMENTATION

United States Census Bureau

QuickFacts

Bedford County, Virginia

QuickFacts provides statistics for all states and counties, and for cities and towns with a ***population of 5,000 or more***.

Table

All Topics	Bedford County, Virginia
Population estimates, July 1, 2019, (V2019)	**78,997**
PEOPLE	
Population	
Population estimates, July 1, 2019, (V2019)	**78,997**
Population estimates base, April 1, 2010, (V2019)	74,929
Population, percent change - April 1, 2010 (estimates base) to July 1, 2019, (V2019)	5.4%
Population, Census, April 1, 2010	68,676
Age and Sex	
Persons under 5 years, percent	⚠ 4.6%
Persons under 18 years, percent	⚠ 19.7%
Persons 65 years and over, percent	⚠ 21.8%
Female persons, percent	⚠ 50.8%
Race and Hispanic Origin	
White alone, percent	⚠ 89.6%
Black or African American alone, percent (a)	⚠ 7.2%
American Indian and Alaska Native alone, percent (a)	⚠ 0.4%
Asian alone, percent (a)	⚠ 1.2%
Native Hawaiian and Other Pacific Islander alone, percent (a)	⚠ Z
Two or More Races, percent	⚠ 1.6%
Hispanic or Latino, percent (b)	⚠ 2.4%
White alone, not Hispanic or Latino, percent	⚠ 87.6%
Population Characteristics	
Veterans, 2015-2019	6,607
Foreign born persons, percent, 2015-2019	2.9%
Housing	
Housing units, July 1, 2019, (V2019)	37,040
Owner-occupied housing unit rate, 2015-2019	82.1%
Median value of owner-occupied housing units, 2015-2019	$201,900
Median selected monthly owner costs -with a mortgage, 2015-2019	$1,303
Median selected monthly owner costs -without a mortgage, 2015-2019	$348
Median gross rent, 2015-2019	$855
Building permits, 2019	53
Families & Living Arrangements	
Households, 2015-2019	31,317
Persons per household, 2015-2019	2.49
Living in same house 1 year ago, percent of persons age 1 year+, 2015-2019	87.0%
Language other than English spoken at home, percent of persons age 5 years+, 2015-2019	4.4%
Computer and Internet Use	
Households with a computer, percent, 2015-2019	86.8%
Households with a broadband Internet subscription, percent, 2015-2019	76.1%
Education	
High school graduate or higher, percent of persons age 25 years+, 2015-2019	90.0%
Bachelor's degree or higher, percent of persons age 25 years+, 2015-2019	29.2%
Health	
With a disability, under age 65 years, percent, 2015-2019	9.7%
Persons without health insurance, under age 65 years, percent	⚠ 10.3%
Economy	
In civilian labor force, total, percent of population age 16 years+, 2015-2019	59.3%
In civilian labor force, female, percent of population age 16 years+, 2015-2019	53.3%
Total accommodation and food services sales, 2012 ($1,000) (c)	28,890
Total health care and social assistance receipts/revenue, 2012 ($1,000) (c)	82,397
	D

Total manufacturers shipments, 2012 ($1,000) (c)	
Total merchant wholesaler sales, 2012 ($1,000) (c)	265,148
Total retail sales, 2012 ($1,000) (c)	521,240
Total retail sales per capita, 2012 (c)	$7,490
Transportation	
Mean travel time to work (minutes), workers age 16 years+, 2015-2019	27.2
Income & Poverty	
Median household income (in 2019 dollars), 2015-2019	$64,199
Per capita income in past 12 months (in 2019 dollars), 2015-2019	$33,678
Persons in poverty, percent	⚠ 8.6%

BUSINESSES

Businesses	
Total employer establishments, 2018	1,726
Total employment, 2018	16,305
Total annual payroll, 2018 ($1,000)	621,971
Total employment, percent change, 2017-2018	4.7%
Total nonemployer establishments, 2018	5,506
All firms, 2012	4,688
Men-owned firms, 2012	2,592
Women-owned firms, 2012	1,385
Minority-owned firms, 2012	311
Nonminority-owned firms, 2012	4,257
Veteran-owned firms, 2012	567
Nonveteran-owned firms, 2012	3,799

GEOGRAPHY

Geography	
Population per square mile, 2010	91.2
Land area in square miles, 2010	753.02
FIPS Code	51019

About datasets used in this table

Value Notes

⚠ Estimates are not comparable to other geographic levels due to methodology differences that may exist between different data sources.

Some estimates presented here come from sample data, and thus have sampling errors that may render some apparent differences between geographies statistically indistinguishable. Click the Quick Info ⓘ icon to th row in TABLE view to learn about sampling error.

The vintage year (e.g., V2019) refers to the final year of the series (2010 thru 2019). *Different vintage years of estimates are not comparable.*

Fact Notes

(a) Includes persons reporting only one race
(c) Economic Census - Puerto Rico data are not comparable to U.S. Economic Census data
(b) Hispanics may be of any race, so also are included in applicable race categories

Value Flags

- Either no or too few sample observations were available to compute an estimate, or a ratio of medians cannot be calculated because one or both of the median estimates falls in the lowest or upper in open ended distribution.
F Fewer than 25 firms
D Suppressed to avoid disclosure of confidential information
N Data for this geographic area cannot be displayed because the number of sample cases is too small.
FN Footnote on this item in place of data
X Not applicable
S Suppressed; does not meet publication standards
NA Not available
Z Value greater than zero but less than half unit of measure shown

QuickFacts data are derived from: Population Estimates, American Community Survey, Census of Population and Housing, Current Population Survey, Small Area Health Insurance Estimates, Small Area Income and P Estimates, State and County Housing Unit Estimates, County Business Patterns, Nonemployer Statistics, Economic Census, Survey of Business Owners, Building Permits.

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People of Color Population

2/17/2021

EJSCREEN_Indexes

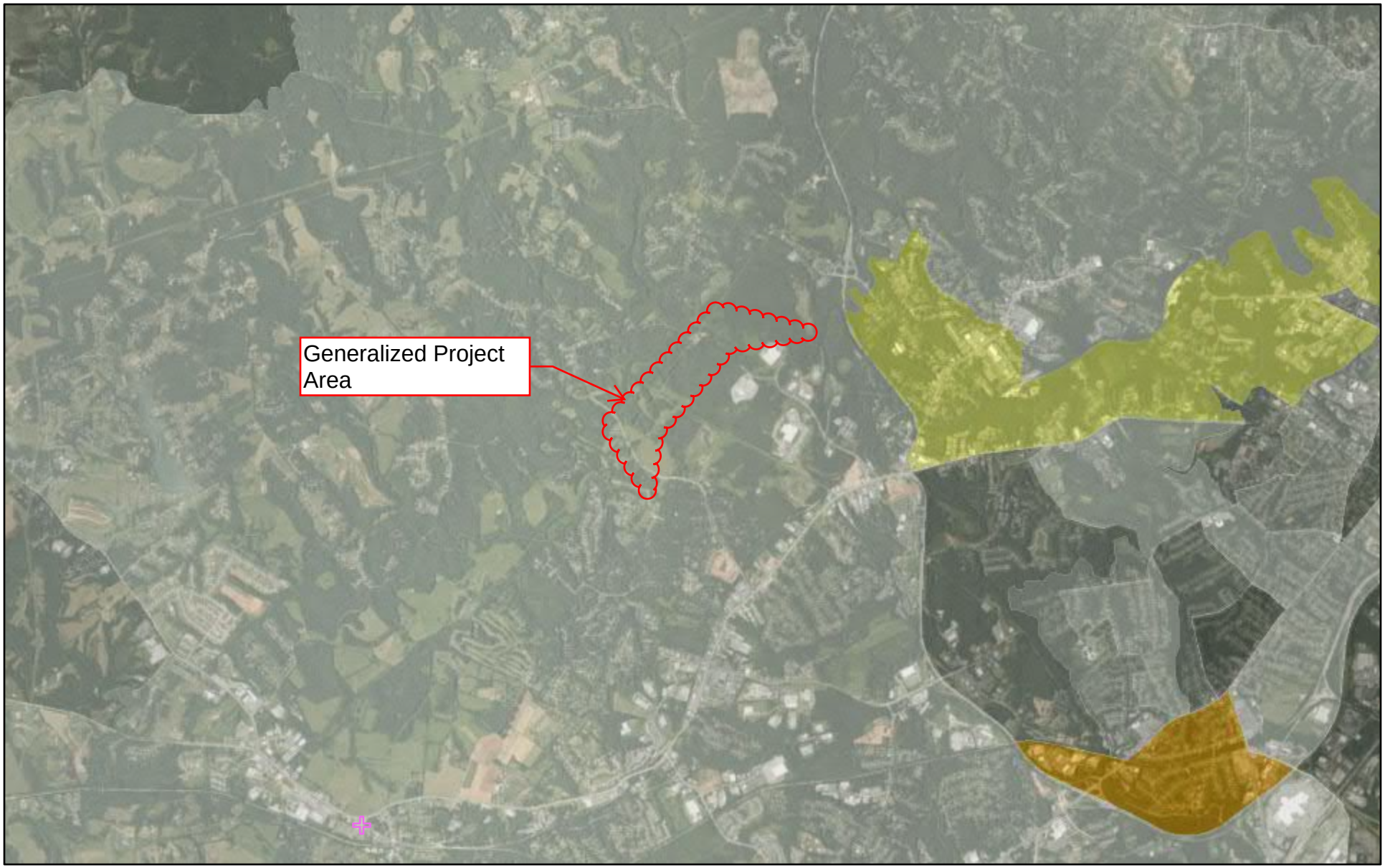
- Data not available
- Less than 50 percentile
- 50 -60 percentile
- 60 -70 percentile
- 70 -80 percentile
- 80 - 90 percentile
- 90 - 95 percentile
- 95 - 100 percentile
- Search Result (point)

1:72,224

0 0.5 1 2 mi

0 0.75 1.5 3 km

Education Level



2/17/2021

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- 90 - 95 percentile
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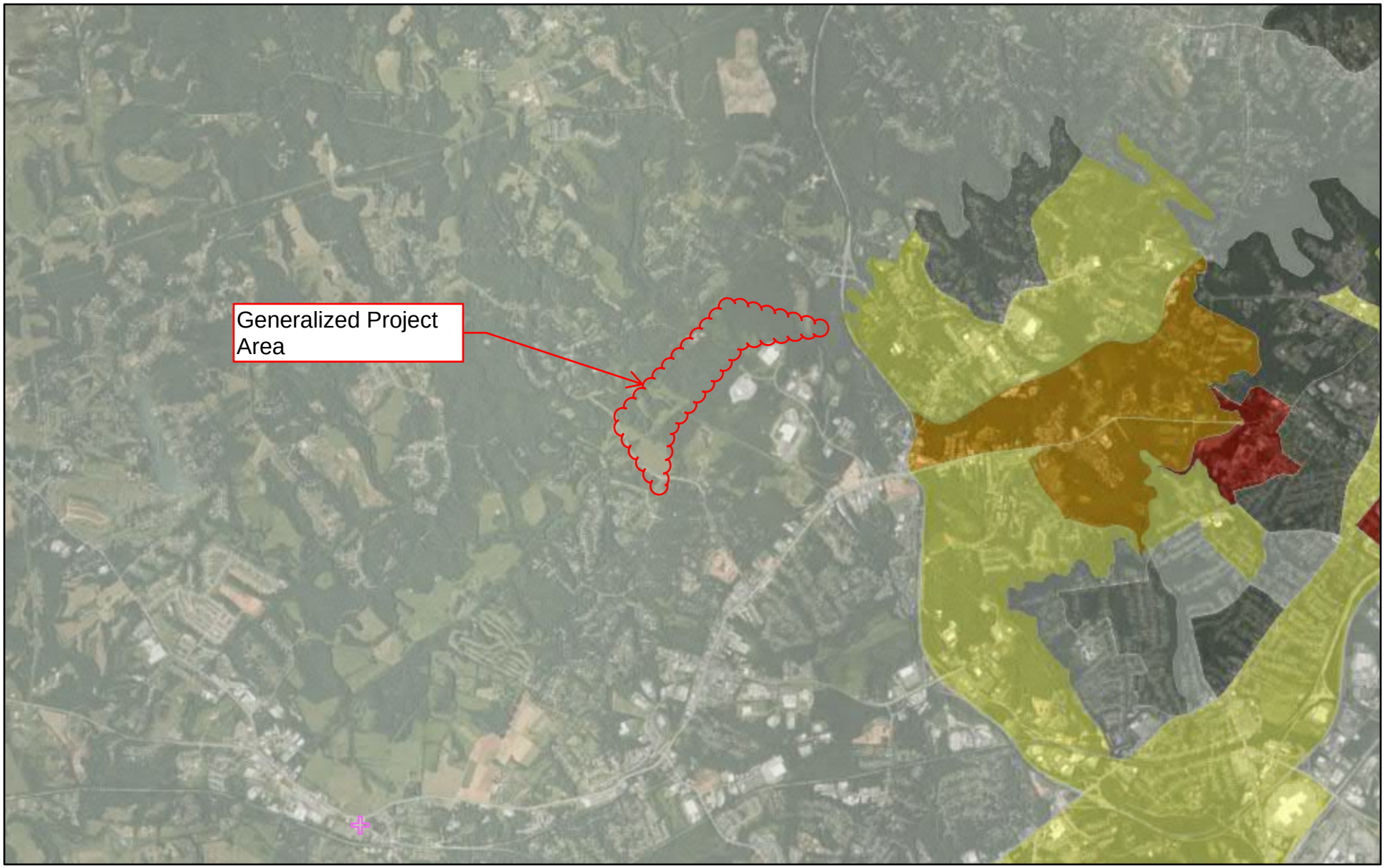
1:72,224

0 0.5 1 2 mi

0 0.75 1.5 3 km

Low Income Population



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