LOWER CHICKAHOMINY WATERSHED

Leveraging Economic Benefits of the Natural Resources of the Lower Chickahominy

FFY16 FINAL REPORT

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Richmond Regional Planning District Commission

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Executive Summary

Steering Committee Coordination and Facilitation – RRPDC staff coordinated the creation of a project Steering Committee that represents a diverse group of local and state agencies active in the watershed as well as non-profit stakeholders and two land conservancies. RRPDC staff facilitated 2 in-person full committee meetings and several conference calls during the grant year. The purpose of these meetings was to find common ground and discuss base-mapping completed by RRPDC staff, to produce and publish a Request for Proposals (RFP) for an economic study, and selection of a contractor among proposals submitted in response to the RFP.

Mapping and Assessment – RRPDC staff finalized base maps of the study area. Maps include: population density, conserved land, parcels and subdivisions showing the existing pattern of development, land cover, Virginia Ecological Value Assessment, floodplains, and wetlands.

Economic Study RFP - In mid-May 2017, the RRPDC staff delivered to the Virginia Coastal Zone Management Program a final RFP that had been developed in cooperation with members of the project Steering Committee. The RFP sought proposals for a study on a broad range of topics including: the effectiveness of conservation programs, the value of natural resource protection, and the costs of natural resource protection. Proposals were due to the VCZM Program by August 1, 2017. In early August, members of the steering committee scored the proposals and scheduled interviews with candidate finalists. The Steering Committee agreed to the selection of the George Mason University/Urban Analytics, Inc. team for the economic study. The GMU/UAI team was chosen based on expertise in the field and experience on a similar study recently completed for Accomack and Northampton Counties.

About the Project

The Lower Chickahominy Project is a 5-year project focused on the economics of natural resource conservation in the Lower Chickahominy watershed. At the conclusion the project, the Steering Committee is charged with developing and presenting policy intended to preserve, realize value from, and make best use of identified natural resources in the watershed through implementing mechanisms. Early project discussions have indicated the localities in the watershed are interested in strategic efforts to improve recreational access to and capture economic benefits from natural resources in the watershed.

Marsh along the Chickahominy River near River's Rest Marina in Charles City County.

About the Watershed

The Lower Chickahominy watershed is identified as the USGS Hydrologic Unit Code (HUC) 0208020606, the "Lower Chickahominy River." This HUC encompasses 106,429 acres across three counties: Charles City, James City, and New Kent. For the purposes of this project, the entirety of each constituent county is to be considered unless scientific or policy considerations suggest that a smaller geography be utilized, such as the aforementioned USGS HUC.

The Lower Chickahominy watershed is bisected by Interstate 64 and VA State Route 5 east of Richmond and slightly west of Williamsburg, VA. The Chickahominy River feeds into the watershed from the northwest and flows southeast until it empties into the James River at the watershed's southern terminus. Key features of the Lower Chickahominy watershed include:

- Approximately 96,000 people live in the three counties that constitute the watershed. Approximately 30,000 live in the Lower Chickahominy HUC area. (2010 – 2014 US Census ACS data)
- There are several types of conserved land in the study area: private conservation easements, Federal and state-owned land, local easements, and parks. In addition to these lands, James City County and New Kent County designate Agricultural and Forestal Districts (AFDs) that place a temporary restriction of four to ten years on land development. The development restriction associated with AFD districts may be renewed for multiple terms; land may also be withdrawn from a district with a penalty payment for early withdrawal, barring exceptions specified by the Code of Virginia. (AFDs are not depicted on the attached conserved land map.)
- The Chickahominy River basin serves as a key source for the drinking water supply of Newport New Waterworks which supplies over 400,000 residents in six communities of the Lower Peninsula. The Chickahominy River is also proposed as a source for surface water intake for the James City Service Authority.
- Numerous private and public recreational facilities exist in the watershed. Biking, hiking, canoeing and kayaking, and wildlife watching are all popular pursuits. Highlights include:
    - Chickahominy Wildlife Management Area
    - Private marinas such as River's Rest and Colonial Harbor
    - The Virginia Capital Trail
    - Little Creek Reservoir Park
    - Wahrani Nature Trails
    - Diascund Reservoir Park & Diascund Landing
    - Private campgrounds including Rockahock and Ed Allen's
    - Chickahominy Riverfront Park & Campground
- Given the location of the DGIF Chickahominy Wildlife Management Area and numerous hunt clubs in the watershed, hunting is a major recreational pursuit in the watershed. A variety of game including deer, turkeys, squirrels, rabbits, doves and waterfowl are hunted.

- The Chickahominy River is a well-recognized fishing location with plentiful largemouth bass, blue catfish, crappie, bream, ring perch, herring, pickerel and rockfish. The area frequently hosts local and regional fishing tournaments.
- Significant historic and cultural features have a vital presence in the watershed and three-county area.
    - Historic Plantations located along Route 5 in Charles City County include Shirley, Berkley, Kittiewan, Edgewood, and Sherwood Forest, Belle Air, North Bend, Evelynton Westover Plantations.
    - The Jamestown Settlement is located along the James River in James City County.

See the maps in Appendix B for illustrations of the watershed's geography.

Steering Committee Coordination and Facilitation

The Lower Chickahominy Project Steering Committee is a voluntary group representative of planning, conservation, and scientific stakeholders who work, live, and/or study in the watershed. The role of this Steering Committee is to guide analysis and research that will be used in the latter years of the strategy to develop policy change proposal(s). Richmond Regional Planning District Commission (RRPDC) staff are responsible for managing the Steering Committee and other technical elements of the Lower Chickahominy project. Organizations represented on the steering committee include:

- Capital Region Land Conservancy
- Charles City County
- College of William and Mary
- Colonial Soil and Water Conservation District
- Hampton Roads Planning District Commission
- Historic Virginia Land Conservancy
- James City County
- James River Association (JRA)
- New Kent County
- Richmond Regional Planning District Commission (RRPDC)
- Virginia Coastal Zone Management Program (VCZM)
- Virginia Department of Conservation and Recreation (DCR)
- Virginia Department of Game and Inland Fisheries (DGIF)

RRPDC staff facilitated two in-person meetings and several conference calls of the Steering Committee during the FFY16 grant year. The committee meetings were used to establish common ground for the base mapping and data gathering conducted by RRPDC staff. This common ground helped the committee focus on a general direction for the five-year project with agreed upon interests for the Economic Study that will be conducted during FFY17. RRPDC staff relied on feedback from the second in-person meeting to finalize the Request for Proposals (RFP) that was used to solicit contractors for the Economic Study.

A subcommittee of the Steering Committee consisting of PDC staffs, local staff, VCZM staff, and land conservancy staff selected the contractor to complete to Economic Study. Conference calls and in-person meetings were used throughout the interview and selection process.

Materials from the in-person committee meetings are included in Appendix A.

Mapping and Assessment

RRPDC staff gathered GIS data from numerous sources, including state agencies and localities, to create a set of base maps.

Base maps completed during FFY16 include:

- Political boundary base map showing County boundaries and the USGS HUC named "Lower Chickahominy River."
- Conserved land map illustrating VDCR conserved lands and easement GIS data.
- Virginia Ecological Values Assessment (VEVA) data
- Land Cover
- FEMA Special Flood Hazard Areas (floodplains)
- Platted Parcels & Subdivisions
- Total population from the US Census 2010-2014 American Community Survey
- Chesapeake Bay Resource Protection Areas

These base maps and associated tabular data are included in Appendix B. RRPDC staff and the project Steering Committee gained a better understanding of the complexities of the watershed through the base mapping process. Insights included:

- FEMA has identified flood hazard areas for all three localities in the study area. Approximately 17% of the land area in the three counties lies within a designated special flood hazard area coinciding with the 100-year floodplain.
- 22.5 square miles of land and water area in the three-county study area (43% of total area) have been identified as having outstanding or very high ecological value based on the Coastal Virginia Ecological Value Assessment (VEVA).
- The largest land cover in the three-county study area is forest, 45%. Impervious cover accounts for less than 5%.

In FFY17, RRPDC staff will refine these base maps and add to them as necessary. Also planned for FFY17, RRPDC will use some of the data gathered during the base mapping process to create a conserved land database for the study area. Supplemental data from state and local sources will likely be necessary.

Economic Study Request for Proposals

RRPDC staff worked with members of the Steering Committee to produce a RFP for release by the Virginia Coastal Zone Management Program seeking proposals for an Economic Study that will be used by the project Steering Committee to develop policy proposal(s) in later years of this project. The RFP was released in early May. Proposals were due to VCZM Program staff by August 1, 2017.

Two proposals were received in response to the RFP. As the first step in the selection process all Steering Committee members were asked to score the proposals. Scores were aggregated by RRPDC staff and a conference call was held to discuss the results. Steering Committee members agreed that proposal scores were close enough and a few questions remained about the candidate's proposals that interviews were necessary to complete the section process in good faith. RRPDC staff led a subcommittee of the Steering Committee through the interview process; the full Steering Committee was kept apprised of the interview process throughout and ultimately agreed with the subcommittee's candidate recommendation. The subcommittee proposed the George Mason University/Urban Analytics, Inc. team for the economic study. The GMU/UAI team was chosen based on expertise in the field and experience on a similar study recently completed for Accomack and Northampton Counties.

The RFP delivered to the VCZM Program staff by RRPDC staff is included in Appendix C.

Appendix A

Agenda

Lower Chickahominy Watershed
-The Economics of Conserved Land-

Steering Committee Meeting – December 15, 2016

Location: Freedom Park, 5537 Centerville Rd, Williamsburg, VA 23188

Goals:

- Consensus on additional mapping to be completed by RRPDC staff
- Consensus on approach and key elements of RFP & economic study

1:30 PM – Introductions

1:45 PM – Project Background & Key Elements for the First Year

- 309 Funds – Policy Development
- DCR-NH & DGIF data
- Base Mapping
- RFP development and contractor selection

2:15 PM – Lay of the Land Overview

- Base Mapping
- Committee suggestions/requests
- Known changes and projects that could influence this project, for example River's Rest Marina is up for sale

2:45 PM – RFP & Economic Study Discussion

- Eastern Shore Study (currently underway)
- Other studies
- Considerations/concerns
- Contractor selection considerations – subcommittee?

3:15 PM – Next Steps

- Draft RFP preparation
- Next Meeting

Lower Chickahominy Watershed
-The Economics of Conserved Land-

Steering Committee Meeting – December 15, 2016

Meeting Notes

Attendees:

Sarah Stewart (RRPDC)	Caren Schumacher (HVLC)
Barbara Jacocks (RRPDC)	Ellen Cook (James City County)
Jim Wallace (Colonial SWCD)	Scott White (James City County)
Laura Messer (James City County)	Rachel Chieppa (Charles City County)
Jane Myers (CRLC)	Marc Bennett (New Kent County)
Ben McFarlane (HRPDC)	Matthias Leu (William & Mary)
Beth Polak (VA CZM Program)	Josh Airaghi (New Kent County)
Todd Janeski (VCU, DCR-NHD)	

Possible additional stakeholders/committee members or interested parties:

- Hunt Club(s)
- Virginia Outdoors Foundation
- Trust for Public Land

DGIF GIS data update – covered by this grant with field work starting in late January at the earliest.
DCR-NHD data update –covered by this grant, data will be gathered in approximately 40 free-flowing stream lengths of Chickahominy watershed, will not include boat-able streams

Other available data – James City County has done stream assessments over the past 5 years, some are for streams in the Chickahominy Watershed. These stream assessments have been provided to Sarah.

Study Area = the entirety of all three localities: Charles City County, James City County, New Kent County
Policies developed as part of this 5-year strategy need not apply to the entirety of each locality; they may only apply to Chickahominy watershed. For example, some stakeholders have expressed interest in policy development related to public access to the Chickahominy River. Such a policy need not apply to all waterbodies within a jurisdiction; a policy may only apply to public access to the Chickahominy. Similarly, local policies that may be developed can differ according to the needs and unique circumstances of each locality. However, the local policies will need to complement each other towards similar goals and not work at cross purposes.

Base mapping to be done principally by the RRPDC this year:

- Public Access Points
- Currently Conserved Lands
- State and Federally owned land
- Existing Land Use and/or land cover
- Parcels & Platted Subdivisions
- Future Land Use
- Wetlands, floodplains, RPA
- VNLA & VEVA
- Parks and Recreation entities, including trails (land and water)
- Water and sewer service areas
- DCR-NHD recently completed vulnerability analysis
- Green Infrastructure data developed by both PDCs

*Not a map, but a list inventory of Outdoor Recreation-Related Businesses & Programs in the Study Area. Make special note of those in the watershed.

What's projects are on the horizon?

- HRSD SWIFT – *Sustainable Water Initiative for Tomorrow* – A project in which treated wastewater will be purified to drinking water quality and treated to match the chemistry of groundwater. This treated water will be added back to the Potomac Aquifer instead of being released into local surface waterways. http://swiftva.com/
- Charles City County – River's Rest Marina for sale
    - Possibility for boat slip expansion
    - Septic system is near capacity – limitation on implementation of proposed plans
- James City County – possible surface water in-take on Chickahominy & desalination plant proposal
    - **http://www.jamescitycountyva.gov/DocumentCenter/View/7908**
    - **http://jamescitycountyva.gov/DocumentCenter/View/7995**
- James City County – Cranston Mill Pond Water supply possibility
    - **http://wydaily.com/2016/12/05/experts-debate-using-toano-pond-for-water-supply-project-moves-forward/**

Items for consideration as we move forward:

- DGIF Wildlife Action Plan
- Virginia Capital Trail is very important existing and future opportunity for eco-tourism growth
- Opportunity? – Scenic Waterways program
- What is the economic value and tourism appeal of wildlife viewing and wildlife habitat?
- Fee simple preservation of land is expensive! What other options are there?
    - Confirmation – HVLC – there are land owners willing to conserve but economic reality prevents them from doing so. (compared to Middle Peninsula and Eastern Shore)
    - Different funding sources?
    - Funding sources prioritized to incentive conservation?
    - Different conservation models?
    - Education for land owners is key
    - Mechanism for accepting property donations for public access, i.e. Middle Peninsula Public Access Authority or similar mechanism? Would a model work in the Lower Chickahominy watershed given different economic reality compared to Middle Peninsula and Northern Neck?
    - Credits for landowners for managing land in a certain way?

Other considerations/concerns:

- Do not structure the study in a way to predetermine the outcomes.
- Make sure that we build in flexibility as we move forward through time and for policy creation that respects unique nature of each local government.

RFP Development & Contractor Selection

- Economic Study will start in year 2 of this strategy. It may occur during one year or elements may be spread across 2 years for timing and funding purposes.
- VCZM Program will officially issue the RFP and contract directly for study; this committee will determine the contents of the RFP/desired products of the study and select the contractor.
- RRPDC staff will draft the RFP with assistance from a subcommittee comprised of members of the steering committee and in consultation with the VCZM Program.
- ***PLEASE TELL SARAH IF YOU ARE WILLING TO JOIN THE RFP DEVELOPMENT SUBCOMMITTEE.***

Next Steps

- Voluntary, short conference call option for those who missed the Dec 15 meeting. Sarah will arrange in January.
- Next Committee meeting we will discuss draft RFP developed by RRPDC staff, meeting will probably be in February

Keep in mind:

- CZM draft grant application due to NOAA in March, final due in late April. The more details we have finalized for year 2 by this point, the better!

Sarah Stewart

From: Sarah Stewart
Sent: Thursday, March 30, 2017 5:21 PM
To: Andy Lacatell; Becky Gwynn; Ben McFarlane; Beth Polak; Caren Schumacher; Carla Hegwood; Christiana Tambone; Ellen Cook; Jamie Brunkow; Jane Myers; Jim Wallace; Joe Weber; Josh Airaghi; Justin Doyle; Lewie Lawrence; Matthias Leu; Parker Agelasto; Rachel Chieppa; Scott Thomas; Stephen Adkins; Terrance Lasher (terry.lasher@dof.virginia.gov); Todd Janeski (tvjaneski@vcu.edu); Harris, Ronald E.
Cc: Barbara Jacocks
Subject: Lower Chickahominy RFP
Attachments: RFP Rough Draft.docx

Hi Everyone,
For those who were able to make the meeting this morning, thank you for such a great discussion. For those unable to attend, I was sorry to miss you. We had a productive discussion and I have several edits planned to the RFP. I've summarized them below. Keeping those in mind, please send me any additional thoughts or questions you have as feedback about the RFP **ASAP**. I plan to make the edits listed below and incorporate additional feedback in early April. I will send out a revised RFP April 10 for final review and comments by the committee.

- Alter invitation language to convey the diverse needs of localities involved. (This is a study to serve the ***localities*** and steering committee.)
- Edit project background language with less focus on RRPDC, more focus on the responsibilities of Key stakeholders (Coastal Program, RRPDC, HRPDC, localities, etc.) and the Steering Committee.
- Background of the Lower Chick
    - More details about hunting and fishing in the area
    - More details about the service area of the Newport News Waterworks & reliance on the watershed
    - More details about conserved lands in the area
    - Full lists of recreational, historic and cultural attractions in area
    - List/map of planned transportation projects (e.g. I-64 widening)
- Include several more plans and studies in the list of Existing resources (Regional Rivers Plan, RRPDC & HRPDC transportation plans & other documents, DOF econ value of forest, etc)
- Key Questions to be Addressed – Simplify questions to 2 or 3 questions
    - Determine the effectiveness of conservation programs in the watershed. Why are they more or less successful?
    - What is the value received from land and natural resource protection?
- Long list of benefits & costs - prioritize or tier benefits & costs so we are sure to get the most valuable information as a product
- Long list of benfits & costs – include:
    - MS4 aspects in James City County
    - Floodplain
    - Change in cost for water treatment
    - Fishing
    - Economic impact to adjacent land
- Additional map – FEMA floodplain

Thanks and let me know if you have any questions!

Sarah G Stewart, AICP
Senior Planner

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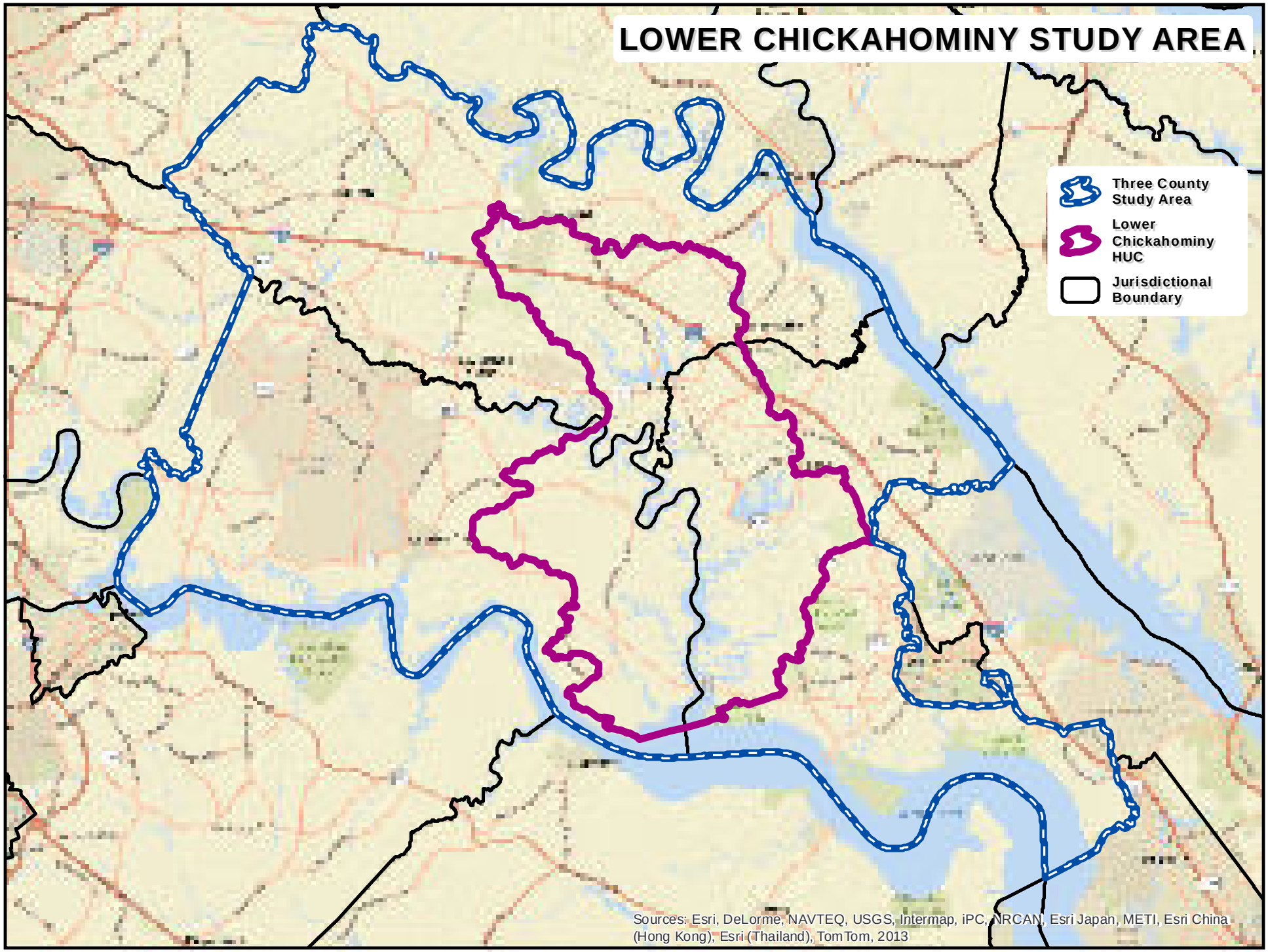
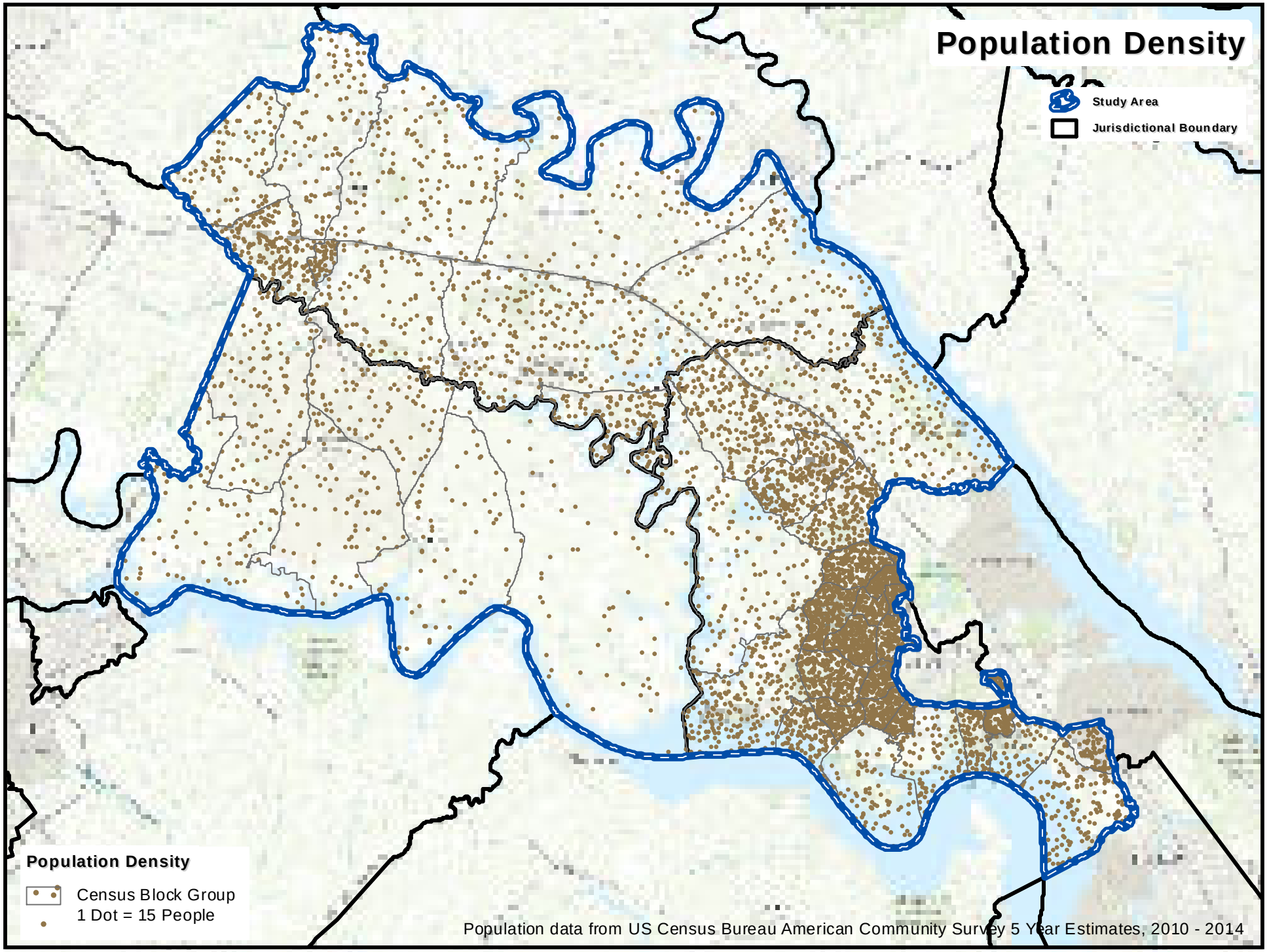
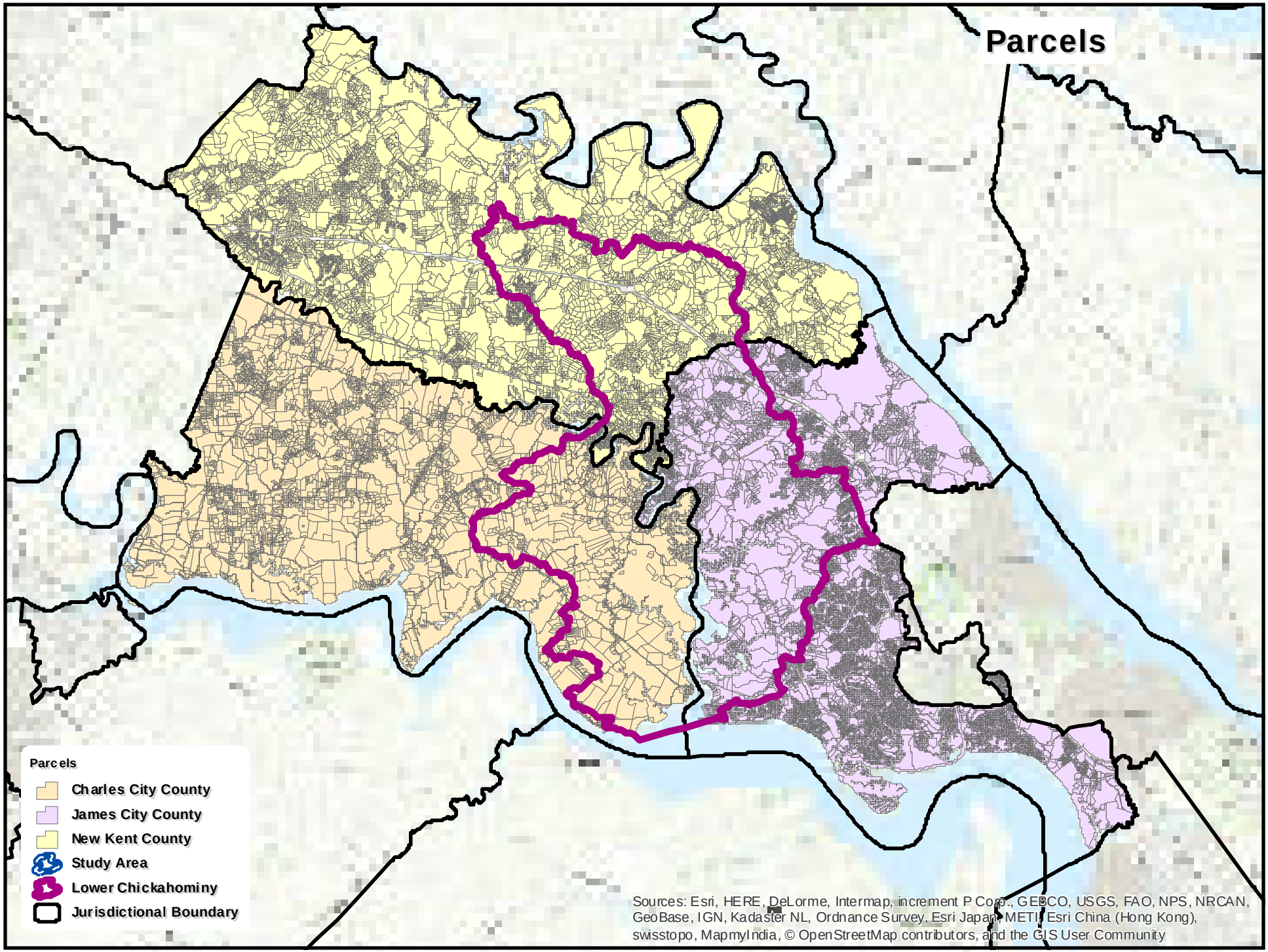
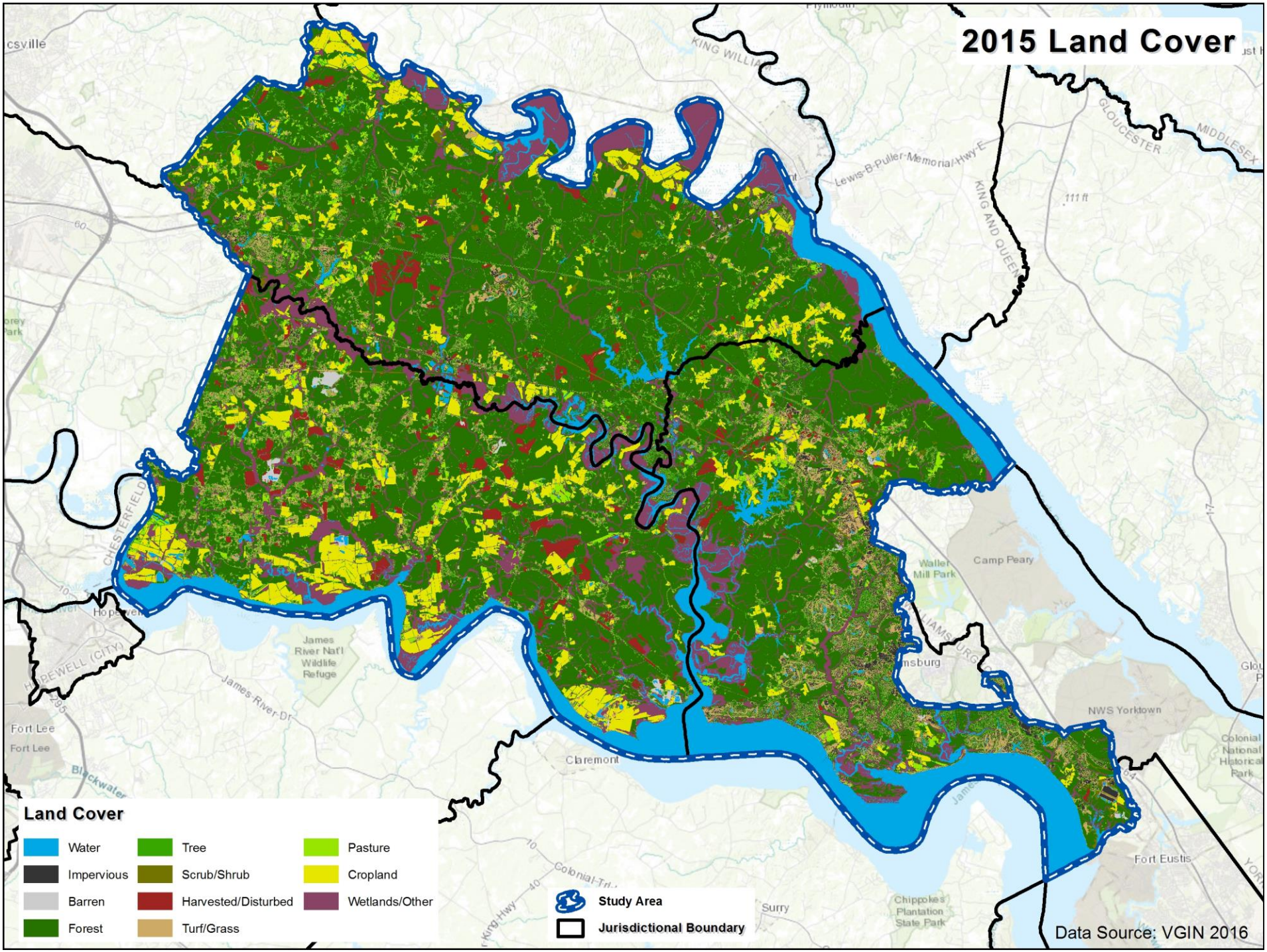
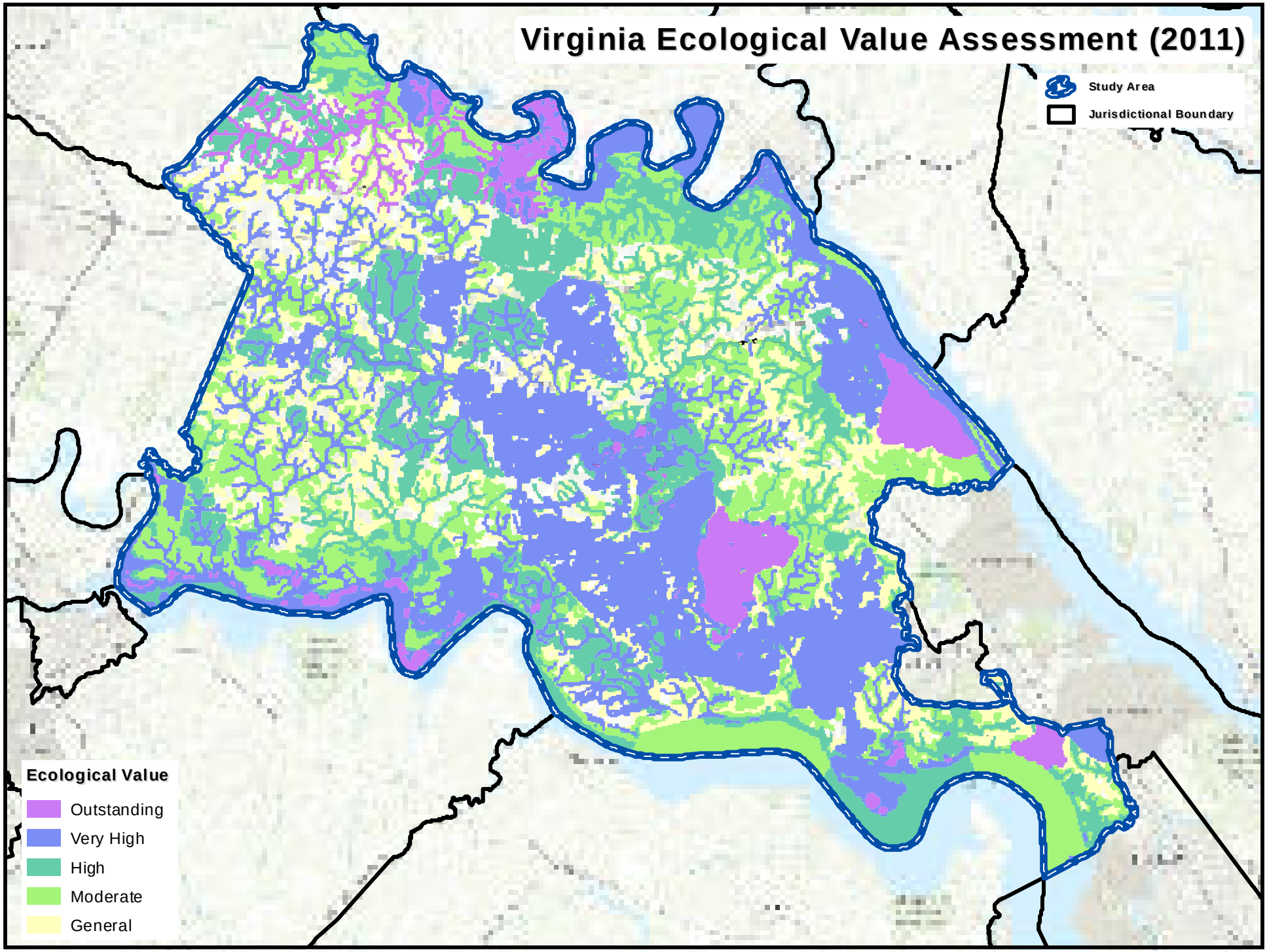
Appendix B

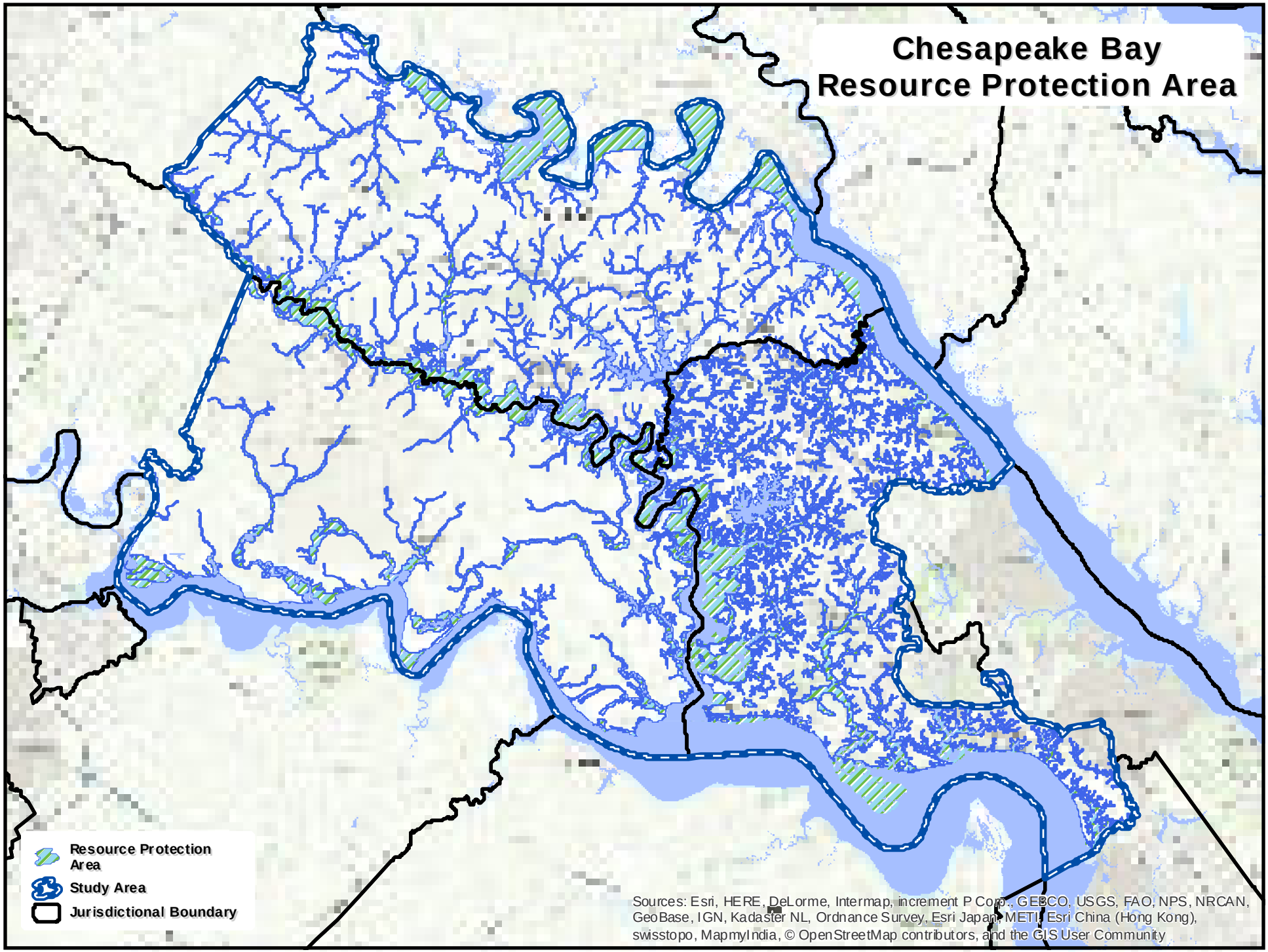

LOWER CHICKAHOMINY STUDY AREA
Three County Study Area
Lower Chickahominy HUC
Jurisdictional Boundary
Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap, iPC, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, 2013

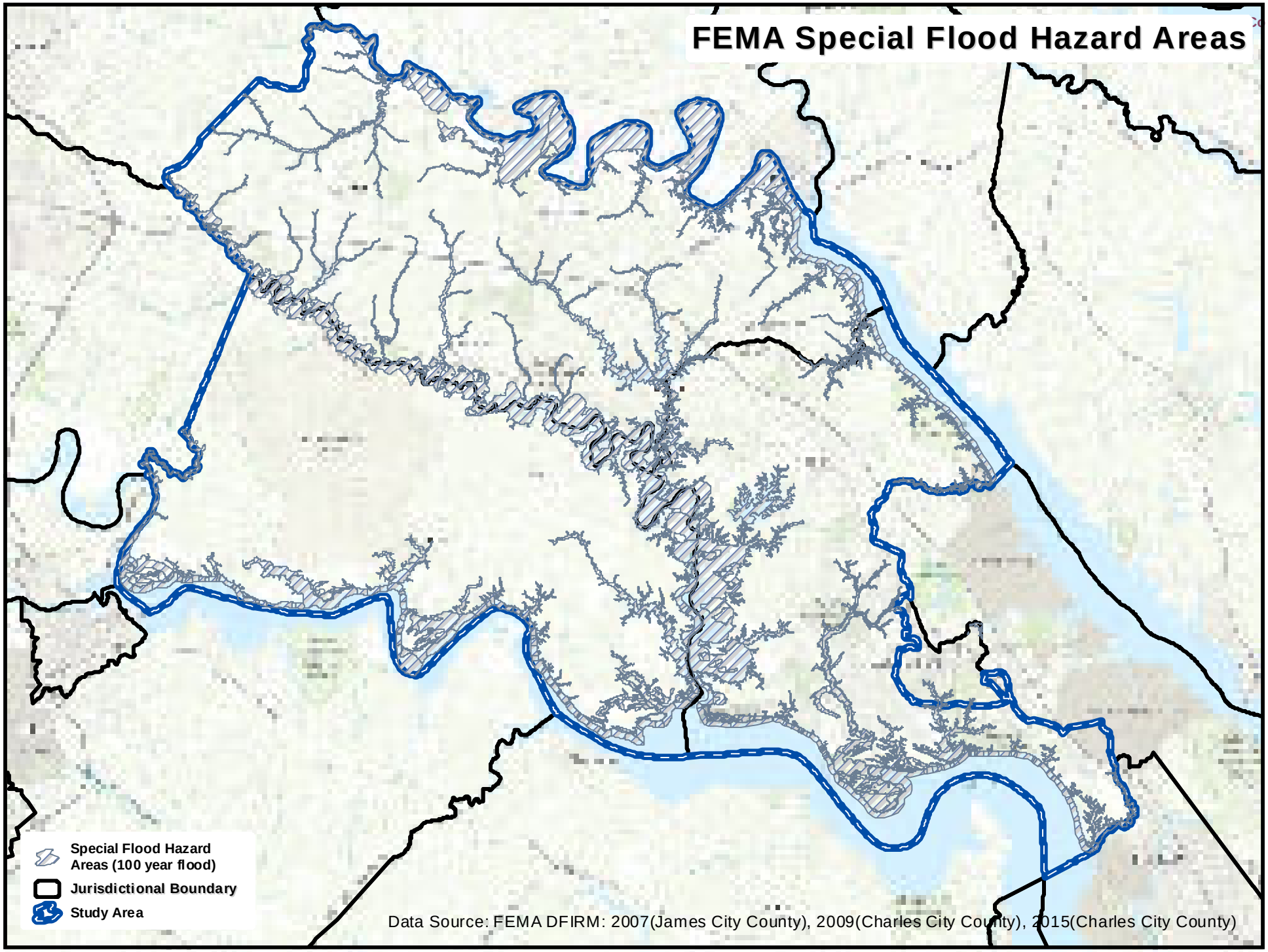

Population Density
Study Area
Jurisdictional Boundary
Population Density
Census Block Group
1 Dot = 15 People
Population data from US Census Bureau American Community Survey 5 Year Estimates, 2010 - 2014


Parcels
Parcels
Charles City County
James City County
New Kent County
Study Area
Lower Chickahominy
Jurisdictional Boundary
Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community


2015 Land Cover
Land Cover
Water
Impervious
Barren
Forest
Tree
Scrub/Shrub
Harvested/Disturbed
Turf/Grass
Pasture
Cropland
Wetlands/Other
Study Area
Jurisdictional Boundary
Data Source: VGIN 2016
KING WILLIAM
Lewis-B-Puller-Memorial-Hwy-E
KING AND QUEEN
GLOUCESTER
MIDDLESEX
CHESTERFIELD
HOPEWELL (CITY)
Hopewell
James River Nat'l Wildlife Refuge
James-River-Dr
Fort Lee
Blackwater
Claremont
Colonial-Trl
Surry
Chippokes Plantation State Park
Waller Mill Park
Camp Peary
NWS Yorktown
Colonial National Historical Park
Fort Eustis
111 ft


Virginia Ecological Value Assessment (2011)
Study Area
Jurisdictional Boundary
Ecological Value
Outstanding
Very High
High
Moderate
General


Chesapeake Bay
Resource Protection Area
Resource Protection Area
Study Area
Jurisdictional Boundary
Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community


FEMA Special Flood Hazard Areas
Special Flood Hazard Areas (100 year flood)
Jurisdictional Boundary
Study Area
Data Source: FEMA DFIRM: 2007(James City County), 2009(Charles City County), 2015(Charles City County)

Tabular Data - Lower Chickahominy Watershed 3-County Study Area

Land Cover

Three County Study Area Land Cover

Land Cover	Square Miles	Percent
Water	76	12.6%
Impervious	24	4.0%
Barren	2	0.3%
Forest	274	45.2%
Tree	47	7.7%
Scrub/shrub	4	0.6%
Harvested/Disturbed	14	2.3%
TurfGrass	41	6.8%
Pasture	8	1.3%
Cropland	44	7.3%
Wetlands/Other	73	12.0%
Total	608	100.0%

Land Cover data source: 2015 VGIN 1 meter resolution land cover

Virginia Ecological Values Assessment (VEVA)

VEVA Rank	Value	Acres	Percent of Total
5	Outstanding	2,577.2	7.7%
4	Very High	11,831.6	35.3%
3	High	7,324.6	21.9%
2	Moderate	7,112.7	21.2%
1	General	4,625.4	13.8%
	Total	33,471.5	100.0%

Floodplains

Flood Hazard Area	Description	Acres	Percent
A	Areas subject to inundation by the 1-percent-annual-chance flood event generally determined using approximate methodologies. Because detailed hydraulic analyses have not been performed, no Base Flood Elevations (BFEs) or flood depths are shown. Mandatory flood insurance purchase requirements and floodplain management standards apply.	12,271.80	3%
AE	Areas subject to inundation by the 1-percent-annual-chance flood event determined by detailed methods. Base Flood Elevations (BFEs) are shown. Mandatory flood insurance purchase requirements and floodplain management standards apply.	43,520.50	11%
AO	Areas subject to inundation by 1-percent-annual-chance shallow flooding (usually sheet flow on sloping terrain) where average depths are between one and three feet. Average flood depths derived from detailed hydraulic analyses are shown in this zone. Mandatory flood insurance purchase requirements and floodplain management standards apply.	5.424	0%
Open Water	open water	22,370.27	6%
VE	Areas subject to inundation by the 1-percent-annual-chance flood event with additional hazards due to storm-induced velocity wave action. Base Flood Elevations (BFEs) derived from detailed hydraulic analyses are shown. Mandatory flood insurance purchase requirements and floodplain management standards apply.	10,612.01	3%
X	Moderate & Minimal flood hazard areas, not in 100 year floodplain	305,554.48	77%
	TOTAL	394,334.47	100%

area in special flood hazard areas	66,409.73	17%

Appendix C

Request for Proposals:

Research on the Economic Benefits from Leveraging the Natural Resources of the Lower Chickahominy River

Project Purpose: A study to identify the economic costs and benefits of land conservation and natural resource protection in the Lower Chickahominy River watershed study area.

Anticipated RFP Schedule

Request for Proposals issued: _____, 2017
Deadline for Proposal Delivery: August 1, 2017
Finalists Interviewed (if necessary): September 1, 2017 – September 15, 2017
Selection of Contractor: September 22, 2017
Date of Award: October 1, 2017

Invitation:

The Virginia Coastal Zone Management (CZM) Program is seeking proposals from Virginia's public academic institutions to conduct an analysis of costs and benefits of land conservation and natural resource protection in the Lower Chickahominy Watershed. As local governments struggle to balance their budgets, it is increasingly important to understand how land conservation is affecting the socio-economic conditions and "bottom line" budgets for these localities. This solicitation is released to select a contractor to execute a study providing well-researched, professional responses to the questions posed below.

Solicitation of this RFP is not binding. The CZM Program reserves the right to postpone or cancel this project based on funding available from the National Oceanic and Atmospheric Administration.

Submissions and Questions:

Proposals will be received by the CZM Program by both postal and electronic mail. All information received in response to this request that is marked Proprietary will be handled accordingly. Responses to the Request will not be returned. Full Submission requirements and instructions are detailed below.

Questions concerning this Request for Proposals should be directed to Beth Polak, Coastal Planner with the Virginia Coastal Zone Management Program: (804) 698-4260 or Beth.Polak@deq.virginia.gov .

Preliminary Project Timeline

Grant awarded: October 1, 2017
Conclusion of grant year: September 30, 2018

The Project Steering Committee anticipates at least two meetings with the selected contractor during the study. One meeting as the project begins and another meeting near the conclusion of the study for an update and a review of the preliminary findings. Additional meetings and further communication with the steering committee may be necessary.

Project Background

This section describes the funding source and project context for the requested study.

Coastal Zone Management Program Section 309 – Enhancement Program Funds

This Request will contribute to analysis and policy development associated with a Section 309 5-year strategy focusing on the economic benefits of natural resources in the lower Chickahominy River watershed. The analysis should include economic, ecological and social costs and benefits, and to whom those costs and benefits accrue, to the maximum extent possible. As required by the Section 309 Program funds, the product of this Request will be used by an existing project steering committee to revise existing or create new policy and/or plans focused on capitalizing on while protecting natural resources and/or land conservation in the watershed ("policy").

Policy revision or creation can involve a variety of products including local comprehensive plans; local ordinances; local, regional, or state mechanisms for land management and/or operation, etc. The details of such policy will need to be appropriate to address the unique circumstances of each locality in the Lower Chickahominy watershed.

Full background on the Federal Section 309 Program can be found at https://coast.noaa.gov/czm/enhancement/media/Sect-309_Guidance_June2014.pdf .

Introduction of the Lower Chickahominy Project Steering Committee

The Lower Chickahominy Project Steering Committee is a voluntary group representative of planning, conservation, and scientific stakeholders who work, live, and/or study in the watershed. The role of this Steering Committee is to guide analysis and research that will be used in the latter years of the strategy to develop policy change proposal(s). Richmond Regional Planning District Commission (RRPDC) staff are responsible for managing the Steering Committee and other technical elements of the Lower Chickahominy project. Organizations represented on the steering committee include:

- Capital Region Land Conservancy
- Charles City County
- Colonial Soil and Water Conservation District
- Hampton Roads Planning District Commission
- Historic Virginia Land Conservancy
- James City County
- James River Association (JRA)
- New Kent County
- Richmond Regional Planning District Commission (RRPDC)

- Virginia Coastal Zone Management Program (VCZM)
- Virginia Department of Conservation and Recreation (DCR)
- Virginia Department of Game and Inland Fisheries (DGIF)
- Virginia Department of Health

Lower Chickahominy Project Overview and Timeline

The Lower Chickahominy Project is a 5-year project. This RFP is being issued at the mid-point of the first year of the project. At the conclusion the project, the Steering Committee is charged with developing and presenting policy intended to preserve, realize value from, and make best use of identified natural resources in the watershed through implementing mechanisms. Early project discussions have indicated the localities in the watershed are interested in strategic efforts to improve recreational access to and capture economic benefits from natural resources in the watershed. A copy of the proposal to develop the 5-year project strategy submitted to NOAA is attached as an addendum to this RFP.

Anticipated Schedule

Year 1 Activities (October 1, 2016 – September 30, 2017)

- Formation of the Steering Committee
- Economic Study RFP preparation and release
- Base mapping of Lower Chickahominy River watershed by RRPDC
- Selection of Economic Study Contractor by Lower Chickahominy Steering Committee
- Virginia Departments of Conservation and Recreation and Game and Inland Fisheries update historic species and water quality GIS field data

Year 2 Planned Activities (October 1, 2017 – September 30, 2018)

- Selected contractor conducts Economic Study
- RRPDC facilitate communication between contractor and Lower Chickahominy Steering Committee
- RRPDC staff continue mapping, policy research, and educational material creation as directed by Steering Committee
- Define communication strategies for local and state elected leaders, the public, and stakeholder interest groups such as the real estate industry.

Year 3 Planned Activities (October 1, 2018 – September 30, 2019)

- Policy development by Steering Committee
- Communication and outreach to elected leaders, general public, and interest groups

Year 4 Planned Activities (October 1, 2019 – September 30, 2020)

- Policy development by Steering Committee
- Communication and outreach to elected leaders, general public, and interest groups

Year 5 Planned Activities (October 1, 2021 – September 30, 2022)

- Policy adoption by jurisdictional authoritative entity, e.g. local government board of supervisors, local wetlands board, Virginia General Assembly, etc.

The Lower Chickahominy Watershed

As depicted by the attached maps, the Lower Chickahominy watershed is identified as the USGS Hydrologic Unit Code (HUC) 0208020606, the "Lower Chickahominy River." This HUC encompasses 106,429 acres across three counties: Charles City, James City, and New Kent. For the purposes of this project, the entirety of each constituent county is to be considered unless scientific or policy considerations suggest that a smaller geography be utilized, such as the aforementioned USGS HUC.

The Lower Chickahominy watershed is bisected by Interstate 64 and VA State Route 5 east of Richmond and slightly west of Williamsburg, VA. The Chickahominy River feeds into the watershed from the northwest and flows southeast until it empties into the James River at the watershed's southern terminus. Key features of the Lower Chickahominy watershed include:

- Approximately 96,000 people live in the three counties within the watershed. Approximately 30,000 live in the Lower Chickahominy HUC area. (2010 – 2014 US Census ACS data)
- There are several types of conserved land in the study area: private conservation easements, Federal and state owned land, local easements, and parks. In addition to these lands, James City County and New Kent County designate Agricultural and Forestal Districts (AFDs) that place a temporary restriction of four to ten years on land development. The development restriction associated with AFD districts may be renewed for multiple terms; land may also be withdrawn from a district with a penalty payment for early withdrawal, barring exceptions specified by the Code of Virginia. (AFDs are not depicted on the attached conserved land map.)
- FEMA has identified flood hazard areas for all three localities in the study area. Approximately 17% of the land area in the three counties lies within a designated special flood hazard area coinciding with the 100-year floodplain.
- The Chickahominy River basin serves as a key source for of the drinking water supply for Newport New Waterworks which supplies over 400,000 residents in six communities of the Lower Peninsula. The Chickahominy River is also proposed as a source for surface water intake for the James City Service Authority.
- Numerous private and public recreational facilities exist in the watershed. Biking, hiking, canoeing and kayaking, and wildlife watching are all popular pursuits. Highlights include:
    - Chickahominy Wildlife Management Area
    - Private marinas such as River's Rest and Colonial Harbor
    - The Virginia Capital Trail
    - Little Creek Reservoir Park
    - Wahrani Nature Trails
    - Diascund Reservoir Park & Diascund Landing
    - Private campgrounds including Rockahock and Ed Allen's

    - Chickahominy Riverfront Park & Campground
- Given the location of the DGIF Chickahominy Wildlife Management Area and numerous hunt clubs in the watershed, hunting is a major recreational pursuit in the watershed. A variety of game including deer, turkeys, squirrels, rabbits, doves and waterfowl are hunted.
- The Chickahominy River is a well-recognized fishing location with plentiful largemouth bass, blue catfish, crappie, bream, ring perch, herring, pickerel and rockfish. The area frequently hosts local and regional fishing tournaments.
- Significant historic and cultural features have a vital presence in the watershed and three-county area.
    - Historic Plantations located along Route 5 in Charles City County include Shirley, Berkley, Kittiewan, Edgewood, and Sherwood Forest, Belle Air, North Bend, Evelynton Westover Plantations.
    - The Jamestown Settlement is located along the James River in James City County.

- 22.5 square miles of land and water area in the three-county study area (43% of total area) have been identified as having outstanding or very high ecological value based on the Coastal Virginia Ecological Value Assessment (VEVA).
- The largest land cover in the three-county study area is forest, 45%. Impervious cover accounts for less than 5%. A detailed table and map of land cover can be found attached at the end of this RFP.

Existing Studies and Resources

No existing study has compiled the research sought through this Request. However, existing studies and resources can support the requested study.

- New Kent County Comprehensive Plan
- 2014 Comprehensive Plan, Charles City County
- Toward 2035: Leading the Way, James City County Comprehensive Plan
- Regional Rivers Plan: A Plan for the Richmond Region, Capital Region Collaborative
- 2013 Virginia Outdoors Plan
- Virginia's 2015 Wildlife Action Plan
- Hampton Roads 2040 Long-Range Transportation Plan, Hampton Roads Transportation Planning Organization
- Plan 2040, Richmond Regional Transportation Planning Organization
- Richmond Area Metropolitan Planning Organization Transportation Improvement Program Fiscal Years 2018 through 2021
- Hampton Roads Regional Source Water Protection Plan, January 2017, Hampton Roads Planning District Commission
- Transportation Improvement Program FY 2015 – 2018, Hampton Roads Transportation Planning Organization

- Management Plan for the Chickahominy Wildlife Management Area, Charles City County, VA
- 2015 Special Report on Paddlesports, The Outdoor Foundation
- Virginia State Parks Economic Impact Report, 2016
- The Economic Benefits of Cleaning Up the Chesapeake: A Valuation of the Natural Benefits Gained by Implementing the Chesapeake Clean Water Blue Print; October 6, 2014.
- Virginia's Return on Investment in Land Conservation, The Trust for Public Land, August 2016.
- The Economic Impact of Agriculture and Forest Industries in Virginia, June 2013.
- Simulated Changes in Salinity in the York and Chickahominy Rivers from Projected Sea-Level Rise in the Chesapeake Bay, USGS Open File Report 2001-1191
- Gordon Creek Watershed Management Plan, James City County, Virginia; May 2011.
- Yarmouth Creek Watershed Plan, James City County, Virginia, July 2003.

Proposal Questions and Grant Deliverables

Key Questions to be Addressed

Proposals will be judged in part as to how they propose to answer the following questions. The proposal response should demonstrate your capabilities and approach to address the following issues through your research:

1) How effective are existing conservation programs in the watershed? (e.g. acres or critical areas conserved, number of easements granted, conditions or timespan) Why are they more or less successful?
2) What is the value received from land and natural resource protection? Identify and quantify to the extent possible the benefits of conserved land and to what parties they accrue, such as land owners, conservation organizations, neighboring property owners, and community members.
3) What are the costs of land and natural resource protection? Identify and quantify to the extent possible the costs of conserved land (land or easement acquisition, lost or reduced development potential, etc.) and the parties who bear those costs.

Outreach to and buy-in from local officials and stakeholders will be critical throughout the process to the success and acceptance of the economic study associated with this Request and the broader 5-year project strategy. While specific details will be determined in consultation with the Steering Committee, proposals should include an approach to incorporate input from public officials and local stakeholders such as watershed groups and the real estate development industry in the economic study.

A list of potential benefits and costs is included below. This list has been compiled by the Steering Committee for this Request. Additional benefits and costs may be identified throughout the project. The list below has been prioritized by the Steering Committee. Effort should be directed to higher priority benefits. Benefits may include:

<u>Top Priority Benefits</u>

<u>Socioeconomic Benefits</u>

- Direct Employment and Indirect Employment:
    - Conservation resource management (e.g. conserved land managers, scientists, local contractors – e.g. mowing, construction, waste management, weed control, waste management, etc .
    - Ecotourism and natural resource reliant recreation
    - Water-dependent businesses
- Avoided infrastructure and service costs of local government.
- Adjacent property value benefits to:
    - Residents owning property adjacent to conserved land experiencing increase in their property's value
    - Local government deriving higher tax revenues from properties adjacent to conserved lands

Natural Resource Benefits

- Regulatory Programs
    - Federal flood insurance
    - James City County MS4
    - Local stormwater programs
- Surface and groundwater water quality benefits to:
    - Local drinking water supply
    - Local governments in meeting TMDL standards
    - Aquaculture and commercial fishing
    - Farmers/agriculture businesses
    - Water-dependent industries
    - Recreational fishing
    - Ecotourism
    - Health of residents
- Surface and groundwater recharge/quantity benefits to:
    - Residents
    - Tourists
    - water-dependent industries
- Wildlife habitat value benefits to:
    - Hunters
    - Wildlife watchers
    - Ecotourism
- Fish habitat value benefits to:
    - Recreational and commercial fishermen
    - Aquatic ecosystem health

General Priority Benefits

Socioeconomic Benefits

- Physical and mental health benefits to:
    - Residents (long term benefits)

    - Tourists (short –term mental health benefits)
- Historical and cultural benefits to:
    - Tourism industry
    - Residents
- Environmental education benefits to:
    - Local students
    - Residents
    - Tourists
- Use conflict mitigation benefits to:
    - Farmers who can operate next to conserved lands with less conflict than next to residential communities
- Scenic value benefits to:
    - Tourism
    - Residents
- Resiliency (from storm and sea level rise) benefits to:
    - Counties and other level of governments (foregone costs of emergency response)
    - Residents
- Biodiversity benefits to:
    - Ecotourism

Natural Resources

- Resiliency (from storm and sea level rise) benefits to ability of wetlands and other shorelines to migrate inland and associated ecosystem services
- Biodiversity benefits to ecosystem health
- Decreased light pollution benefits to resident and migratory animals

Costs may include:

- Acquisition costs to:
    - Federal agencies
    - State agencies
    - Environmental Non-Governmental Organizations
- Tax revenue reduction costs to local governments
- Infrastructure costs of tourism
- Opportunity costs for economic growth

Additional costs and benefits are encouraged to be identified for exploration through this project.

Budget

The maximum amount available for the grant is anticipated to be $88,500 in Federal Fiscal Year 2017 CZM funds from the National Oceanic and Atmospheric Administration. Proposals for more than the anticipated amount cannot be considered. However, parameters of the project could potentially be modified to best align with available funds.

US Department of Commerce, NOAA and the Virginia Department of Environmental Quality standard terms and conditions apply and are available upon request. Matching funds are not required but are welcome and may enhance a proposal's cost effectiveness rating. Subcontracts are allowed but must be submitted with the embedded sub-contractual budget Excel file in the attached proposal template with a description of the work to be performed accompanying the budget. Subcontracts must be pre-approved by the Virginia CZM Program and awarded, at minimum, consistent with State procurement procedures.

Proposal Scoring

Proposals will be evaluated by the project Steering Committee. The Steering Committee may request a short list of 2 to 3 finalist candidates to present and discuss submitted proposals in late summer or early fall 2017. This short list of finalists will be determined by the Steering Committee using the scoring scale below. A final candidate will be selected by the Steering Committee after proposal scoring and proposal presentation.

Proposals will be scored based on a 25-point scale:

1) **Technical Merit (0-10 points, 10 being best)** How clear and attainable are the objectives detailed in the proposal? What is the likelihood of successful implementation of the methods and work plan? Reviewers may consider the practicality and innovativeness of the approach.
2) **Feasibility (0-5 points, 5 being most feasible)** How realistic is the proposed work given the level of funding, the staffing requested and the one year timeframe for completion?
3) **Qualifications of Investigators (0-5 points, 5 being most qualified)** To what degree are the investigators qualified by education, training, and/or experience to execute the proposed activity? What is their record of achievement with previous similar projects?
4) **End User Relationship (0-5 points, 5 being most useful)** What is the likelihood that the project will result in successful information transfer and adoption by end users? How well does the proposed project reflect a genuine collaboration and integration of knowledge, experience, and resources of collaborators, end users, or other partners and stakeholders?

SUBMISSION INSTRUCTIONS

Proposals should be submitted via e-mail to beth.polak@deq.virginia.gov using the Virginia CZM Program project template (attached as pages 14-25) **NO LATER THAN 5:00 PM, August 1, 2017**. Late proposals will not be considered for funding.

DISTRIBUTION

- University of Virginia
- College of William & Mary
- Virginia Tech
- Old Dominion University
- George Mason University

- Virginia Commonwealth University
- James Madison University
- Norfolk State University
- Christopher Newport University
- Virginia State University
- University of Mary Washington
- Longwood University
- Radford University

Cumulative and Secondary Impacts: *Leveraging Economic Benefits of the Natural Resources of the Lower Chickahominy River*

I. Issue Area(s)

The proposed strategy or implementation activities will support the following high-priority enhancement areas *(check all that apply)*:

- ☐ Aquaculture
- ☐ Energy & Government Facility Siting
- ☐ Coastal Hazards
- ☐ Ocean/Great Lakes Resources
- ☐ Special Area Management Planning
- ☒ Cumulative and Secondary Impacts
- ☐ Wetlands
- ☐ Marine Debris
- ☐ Public Access

II. Strategy Description

A. The proposed strategy will lead to, or implement, the following types of program changes *(check all that apply):*

☐ A change to coastal zone boundaries;

☒ New or revised authorities, including statutes, regulations, enforceable policies,

administrative decisions, executive orders, and memoranda of agreement/understanding;

☒ New or revised local coastal programs and implementing ordinances;

☒ New or revised coastal land acquisition, management, and restoration programs;

☐ New or revised special area management plans (SAMP) or plans for areas of

particular concern (APC) including enforceable policies and other necessary implementation mechanisms or criteria and procedures for designating and managing APCs; and,

☒ New or revised guidelines, procedures, and policy documents which are formally

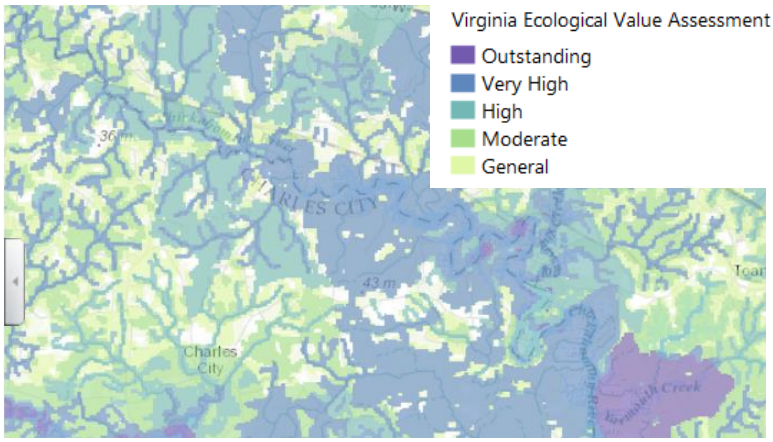
adopted by a state or territory and provide specific interpretations of enforceable CZM program policies to applicants, local government, and other agencies that will result in meaningful improvements in coastal resource management.

B. ***Strategy Goal:***

Through this strategy stakeholders at the local, state and federal level – including government and non-government organizations – will work together to align priorities in land use and land protection for maximum socio-economic and ecological benefit and create a shared vision for economic growth and conservation in the lower Chickahominy watershed and possibly additional locations. The overall strategy objective is to develop and adopt policies, procedures and new partnerships to address the cumulative and secondary impacts of coastal growth and development, including the collective effect of various individual uses or activities on coastal resources such as coastal wetlands and fisheries.

C. Describe the proposed strategy and how the strategy will lead to and/or implement the program changes selected above:

While the strategy will begin with a broad approach, assessing the economic values of protected lands in targeted regions coastal zone wide, it will continue with a specific focus on the lower Chickahominy watershed as a pilot area for future initiatives. Much of the lower Chickahominy has been identified as having very high to outstanding ecological significance by the Coastal Virginia Ecological Value Assessment (VEVA), a GIS dataset that ranks land and water areas based on modeled ecological and conservation value. Maintaining ecological integrity of the lower Chickahominy watershed, while appreciating and encouraging economic development opportunities will be priorities of the pilot. Comprehensive plans and other policies in localities within the watershed will be reviewed to identify opportunities for aligning state and local priorities. A memorandum of understanding will be developed to express a shared vision and outline consistent approaches toward watershed protection and leveraging of identified economic benefits. This could lead to development of a management plan and possibly draft legislation to enable local governments in the watershed to establish a public access authority. This will be written and offered for sponsorship and introduction to the General Assembly.



(Data Source: Coastal Virginia Ecological Assessment, Virginia CZM Program, 2001)

III. Needs and Gaps Addressed

This strategy addresses the need for improved coordination among state natural resource agencies and local governments in land use planning and conservation of coastal assets. Trends in expansion of impervious cover (C-CAP data for VA and RRPDC data for Richmond region) and wetland loss (VIMS) in Virginia's coastal zone due to land conversion coupled with the influence of sea-level rise demonstrate a need for strong coordination in local land use planning. Place-based focus in the Lower Chickahominy addresses a need for coordinated planning in an area identified for its outstanding ecological significance (Coastal VEVA) that is situated between two high-growth metropolitan areas. Actions outlined in the strategy will bring watershed stakeholders together building key partnerships among local, state and federal government agencies and NGOs in the region that are not presently in place.

Scientific/ecological field studies are needed in the lower Chickahominy watershed to fill spatial and temporal data gaps. The three counties of the Lower Chickahominy watershed (10-digit HUC – 0208020606) are recognized for harboring some of the most biologically diverse and ecologically significant areas in the Coastal Zone of Virginia. The Coastal VEVA classifies much of these counties, and especially the Lower Chickahominy corridor itself as very high to outstanding ecological significance.

The Chickahominy watershed earned these highest ranks in the Coastal VEVA based on comprehensive analysis of terrestrial, freshwater aquatic and estuarine biodiversity and habitat value there. This analysis was conducted by VIMS, DGIF, DCR-Natural Heritage, and the VCU-Center for Environmental studies, and driven by decades of field inventory data collected and maintained by these partners. The strength and utility of the Coastal VEVA, as well as other land use and conservation prioritizations (e.g. local conservation plans), hinges on the quality of information used to build these tools. More comprehensive, current and spatially accurate input data (i.e. locations and health of species populations and natural communities, habitat quality), ultimately enables more informed and impactful decisions to be made from the Coastal VEVA and other tools like it.

The landscape of Virginia's Coastal Zone is continually changing due to land conversion and climate change stressors such as sea level rise and storm events (i.e. storm surge and flooding in coastal areas). Naturally, species populations and their habitats respond to this change, as does the distribution of functioning ecological systems and the benefits derived from them for coastal communities. Understanding the current patterns in ecological systems and their benefits begins with an understanding of the distribution and health of species populations, their habitats and natural communities. And, to assure that land use and economic development decisions are adaptive and sustainable from a natural resources perspective, those decisions must start with a strong foundation of current scientific data collected in the field.

Data for this region are rich and informative, but there are also significant temporal and spatial data gaps. Temporal gaps are represented in the last observation dates of rare species populations and natural community locations in the study area. Currently there are 123 natural heritage resources (habitat of rare, threatened, or endangered plant and animal species, rare or state significant natural communities or geologic sites) identified throughout Charles City, James City and New Kent counties. Of these 123 natural heritage resources, 67 are, or will soon be considered "historic" because they have not been visited or verified, in at least 25 years. Once Natural Heritage data enter this "historic" status, they are no longer used to develop other conservation prioritization tools and assessments (e.g. Coastal VEVA). Thus, with this temporal data gap, about 54 percent of natural heritage data in the study area will not be used to inform future conservation and land use decisions until it is updated.

Key spatial data gaps might also be filled with targeted ecological assessment fieldwork. Many of the conserved areas in the study area may not have been thoroughly surveyed for biodiversity and habitat values. Tools like the Virginia Natural Landscape Assessment (VaNLA) and the Coastal

VEVA could be used to target "high priority" portions of conserved lands that warrant field inventories. Or, it may be apparent (i.e. from aerial photography or cursory field observation) that changes in vegetation composition and/or habitat structure warrant more focused field inventory since an area was last visited.

Spatial data gaps also occur on privately owned lands. Nearly all natural heritage resources documented in the lower Chickahominy watershed occur on currently conserved lands. However, only 8.1, 12 and 4.5 percent of all lands in Charles City, James City and New Kent counties respectively are currently conserved. While rare species and habitat inventory on private lands is inherently more complex, perhaps certain areas could be identified where inventory is feasible. Biologists at DCR-Natural Heritage and DGIF could seek permission and target field inventory on some private lands, with the agreement of landowners. In fact, predictive species distribution models under development now at DCR could help to concentrate these efforts on areas with the highest predicted likelihood of suitable habitat for certain rare, threatened and endangered species.

In addition to ecological assessments through field inventory, the logical follow-on work of updating the Coastal VEVA in Lower Chickahominy watershed study area, and throughout the Coastal Zone is needed to conduct coordinated planning. Using the same partner team that originally developed the Coastal VEVA, this update could efficiently utilize consistent methods, but with updated input datasets (e.g. VaNLA, INSTAR data from VCU, estuarine priority areas data from VIMS). This would update the Coastal VEVA prioritization tool, while also providing a means of assessing change in ecological value of areas in the coastal zone since its original release.

Economic studies to support coordinated planning and educate elected officials are needed for Virginia's coastal zone. While an economic study, (Southwick Associates, 2012) has been done for the Delmarva region (MD and VA) a more specific (VA only or specific VA regions) and detailed analysis is needed.

Further, through the Chesapeake Bay Watershed Agreement a management strategy goal of protecting two million new acres by 2025 has been established. Our CSI strategy complements this goal by aiming to develop and strengthen policies that will protect land to achieve conservation goals, support economic growth and provide open space for recreation.

Finally, the strategy will introduce policy concepts to enable establishment of a public access authority, which the region currently lacks. Success with public access authorities in other regions (MPCBPAA) in the VA coastal zone demonstrates a need for this kind of authority in the lower Chickahominy region that will provide an avenue for ownership of land for the sole purpose of providing public access to coastal waters. This kind of land ownership facilitates water access for residents and tourists alike. The most recent Virginia Outdoors Demand Survey reveals that 60 percent of respondents find "public access to state waters" as "most needed in Virginia."

IV. Benefits to Coastal Management

Coordinated land use planning will ensure successful long term economic growth by maintaining the natural resource base that supports it. This strategy aims for improved coordination among local, state, and federal stakeholders to develop a shared vision for growth and conservation. A coordinated approach will help reduce land use conflicts and align goals to balance demand between development needs and natural resource conservation. Both growth and conservation will be addressed through a variety of tools, such as a public access authority, whereby natural resources can meet demand for eco and nature tourism while also ensuring low impact uses of natural areas.

V. Likelihood of Success

There is a high likelihood of success with this strategy since we are working directly with major local government stakeholders in the pilot area of the lower Chickahominy; New Kent, James City and Charles City Counties, as well as others (Middle Peninsula PDC which has direct experience with establishment and functioning of a regional public access authority). Local government stakeholders can help direct the strategy work plan to focus on creating new policy that will be well received and successful in their community. Stakeholders from state natural resource agencies and national, as well as, local land trusts will also be involved in this collaborative effort among local, state and federal partners.

VI. Strategy Work Plan

Strategy Goal: Align state and local land use and land protection priorities in the lower Chickahominy region utilizing economic and ecological analyses, development of a watershed management plan and draft legislation to enable establishment of a public access authority for the lower Chickahominy.

Total Years: 5

Total Budget: $672,400

Year(s): 1-2

Description of activities: Establish a steering committee of stakeholders and technical experts to develop a shared vision for coordinated planning in the lower Chickahominy and possibly other areas in the coastal zone. Conduct ecological assessments and update data tools to aid analysis that could identify potential conflicts with current planning and zoning policies. Conduct economic analyses of protected lands in the lower Chickahominy and perhaps other specified target areas of Virginia's Coastal Zone. Economic analyses would summarize findings into educational tools (e.g. fact sheet(s), web pages) for outreach. A model for one or more economic analyses will come from one that is to be conducted on Virginia's Eastern Shore. It could include (but not be limited to) the following key elements:

- Documenting the physical and mental health benefits of open space (Regional Health and Communities) – savings in health costs
- Surface and groundwater water quality benefits to aquaculture and commercial fishing
- Benefits to water supply/groundwater recharge
- Costs of conserved lands vs. benefits
- Costs to whom? Counties? Or General?
- Economic value of hunting
- Economic value of recreational fishing/commercial
- Economic value of wildlife watching
- Tourism impacts
- Mitigation of storm impacts/SLR
- Value of conservation resource management – institutions who are here managing lands, doing research, etc.
- Direct impact to local tax base
- Long-term implications to tax base/county budgets… what is the tipping point, where is the continuum? Consideration of long-term conservation goals?
- Value of conservation lands (i.e. easements)? Placing easements? Selling easements?
- Tax rates on conservation lands? Is it really taking land away from the tax base?
- Economic value of ag/farmland
- Biodiversity, habitat
- Ecosystem services
- Value of conserved lands as far as reducing need for and cost of infrastructure services (fire, rescue)
- Recreational value of lands
- Impact on insurance rates – do conservation lands reduce rates, claims, etc.?
- Historical and cultural benefits
- Property value
- Environmental education
- Light pollution
- Quality of life

Water

- Surface and groundwater quality benefits to aquaculture and commercial fishing
- Ecosystem services
- Water supply/groundwater recharge

Positive and negative impacts of land protection on the tax base?

Focus: Economic benefits and costs of services (if developed, other than tax base) of conservation lands.

Cost/benefit analysis

- Natural resources
- Recreation
- Health
- Employment

- Cultural/historical
- Liability/insurance
- Economic Growth
- Sustainable Development/Infrastructure Protection
- Resiliency

Major Milestone(s): Quantify benefits of protected lands in select Virginia coastal regions to help demonstrate the value of coordinated land use and land conservation. Address local government concerns that conservation and land protection erodes the local tax base.

Budget: $232,200

Year(s): 3-4

Description of activities: Review and analysis of local plans and policies in lower Chickahominy localities to identify opportunities for new or revised policies or procedures that will leverage the benefits of natural resources. Begin development (with stakeholders) of a plan to optimize land uses while protecting very high and outstanding ecological resources. Develop potential enabling legislation to promote multiple benefits, such as the authority to establish public access authorities. Identify additional regions to which the lower Chickahominy pilot could be applied.

Major Milestone(s): Establish coordination for land use/land protection among state agencies and Lower Chickahominy watershed localities. Enable local governments in the Lower Chickahominy (and others, if possible) to create a Public Access Authority for the region.

Budget: $278,700

Year(s): 5

Description of activities: Finalize management plan(s)

Major Milestone(s): Finalize and consider adoption of land management and conservation policies that encourage cooperation among localities in the lower Chickahominy watershed and complement state and federal conservation priorities. Serves as a model for planning in additional coastal regions.

Budget: $161,500

VII. Fiscal and Technical Needs

A. Fiscal Needs: NA

B. Technical Needs: NA

VIII. Projects of Special Merit (Optional)

5-Year Budget Summary by Strategy

At the end of the strategy section, please include the following budget table summarizing your anticipated Section 309 expenses by strategy for each year.

Strategy Title	**Year 1 Funding**	**Year 2 Funding**	**Year 3 Funding**	**Year 4 Funding**	**Year 5 Funding**	**Total Funding**
Leveraging Economic Benefits of Land Conservation	**125,000**	**107,200**	**117,200**	**161,500**	**161,500**	672,400
Working waterfronts implementation (Note: this is a 2nd part of the CSI strategy described on a separate template)	*50,000*	*47,500*	*47,500*			*145,000*
Total Funding	**175,000**	**154,700**	**164,700**	**161,500**	**161,500**	**817,400**