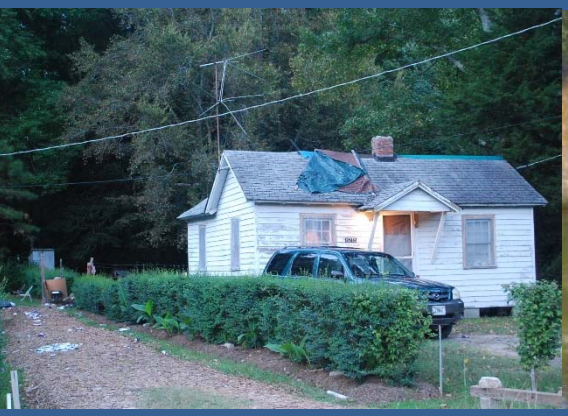
Indoor Plumbing Needs on the Eastern Shore of Virginia



November 2015

Prepared for the Accomack-Northampton Planning District Commission

by Skeo Solutions

This project was supported by:

Executive Summary

Situation

Virginia's Eastern Shore has many residences that lack indoor plumbing. Residents in these circumstances often use night pails, unpermitted privies or backyard port-a-johns. In addition to the impact on quality of life for residents, this antiquated problem results in human waste disposal practices that threaten water quality in the Chesapeake Bay watershed and endanger the local seafood and tourism economy. Historically, the full extent of the problem has not been documented, but is suspected to impact hundreds of homes.

The Accomack-Northampton Planning District Commission (A-NPDC) has championed efforts to solve the indoor plumbing challenge. Over the past several decades, A-NPDC has led a comprehensive rehabbing effort that will improve water quality, protect the local economy, and provide basic plumbing for families without access. Funding has traditionally come from the state's Indoor Plumbing Rehab (IPR) and Community Development Block Grant (CDBG) programs; however, in recent years, funding cuts and shifts in funding priorities have led the A-NPDC to look for more diverse sources of funding that will allow them to significantly accelerate rehabilitation efforts to ensure residential plumbing on the Eastern Shore meets modern day standards for the United States.

Approach

With support from the National Fish and Wildlife Foundation, the Skeo Solutions conducted a windshield survey on behalf of A-NPDC to identify homes on the Bayside of the Eastern Shore that need indoor plumbing and developed a prioritization and funding framework for resolving remaining indoor plumbing needs. Surveyors originally hoped to cover all homes prioritized for a windshield survey; however, the extent of the survey needs caused surveyors to focus in on homes in "hot spot" areas. The windshield survey, conducted in Fall 2014, documented the indoor plumbing status of 1,226 homes on the Bayside including 995 homes considered to be in "hot spot" areas for indoor plumbing needs. These 1,226 homes represent approximately 15% of the 8,384 residential addresses prioritized for a windshield survey on the Bayside of the Eastern Shore. Of these 1,226 homes, 112 (9%) were found to lack complete indoor plumbing facilities.

Based on the results of the windshield survey, the project team developed a draft funding framework to address the following needs (1) Complete an indoor plumbing needs assessment (windshield survey) of the entire Eastern Shore and (2) Pursue rehab funding for homes with known indoor plumbing needs. On May 26, 2015, the A-NPDC hosted a technical working session to share the results of the 2014 windshield survey, gather feedback on funding recommendations, and share potential funding sources. Working session participants agreed on the following priorities:

- *Needs Assessment*: Completing the Needs Assessment is a priority. A full needs assessment would provide a complete picture of indoor plumbing needs on the Eastern Shore and would serve as a helpful baseline and prioritization tool for future investments. A-NPDC could pursue additional funding from NFWF to complete the Bayside portion of the needs assessment, while funding for the Seaside could come from other foundation sources.

- *Rehab Priorities for NFWF Funding*: A-NPDC could prioritize proximity to sensitive environmental features and clusters of homes for a NFWF rehab funding application. Participants affirmed the four priority areas of Holden's Creek, Pocomoke Sound, Occohannock Creek and Church Creek.

Outcomes

This report summarizes the findings of the study and the outcomes of the technical working session. The report documents a recommended framework (including cost estimates) for pursuing funding to complete a full needs assessment and installing wells and septic systems at the 112 homes identified in the 2014 windshield survey. This framework was affirmed by stakeholders who attended the May 26, 2015 Technical Working Session. The funding framework captures the following funding needs:

1. Complete Needs Assessment
    - Bayside: $60,000
    - Seaside: $50,000

2. Install Wells and Septic Systems at Homes with Known Indoor Plumbing Needs[1]
    - 35 Homes Prioritized for NFWF Funding: $846,000
    - 77 Homes Prioritized for Other Funding Sources: $1,666,000

The report also documents a wide range of potential funding sources for addressing these needs. The A-NPDC should be well positioned to pursue additional NFWF funding for the Bayside needs assessment and rehabbing prioritized homes. New funding sources captured in Appendices C and D could be evaluated to complete the Seaside needs assessment and rehab homes not currently prioritized for potential NFWF assistance.

[1] It is important to note that many homes with indoor plumbing needs have additional rehab needs, and that the estimates provided above only cover the estimated costs of installing a well and septic system. When receiving an indoor plumbing project, homes must be rehabbed to meet housing code standards. In many cases, it is more cost effective to demolish a home and construct a new house on the property. The average cost for a complete rehab project, including installation of a well and septic system, has been approximately $100,000 per home.

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I. Introduction

Virginia's Eastern Shore has many residences that lack indoor plumbing. Residents in these circumstances often use night pails, unpermitted privies or backyard port-a-johns. In addition to the impact on quality of life for residents, this antiquated problem results in human waste disposal practices that threaten water quality in Chesapeake Bay watershed and endanger the local fishing and tourism economy. Historically, the full extent of the problem has not been documented, but it is suspected to impact hundreds of homes.

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In 2013, the A-NPDC applied to the National Fish and Wildlife Foundation (NFWF) for technical assistance through the NFWF Chesapeake Bay Stewardship Fund Technical Assistance program. A-NPDC was awarded the technical assistance with Skeo Solutions serving as the technical assistance service provider. This assistance allowed the A-NPDC to conduct a targeted windshield survey to identify homes on the Bayside of the Eastern Shore that need indoor plumbing and to develop a prioritization strategy and funding framework for addressing indoor plumbing needs on the Eastern Shore.

This report summarizes the methods and outcomes of that technical assistance. Following this Introduction, the report is organized around the following chapters and appendices:

- *Context*: summarizes what was known about indoor plumbing on the Eastern Shore before the NFWF-funded windshield survey and what has been accomplished to date to address lack of indoor plumbing.
- *Windshield Survey Methodology*: describes the approach used to prioritize homes for inclusion in the 2014 windshield survey and the methodology used to conduct that survey.
- *Windshield Survey Findings*: contains results from the survey as well as field observations and a summary of additional county data available to inform future windshield surveys.
- *Impact of Indoor Plumbing Needs*: provides context on the impact of indoor plumbing needs on sensitive ecosystems, the local economy and quality of life; this information may be used to support future funding applications.
- *Funding Framework Recommendations*: summarizes recommendations for seeking future funding and associated cost estimates.
- *Technical Working Session*: captures feedback on the Funding Framework Recommendations from a stakeholder working session.
- *Conclusion*: summarizes outcomes of the NFWF technical assistance and next steps.
- *Appendices*: provides copies of solicitation materials, working session materials, and summary charts of potential funding sources for addressing indoor plumbing needs.

II. Community Context

Eastern Shore stakeholders have long understood that indoor plumbing needs are a significant challenge facing the Eastern Shore community. However, exact figures and data have not been systematically documented. The following information summarizes what is known about indoor plumbing status on the Eastern Shore from national data sources, previous studies and documented local investments to address indoor plumbing needs.

Context from National Data Sources

Indoor Plumbing Status in Virginia

As of 2013, nearly 13,000 occupied Virginia homes lack complete plumbing facilities.[2] Comparatively, Virginia ranks 13th in the nation for the highest number of occupied housing units lacking complete plumbing facilities.[3] Furthermore, in 2000, Virginia ranked 4th nationwide for total *rural* occupied housing units lacking complete plumbing facilities.[4] More recent data is not available because this information is no longer collected by the American Community Survey (ACS). However, this statistic is significant given that the Eastern Shore is located in a rural area of the state.

Indoor Plumbing Status on the Eastern Shore

According to the 2013 ACS (5-year estimates):

- Accomack is 4.5x more likely and Northampton: 3.3x more likely to lack complete indoor plumbing than Virginia's average housing stock.
- Residents of Accomack and Northampton Counties are two times more likely than the average Virginian to live without complete indoor plumbing.
- Residents living without complete indoor plumbing on the Eastern Shore are more likely to be homeowners: 54% in Accomack and 61% in Northampton compared to 48% in Virginia.

Past Data Collection and Rehab Efforts on the Eastern Shore

Over the past several decades, the A-NPDC has championed the identification and rehab of homes without indoor plumbing on the Eastern Shore.

Past Data Collection Efforts

Past studies and their key findings include:

- *Accomack-Northampton Regional Housing Assessment* (2002): This assessment captures a number of findings including:
    - Number of owner units lacking complete indoor plumbing: "The Virginia Center for Housing Research estimates that as of 1999, there were 273 owner units on the Eastern Shore lacking complete plumbing. This represents a 42.6 percent decrease in the number of owner units lacking complete plumbing in 1990." (p. III-1)

[2] American Community Survey (ACS), 2013.
[3] American Community Survey (ACS), 2013.
[4] U.S. Census, 2000.

  - Percent of units lacking complete indoor plumbing: "Of the total housing units on the Eastern Shore, 8.8 percent lack complete plumbing, while Statewide 1.9 percent of the housing lacks complete plumbing. Interestingly, there is a higher proportion of occupied units on the Eastern Shore with incomplete plumbing facilities (9.1 percent) than vacant units with incomplete plumbing (7.4 percent)." (p. III-2)

  - 2002 Windshield Survey Results: A windshield survey to identify house without indoor plumbing was conducted in 23 Eastern Shore communities. The survey identified 162 occupied (or occupiable) homes lacking indoor plumbing.

- *2007 Windshield Survey Update*: A 2007 update to the windshield survey data identified that 45 homes had been addressed between 2002 and 2007, leaving 117 homes that still needed assistance.

- *2014 Windshield Survey Update*: A 2014 update to the windshield survey data identified that an additional 18 homes had been addressed between 2007 and 2014, leaving 99 homes that still needed assistance.

- *Indicators of Housing Need Survey* (Northampton County Housing Committee, 2009): Survey results indicate the percent of respondents in various Eastern Shore communities who lack an indoor bathroom. Communities surveyed include: Birdsnest (0%), Bridgetown (2%), Cheapside (4%), Culls (9%), Jamesville (38%), Sylvan Scene (0%), Treherneville (4%) and Weirwood (33%).

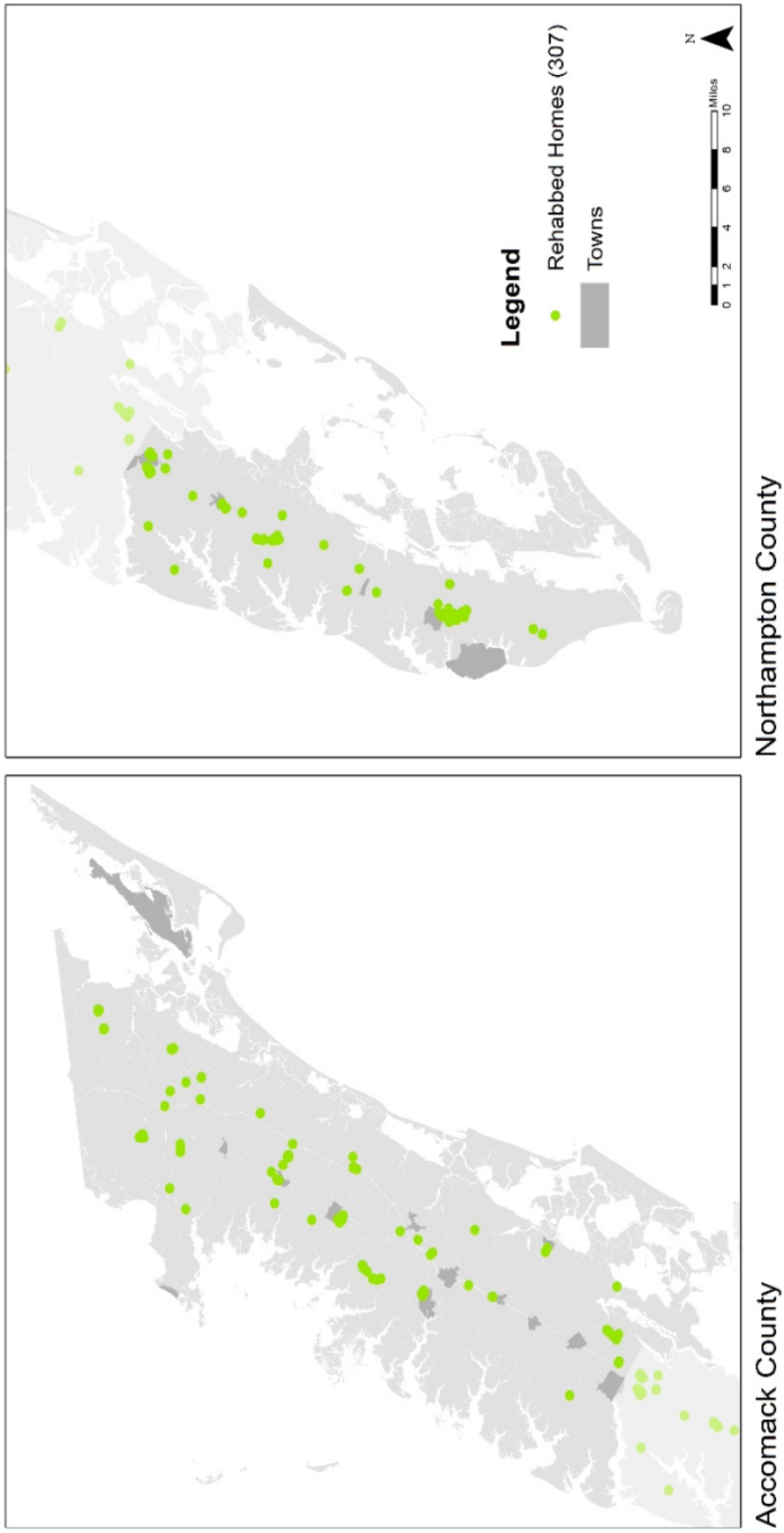
Unfortunately, past studies have not resulted in a full assessment and documentation of specific addresses needing indoor plumbing on the Eastern Shore.

Rehab Efforts

Historically, the A-NPDC has served as the predominant driver of indoor plumbing rehabs on the Eastern Shore. Staff have worked diligently to identify funding from multiple sources. Efforts to date have resulted in 401 homes provided with first-time indoor plumbing. Map 1 on the following page indicates the locations of 307 of these projects.[5]

Funding for these rehabs has historically come from sources such as the Indoor Plumbing Rehab program and the Community Development Block Grant program. However, reductions in funding and shifting priorities have created a need to identify new, diverse sources of funding to address remaining indoor plumbing needs.

[5] Approximately a quarter of the 401 projects identified by the A-NPDC could not be digitized due to insufficient address information (e.g., complete address unknown or the known address doesn't match an address in the address shapefile). The information known about each project is captured in an Excel workbook titled "List of Rehab Addresses from A-NPDC.xlsx."



Map 1. Locations of Past Indoor Plumbing Rehab Projects

III. Methodology

A first step to developing a full funding strategy is to better understand the scope of the problem by conducting an indoor plumbing needs assessment. When applying for NFWF technical assistance, the A-NPDC determined that a windshield survey would be the best method of conducting this needs assessment as many homes have visual signs indicating the status of indoor plumbing inside the home.

This chapter describes the methodology for the following steps in the windshield survey process:

1. Prioritize homes for the needs assessment.
2. Conduct a windshield survey of Bayside homes prioritized for the needs assessment.

Step 1: Prioritize Homes for the Needs Assessment

Funding from NFWF provided the resources for a 5-day windshield survey of residences on the Bayside of the Eastern Shore. With over 1,516 miles of roads on the Eastern Shore of Virginia, surveyors needed to prioritize homes that would be included in this initial pilot survey. The A-NPDC and Skeo Solutions worked together to gather available data and local knowledge on indoor plumbing status at individual residences on the Bayside ahead of the survey. Based on this information, homes on the Eastern Shore whose indoor plumbing status is unknown were prioritized for inclusion in an indoor plumbing needs assessment. Then, those homes that are located on the Bayside were prioritized for inclusion in the Bayside windshield survey.

Methodology

1a. Develop criteria for Eastern Shore Homes that should be included in a needs assessment.
At the start of the project, Skeo Solutions worked with Accomack and Northampton Counties to determine what digitized records of indoor plumbing status might be available. Representatives from both Accomack and Northampton Counties stated that the Counties have no reliable digital records documenting whether properties have permitted sewer systems or what kind of system has been permitted. Therefore, the A-NPDC and Skeo Solutions determined the prioritization process would need to rely on local knowledge of indoor plumbing status to prioritize homes for inclusion in a needs assessment. Based on local documentation, the A-NPDC and the Health Department recommended excluding the following types of properties:

- Residences located in a local jurisdiction identified by the A-NPDC.
- Residences located in a subdivision or mobile home park identified by the A-NPDC.
- Residences already upgraded by the A-NPDC.
- Residences located in other areas not prioritized by A-NPDC staff. (These areas, identified based on staff knowledge, tended to be newer neighborhoods known to have indoor plumbing or communities located next to the shore where income levels likely preclude the need for indoor plumbing assistance.)

In addition, the A-NPDC and the Health Department were able to identify “hot spots” – areas where a concentration of residences without indoor plumbing are known or suspected. These hot spots were identified based on staff knowledge, as well as solicitation of information from Eastern Shore stakeholders. See Appendix A for the solicitation materials.

1b. Develop and digitize data based on the criteria.

Using these criteria, A-NPDC and Health Department staff developed a set of handwritten notes on paper maps of the Bayside area. Skeo Solutions digitized the information on these paper maps by selecting address points in ArcMap and saving the information for each address in a GIS shapefile.

In some areas, these maps also captured information on the Seaside; however, the A-NPDC and Health Department staff did not generate a full set of data for the Seaside, since this area fell outside of the study area funded by NFWF.

Each address was also assigned an attribute of "residential" or "non-residential" by intersecting the address points with residential building footprints. Because the residential building footprint data is out of date, all addresses were retained in the shapefile; however, for the purposes of calculation, only addresses assigned a residential value are used in subsequent estimates of the number of residential addresses on the Eastern Shore.

Results: Homes Prioritized for the Needs Assessment

Once all data provided by the A-NPDC and Health Department was digitized, Skeo Solutions was able to identify 14,729 residences where the indoor plumbing is unknown. Table 1 summarizes the number of homes in each prioritization category, including their location (Bayside or Seaside).[6] Map 2 on the following page depicts the addresses that were prioritized for the needs assessment. Specific addresses can be identified by referring to the GIS shapefiles delivered to the A-NPDC along with this report.

Table 1. Residences Prioritized for the Indoor Plumbing Needs Assessment

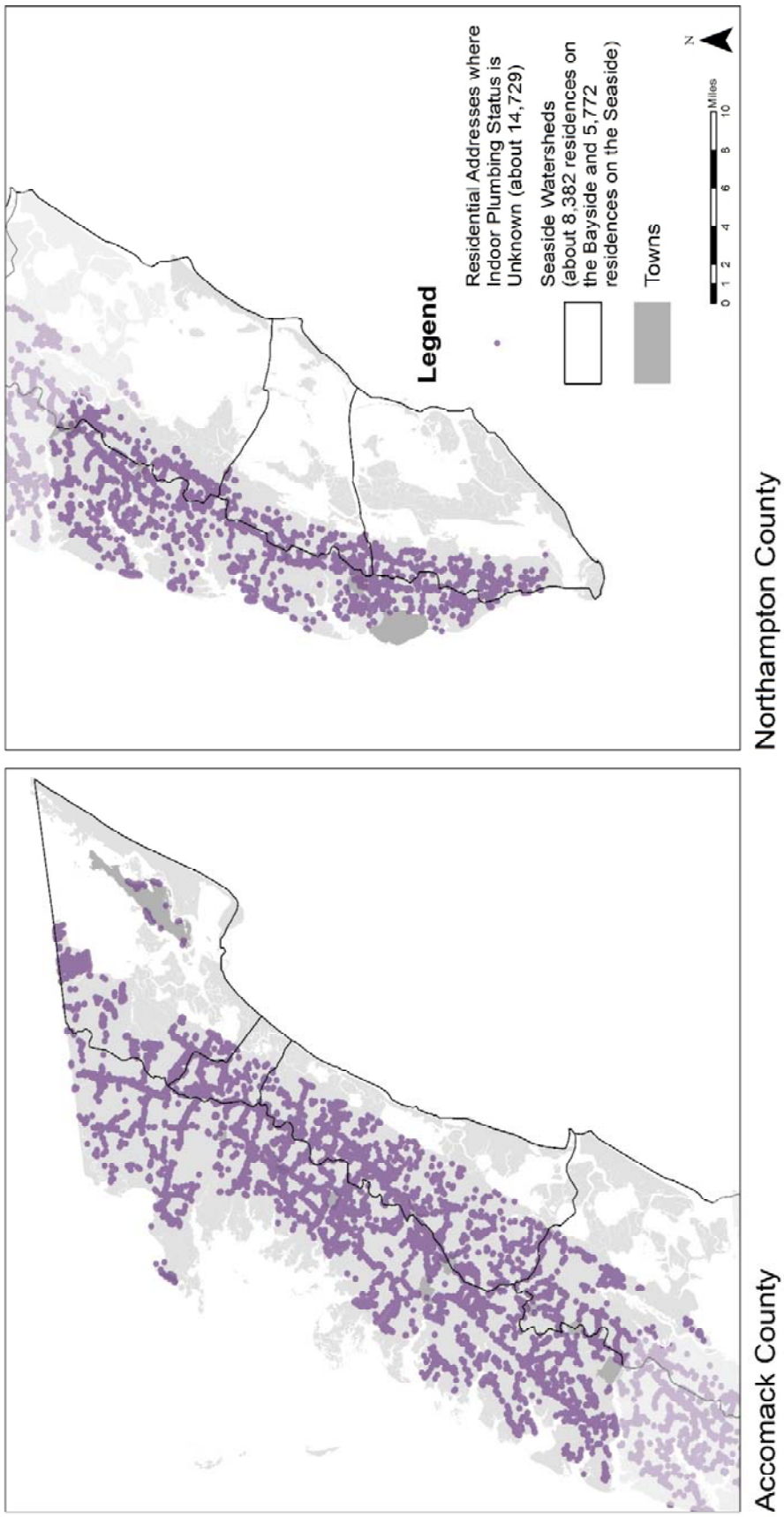
	Criteria	Bayside	Seaside[7]	Total[8]
All Residences[9]	**All residences on the Eastern Shore**	**14,311**	**12,161**	**26,472**
Residences excluded from Needs Assessment	**Total**	**5,927**	**5,816**	**11,743**
	Served by a municipal or subdivision sewer	3,512	5,590	9,102
	Known rehab project at residence	194	59	253
	Located in a high-income area, newly-developed area or mobile home park.	2,221	167	2,388
Residences prioritized for Needs Assessment	**Total**	**8,384**	**6,345**	**14,729**
	Located in hot spots.	955	102	1,057
	Remaining residences where indoor plumbing status is undocumented.	7,429	6,243	13,672

[6] Because paper maps capturing the A-NPDC and Health Department's understanding of indoor plumbing status on the Seaside have not yet been fully completed, the Seaside numbers may fluctuate. New data will predominately exclude homes from the needs assessment, per the criteria listed in Step 1a.

[7] As noted in footnote 4, these figures are expected to fluctuate. The total for Residences Excluded from the Needs Assessment is expected to increase. Overall, the total for Residences Prioritized for the Needs Assessment is expected to decrease; however, the subset of Residences located in Hot Spots may increase.

[8] These figures will adjust in relation to the development of Seaside data.

[9] Given the uncertainties around the accuracy of the residential footprint data used to calculate the total number of residences (described in the Methodology 1b section), these numbers are provided for estimation purposes only.



Map 2. Residences Prioritized for the Needs Assessment

Step 2: Conduct the Bayside Windshield Survey

Skeo Solutions conducted a targeted windshield survey of homes on the Bayside of Accomack and Northampton Counties on October 6-10, 2014. The purpose of the survey was to identify homes without indoor plumbing. Surveyors originally hoped to cover all homes prioritized for a windshield survey; however, the extent of the survey needs caused surveyors to focus in on homes in "hot spot" areas, as described in Step 2b.

During that week, the surveyors also met with staff from the Assessor's Offices in both counties to discuss options for prioritizing additional homes for a future windshield survey. Following the windshield survey, A-NPDC staff provided further classification of homes identified during the survey.

Field Methodology for the Bayside Windshield Survey

2a. Establish visual criteria for determining indoor plumbing status.
The surveyors received a training from David Annis and John Aigner, from the A-NPDC on how to identify homes without indoor plumbing prior to starting the windshield survey. These criteria are listed in Table 2.

Table 2. Indoor Plumbing Status Criteria

	Identification Criteria
Residential addresses that do not need indoor plumbing.	• Indoor plumbing confirmed by presence of a vent pipe, a bathroom addition, a mounded system or by verbal confirmation. • Structure abandoned • No structure visible • Not a residence
Residential addresses that likely do not need indoor plumbing	• No system visible, but general condition and age of the home would indicate that the home likely has indoor plumbing
Residential addresses that need further classification by an A-NPDC expert	• No system visible, but general condition and age of the home would indicate that the home may not have indoor plumbing
Residential addresses that likely need indoor plumbing	• Presence of a port-a-john • Presence of a privy • Verbal confirmation of no indoor plumbing

2b. Establish initial driving route and modify as needed to complete hot spot areas.
Surveyors started in the southern tip of the Bayside in Northampton and worked their way north over the course of the week-long survey. Surveyors were equipped with paper maps identifying the locations of homes prioritized for the survey, as well as a Trimble Yuma 2 Rugged Tablet (a global positioning system device) that had the prioritized homes loaded as data points that could be edited in the field.

On the first afternoon, surveyors used the maps and the Trimble to navigate through the southern tip of the Bayside in Northampton and recorded data for every prioritized residence they passed. However, based on the time needed to record information at each home, it was determined that the surveyors would not be able to visit all Bayside residences that had been prioritized for the survey in the space of a week.

Based on this finding, A-NPDC and the surveyors decided to focus on the 955 residences located in "hot spot" areas on the Bayside. On the following days of the survey, the surveyors used the maps and the Trimble to navigate through each of the hotspot areas and recorded data for all of the residences in these areas. By the end of the week, the surveyors had completed the windshield survey for all hotspot areas in the Bayside.

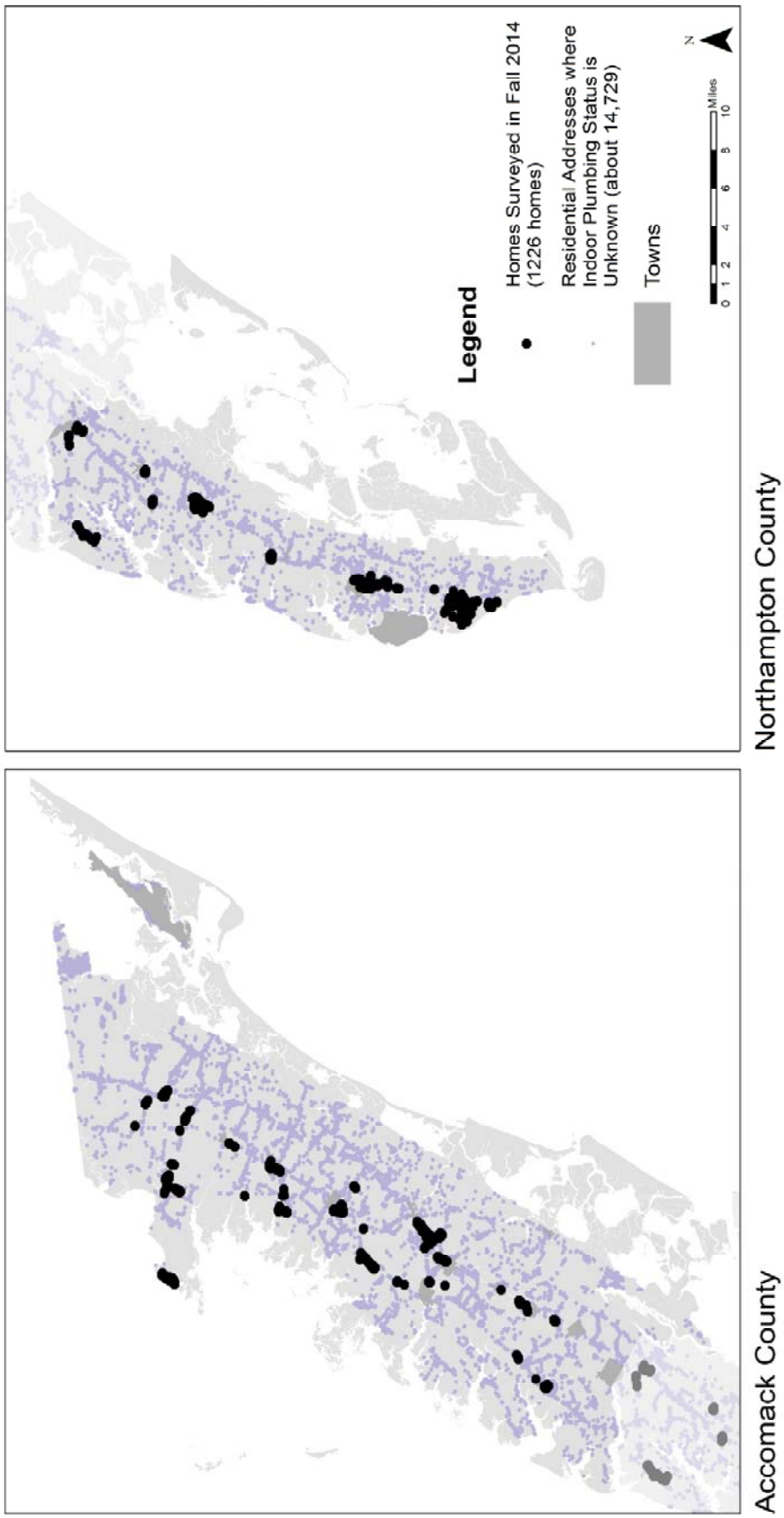
In addition, as the surveyors drove, they occasionally spotted homes that had port-a-johns or privies on the property. In these instances, the surveyors stopped to record data for the homes.

2c. Record windshield survey data.
For each surveyed residence, the surveyors used the Trimble Yuma 2 Rugged Tablet to record data for the criteria that would be used to make a determination of the home's indoor plumbing status. The surveyors recorded data for a total of 1,226 homes over the course of the week-long windshield survey.

In instances where a home (1) had no visible sign of indoor plumbing, (2) had no visible sign of a port-a-john or privy, and (3) appeared to be of an age or physical condition that might indicate a lack of indoor plumbing, the surveyors took photos of the home for future review by A-NPDC staff.

Map 3 on the following page depicts the addresses in each county that were documented during the windshield survey. Specific addresses can be identified by referring to the GIS shapefile delivered to the A-NPDC along with this report.

2d. Subsequent A-NPDC Expert Classification
Following the week-long windshield survey, photos of residences that could not be classified were submitted to the A-NPDC for an expert determination. A-NPDC staff reviewed the photos and conducted in-person visits to some properties to make a final determination of indoor plumbing status. A-NPDC staff classified these residences using the following four categories: has plumbing, no plumbing, inconclusive and abandoned. This information was incorporated into the GIS shapefile and used in the final data calculations.



Map 3. Homes Surveyed in Fall 2014

IV. Bayside Windshield Survey Findings

The 2014 windshield survey resulted in the documentation of indoor plumbing status for 1,226 homes as well as the identification of considerations for future windshield survey work.

Results of the Windshield Survey

Initial Data

Table 3 captures the data recorded during the survey. Of the properties surveyed, 84 properties are suspected of needing indoor plumbing. Of these 84 properties, 49 had privies and 24 had porta-johns. At 11 additional properties, residents or neighbors confirmed the property did not have indoor plumbing but no privy or porta-john was visible.

Finally, the surveyors took pictures of 111 properties where no determination could be made. These properties would later be classified by A-NPDC staff then incorporated into the survey accordingly.

Table 3. Classification of Indoor Plumbing Status

	In Hotspots	**Not in Hotspots**	**Total**
Total Properties Surveyed	*1091*	*135*	*1226*
Total suspected of needing indoor plumbing	*50*	*34*	*84*
Privies	34	15	49
Port-a-johns	8	16	24
Structures with verbal confirmation of no indoor plumbing but no visible privy or port-a-john	8	3	11
Total Needing Further Classification by an A-NPDC Expert	*74*	*37*	*111*

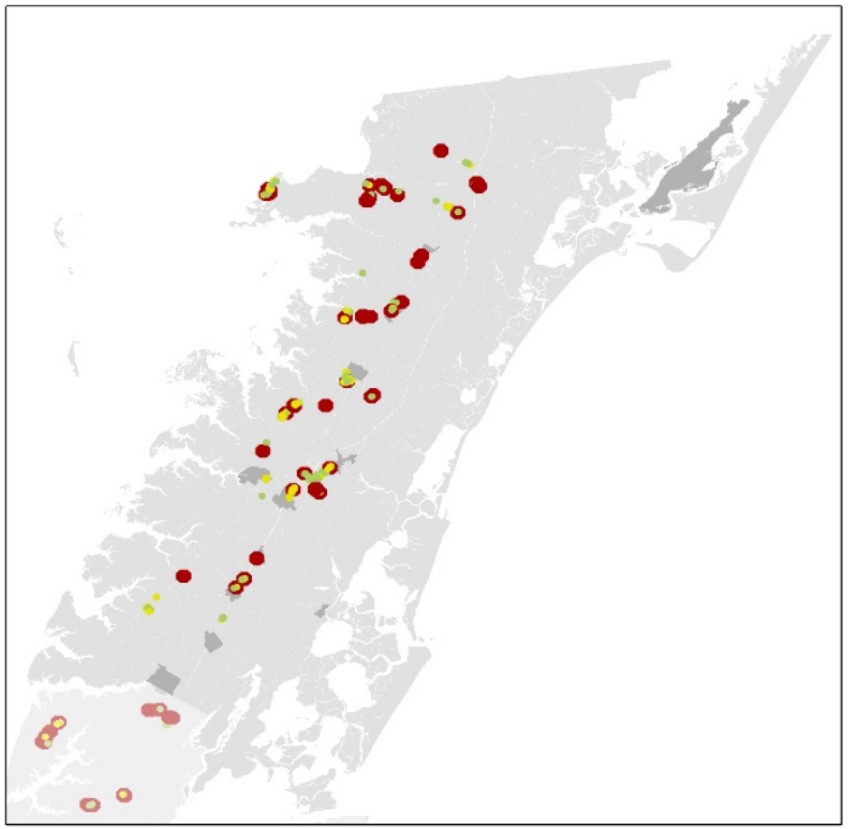
Final Results

After the data from the windshield survey and subsequent A-NPDC classifications were totaled, the survey resulted in the identification of 112 residences that likely need indoor plumbing assistance. That figure represents 9% of the 1,126 homes surveyed. Table 4 and Map 4 summarize the survey results.

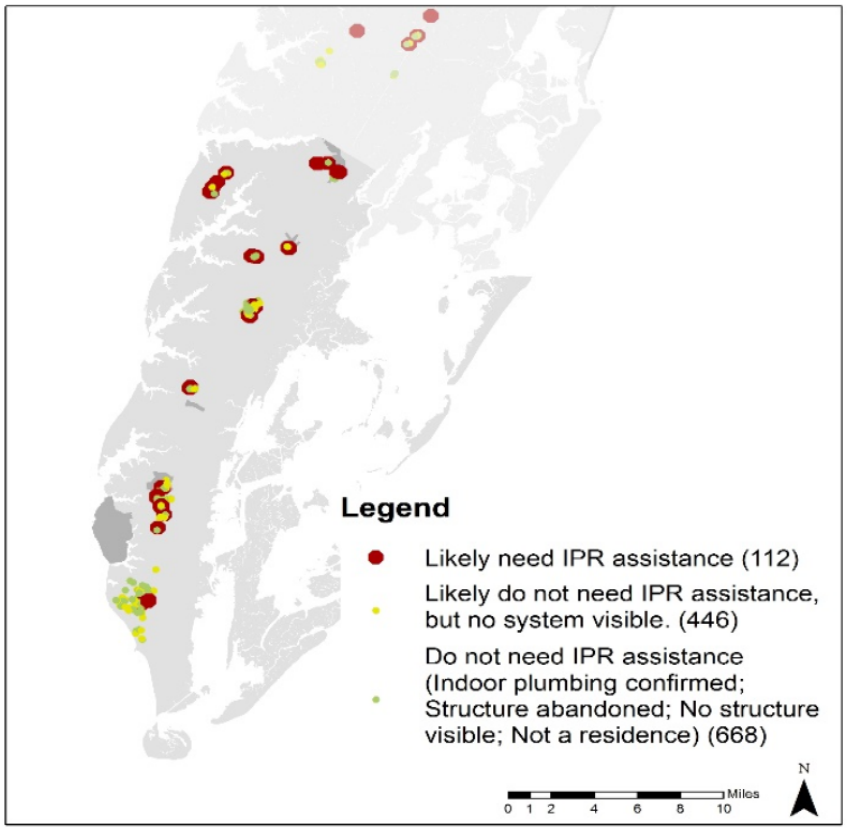
Table 4. Windshield Survey Results

	Identification Criteria	**Number of Properties (1,226 total)**	**Percentage of Properties Surveyed**
Residential addresses that do not need indoor plumbing	• Indoor plumbing confirmed by presence of a vent pipe, a bathroom addition, a mounded system or by verbal confirmation. • Structure abandoned • No structure visible • Not a residence	668	54.5%
Residential addresses that likely do not need indoor plumbing	• No system visible, but general condition and age of the home would indicate that the home likely has indoor plumbing	446	36.4%
Residential addresses that likely need indoor plumbing	• Presence of a port-a-john • Presence of a privy • Verbal confirmation of no indoor plumbing	112	9.1%

Map 4. Geographic Distribution of Windshield Survey Results



Accomack County



Northampton County

Considerations for Future Survey Work

Field Observations

In addition to the data collected during the windshield survey, surveyors made the following field observations:

- *Identifying homes through conversations with residents*: Conversations with residents were extremely valuable for locating homes in need of plumbing upgrades when no signs of plumbing were visible. For example, the home pictured in Figure 1 appears to be in good condition but several neighbors confirmed that in fact it does not have indoor plumbing.

Figure 1. Home where neighbors report no indoor plumbing.

- *Indoor plumbing assumptions for trailers*: Conversations with residents also revealed that some trailers lack indoor plumbing. Furthermore, it is not always evident what trailers may be in need of upgrades based on the condition of the trailer. For example, the trailer pictured in Figure 2 appears to be in good condition, but the resident and a neighbor confirmed that it does not have indoor plumbing.

  In a future phase of the project, door-to-door surveys could be considered for trailers to confirm status of indoor plumbing. Door-to-door survey teams might include a bilingual staff person to support communication with Spanish-speaking residents.

Figure 2. Trailer where resident and neighbor report no indoor plumbing.

- *Properties with other habitations*: On some properties, people are living in temporary or mobile habitations (e.g., tents or RVs). In some instances, these habitations look modern and well-maintained. In other situations, the structures appear dilapidated or living-conditions appear neglected. When the survey team encountered the latter, they took pictures as possible and recorded the properties as instances where indoor plumbing assistance may be needed. For example, the resident of the RV pictured in Figure 3 confirmed that he has no indoor plumbing.

Figure 3. RV where resident reports no indoor plumbing.

- *Providing project contact information*: For future surveys, it could be helpful for surveyors to carry business cards from an A-NPDC staff person to share with interested residents.

Additional Data Collected from Assessor's Offices

While on the Eastern Shore, Skeo Solutions visited the County Assessors' offices and made data requests to try to identify additional homes that could be targeted in a second windshield survey. Both assessor offices confirmed again that reliable GIS data is not available.

In lieu of further GIS queries, the assessors were able to query their own database and both offices submitted data, as summarized in Table 5. The queries did not exclude homes covered by the first windshield survey, so it is possible there is overlap.

Skeo Solutions was not able to analyze this data further due to limited resources; however, it could be used to help prioritize additional homes for a later windshield survey.

Table 5. Additional Homes Prioritized by the Accomack and Northampton Assessors

County	Query from Assessors Database	Number of Homes	Format	Unique ID
Accomack	Homes and tenant housing with no bathroom.[10]	112	Excel	Parcel ID
Northampton[11]	Single Family, no bathroom	72	Hard-copy	Address
	Tenant House	89		
	Tenant House and/or Old Dwelling	97		

[10] The Accomack Assessor conducted this query and then reviewed the photos of all homes identified by the query. To arrive at the final 112 homes identified here, the assessor eliminated buildings that appeared derelict in the photo on file.

[11] According to the Northampton Assessor, it is possible there is some overlap between these three queries.

V. Impact of Indoor Plumbing Needs

Indoor plumbing needs have a significant impact on environmental health, economic security, and quality of life on the Eastern Shore.

Environmental Health

Sole Source Aquifer

The Eastern Shore has been designated a sole source aquifer by the U.S. Environmental Protection Agency and all residents rely on groundwater for their drinking water supply. Properties with shallow wells screened in the unconfined Columbia Aquifer are especially vulnerable to contamination from land use activities including bacteria and nutrients from properties lacking complete plumbing facilities.

Sensitive Ecosystems and the Chesapeake Bay

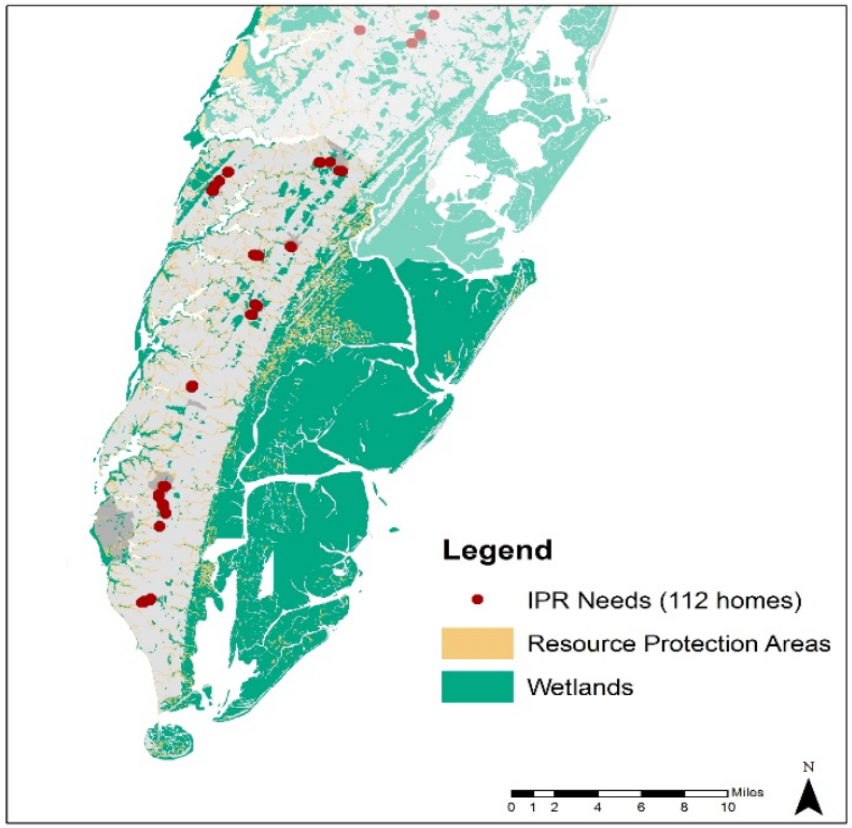
In addition, indoor plumbing needs can directly impact the health of sensitive ecosystems and the Chesapeake Bay. Map 5 on the following page indicates the locations of the 112 homes with indoor plumbing needs and their proximity to sensitive environmental features that drain to the Chesapeake Bay.

Related Economic Threats

The Eastern Shore's tourism, agricultural and seafood economies are dependent on the integrity of natural ecosystems. Therefore, addressing indoor plumbing needs can be viewed as an investment in the stability and future growth of the Eastern Shore's local economy.

Map 5. Proximity of Indoor Plumbing Needs to Sensitive Ecosystems

Accomack County



Northampton County

Quality of Life: Environmental Justice and Social Justice Risk Factors

A number of environmental justice and social justice risk factors provide compelling reasons to invest in indoor plumbing needs and help reduce significant disparities in the quality of life for Virginian residents in the United States.

Race-based Risk Factors

Nationwide, people of color living in rural areas are more likely to live without complete plumbing facilities than whites. (2000 Census)

- African Americans are 3.4x more at risk than whites.
- Hispanics are 2.7x more at risk than whites.

Local Socioeconomic Risk Factors

As documented in Table 6, residents of Accomack and Northampton Counties:

- Are nearly 2.5x as likely to live in homes worth less than $100,000.
- Have a median income just over half of the state median.
- Are more likely to have less than a high school education.
- Are more than 2x as likely to live in poverty as other Virginians.
- Have 2x as many children living in poverty than the state average.
- Are more likely to be African American than other Virginians.

Table 6. Socioeconomic Risk Factors (ACS 2013, 5-year estimates)

	Accomack	**Northampton**	**Virginia**
Median Household Income	$39,328	$33,635	$63,907
Unemployment Rate	6.4%	11.3%	7.2%
Percent of Residents with less than a High School Education	19.8%	25.6%	12.2%
Poverty Rate	20.5%	24.3%	11.3%
Child Poverty Rate	30.1%	33.1%	14.9%
Percent Families Living in Poverty with a Single Female Head of Household	40.2%	39.3%	24.8%
Percent African-American	29.3%	38.0%	20.7%
Percent Homes < $100,000 (owner-occupied)	33%	30%	13%

VI. Funding Framework Recommendations

Based on the findings of the windshield survey, Skeo Solutions identified the following priorities for funding future indoor plumbing work:

1. Complete an indoor plumbing needs assessment (windshield survey).
2. Pursue rehab funding for homes with known indoor plumbing needs.

Additional details on each of these funding priorities are summarized in the following sections.

1. Complete an indoor plumbing needs assessment (windshield survey).

The level of effort needed to complete a full windshield survey of all homes on the Bayside of the Eastern Shore where indoor plumbing is unknown exceeded the capacity of the 2014 NFWF Chesapeake Bay Stewardship Fund Technical Assistance. Obtaining additional funding to complete the survey would allow the A-NPDC and local governments to develop a complete dataset on homes needing assistance with indoor plumbing.

Estimates for completing a full survey can be approximated based on the windshield survey completed for the hot spot areas. As indicated in Table 7, costs for this effort can be prioritized by location (e.g., Bayside vs. Seaside or Accomack vs. Northampton) depending on the available funding sources.

Table 7. Cost Estimates to Complete a Full Needs Assessment

	# of Homes Prioritized[12]	# of Homes Surveyed	# of Homes Remaining	Time to Complete Survey[13]	Cost Estimate[14]
Bayside vs. Seaside					
Bayside	8,300	1,101	7,199	**6 weeks**	**$60K**
Seaside	6,345	125	6,220	**5 weeks**	**$50K**
Accomack County vs. Northampton County					
Accomack	9,845	650	9,195	**8 weeks**	**$80K**
Northampton	4,309	576	3,733	**3.5 weeks**	**$35K**

In addition, after the 2014 windshield survey had been completed, local assessors from both counties provided additional data on residences that might be at risk for indoor plumbing needs. If funding for conducting a windshield survey of all remaining prioritized homes is not available, funding to cover the costs of analyzing this new data could help further prioritize a smaller subset of homes for a second windshield survey and rehabilitation.

[12] Approximation based on assumptions in GIS.
[13] Assumes 1200 homes/40 hours, including travel time for survey staff. Assumes a 40-hour work week. Actual survey times will vary based on field conditions and accuracy of GIS address database.
[14] Includes site visit prep, windshield survey time and data processing. Assumptions available upon request.

2. Pursue rehab funding for homes with known indoor plumbing needs.

There is not a single funding source to address all 112 homes identified in the windshield survey; therefore, these homes need to be prioritized for rehab based on different funding sources' goals and objectives. For example, a subset could be prioritized for installation of wells and septic systems under a NFWF Innovative Nutrient and Sediment Reduction Grant based on several factors including: (1) proximity to sensitive environmental features and (2) clusters of homes. For these homes, additional funding sources may need to be identified to cover additional rehab costs incurred in the process of providing first-time indoor plumbing. Homes not prioritized for a NFWF funding application could be funded through federal programs and other foundation sources. See Appendices C and D for a list of potential sources that could complement NFWF funding.

Proximity to Sensitive Environmental Features

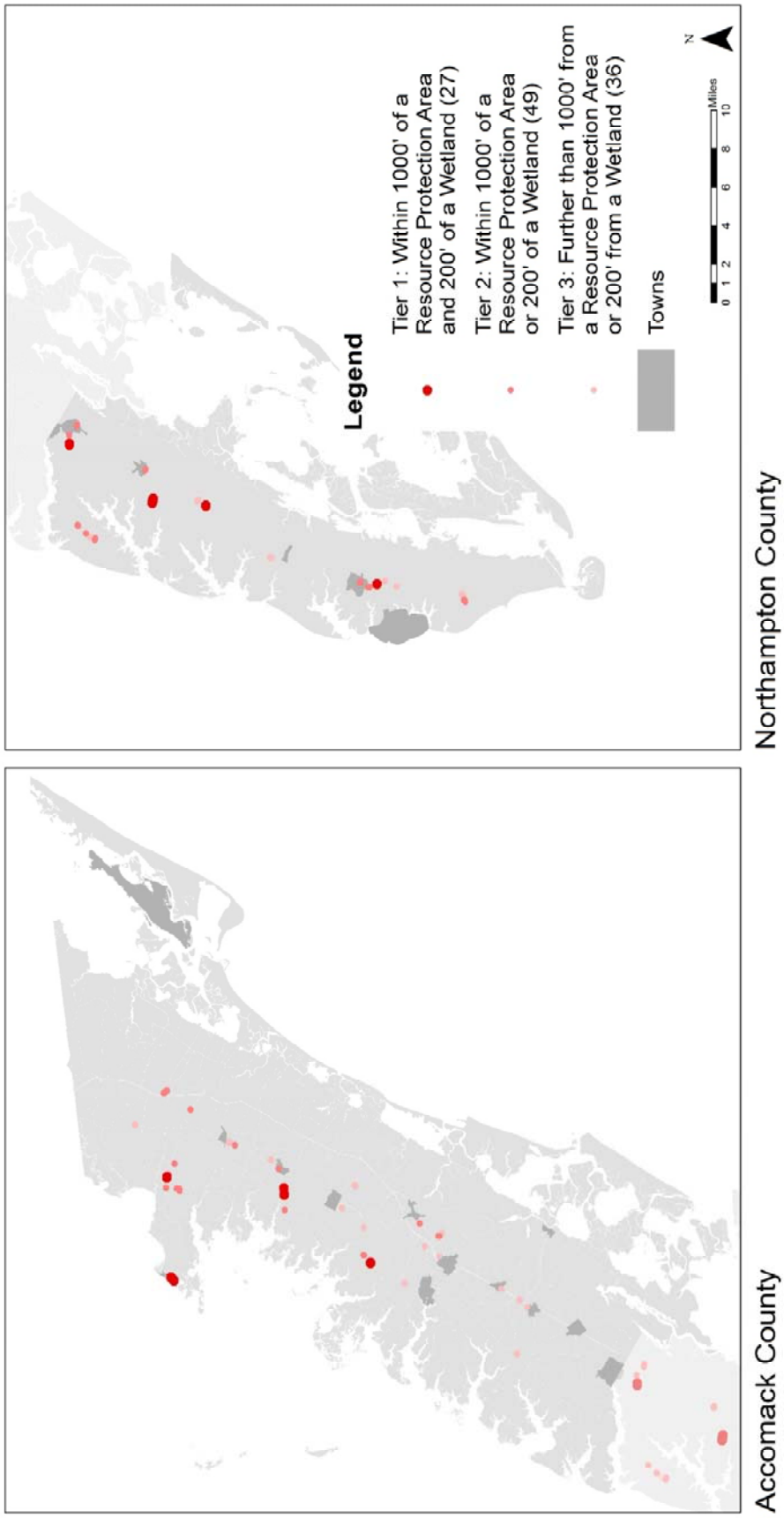
As shown in Table 8, when prioritized by proximity to sensitive environmental features, the 112 homes with indoor plumbing needs could be ranked into three tiers. Map 6 on the following page shows the geographic distribution of these homes by tier level.

Table 8. Ranking Homes with Proximity to Environmental Features

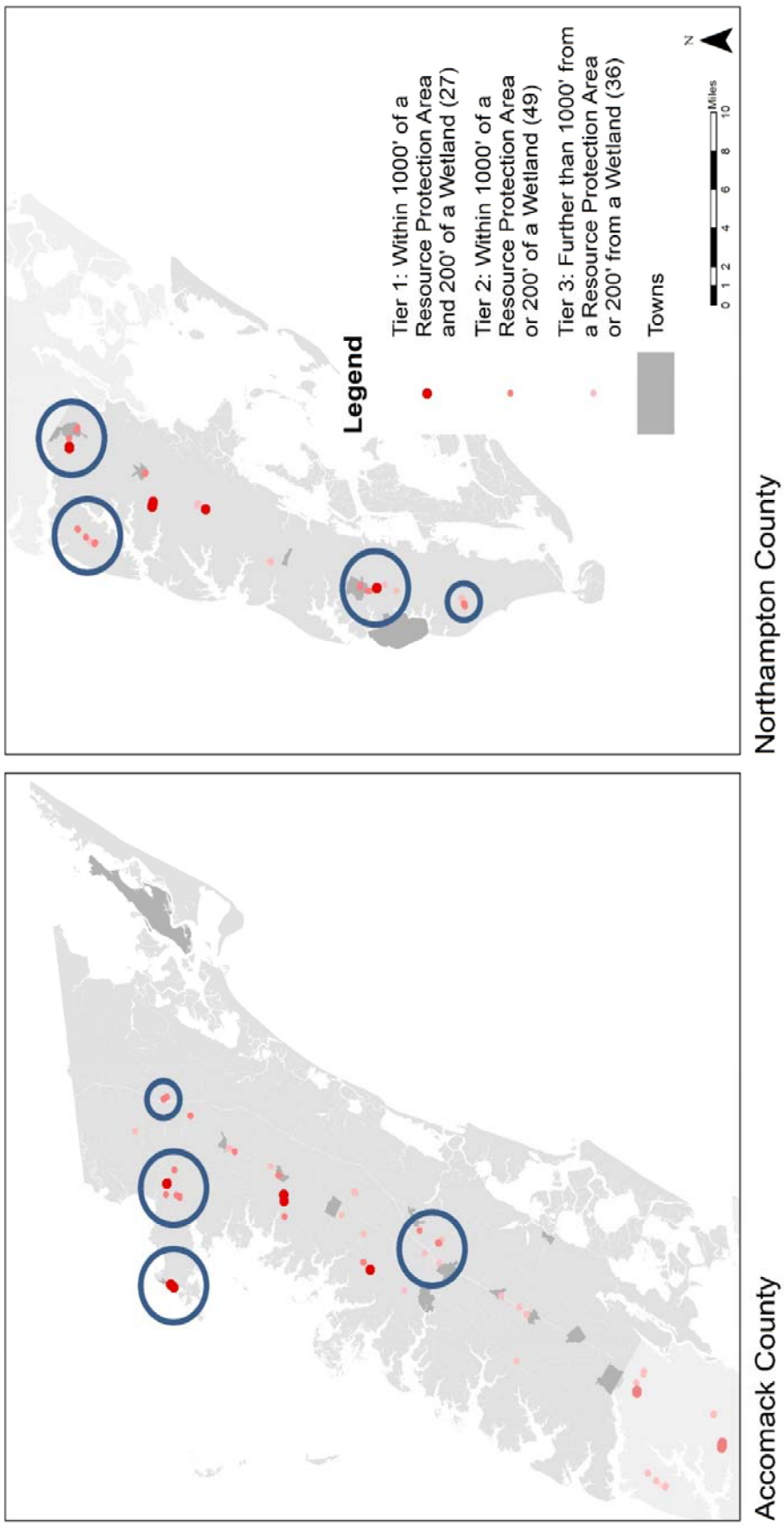
Tier	Ranking Criteria	Number of Homes (112 total)
1	Homes within 1000' of a Resource Protection Area and 200' of a wetland.	27
2	Homes within 1000' of a Resource Protection Area or 200' of a wetland.	49
3	Homes further than 1000' of a Resource Protection Area or 200' of a wetland.	36

Clusters of Homes

It may be more cost effective to conduct rehabs on homes located in proximity to each other. Map 7 on the page after next indicates clusters of five or more homes and their proximity to environmentally sensitive areas.



Map 6. Ranking Homes with Proximity to Environmental Features



Map 7. Clusters of Five or More Homes within Two Miles

Recommendations for NFWF Funding Assistance Priorities

Based on the tiered environmental rankings and the clusters identified in Map 7, the locations indicated in Map 8 on the page after next have been prioritized for potential NFWF funding assistance. Table 9 indicates the impairments in the nearby waterbodies that could be related to indoor plumbing needs.

Table 9. Causes of Impairment in Waterbodies Near Homes Prioritized for NFWF Funding Assistance

County	Waterbody	Impairment Cause(s) Related to Indoor Plumbing Needs[15]
Accomack	Holden's Creek	*E. coli*
	Pocomoke Sound	Fecal coliform
Northampton	Occohannock Creek	Fecal coliform
	Church Creek	Fecal coliform

Cost Estimates

To support future efforts at securing grant funding for rehab projects, the project team developed the following cost estimates for installing wells and septic systems at the 112 homes with known indoor plumbing needs and at the subset of homes prioritized for NFWF funding assistance.

It is important to note that many homes with indoor plumbing needs have additional rehab needs, and that the estimates provided above only cover the estimated costs of installing a well and septic system. For many indoor plumbing projects, homes must also be rehabbed to meet housing code standards. In many cases, it is more cost-effective to demolish a home and construct a new house on the property. The average cost for a complete rehab project, including installation of a well and septic system, has been approximately $100,000 per home. At homes prioritized for NFWF assistance, NFWF funding would likely only support well and septic installation; funding partnerships would be needed to support a full home rehab.

Costs for installing wells and septic systems depend significantly on the soil type and infiltration rates, which dictates allowable technologies. Therefore, the project team identified how many homes are located on soils that lend the site to lower installation costs (Bojac soils). A-NPDC provided assumptions regarding these costs for homes that are located on Bojac soils and homes that are not located on Bojac soils.

[15] Impairment causes identified from the 2012 Virginia Department of Environmental Quality water quality shapefiles (va_2012_aus_estuarine.shp, va_2012_aus_riverine.shp).

Table 10 summarizes estimated costs for installing wells and septic systems at all 112 homes identified in the 2014 windshield survey. Table 11 summarizes estimated costs for installing wells and septic systems at the subset of homes prioritized for NFWF funding assistance. Assumptions are footnoted.

Table 10. Total Cost Estimate for Installing Wells and Septic Systems

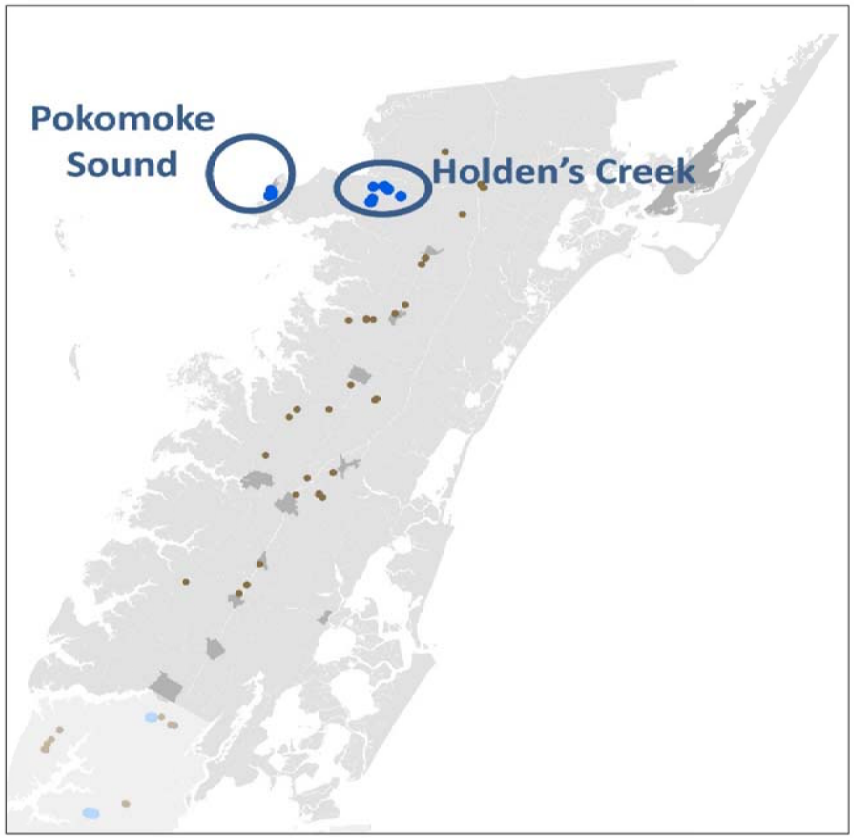
	Known Indoor Plumbing Needs[16]	**Inside Bojac Soils[17]**	**Outside of Bojac Soils[18]**	**Cost Estimate**
Accomack	54	7	47	**$1.29M**
Northampton	58	18	40	**$1.22M**
TOTAL				***$2.51M***

Table 11. Cost Estimate for Installing Wells and Septic Systems at Homes Prioritized for NFWF Assistance

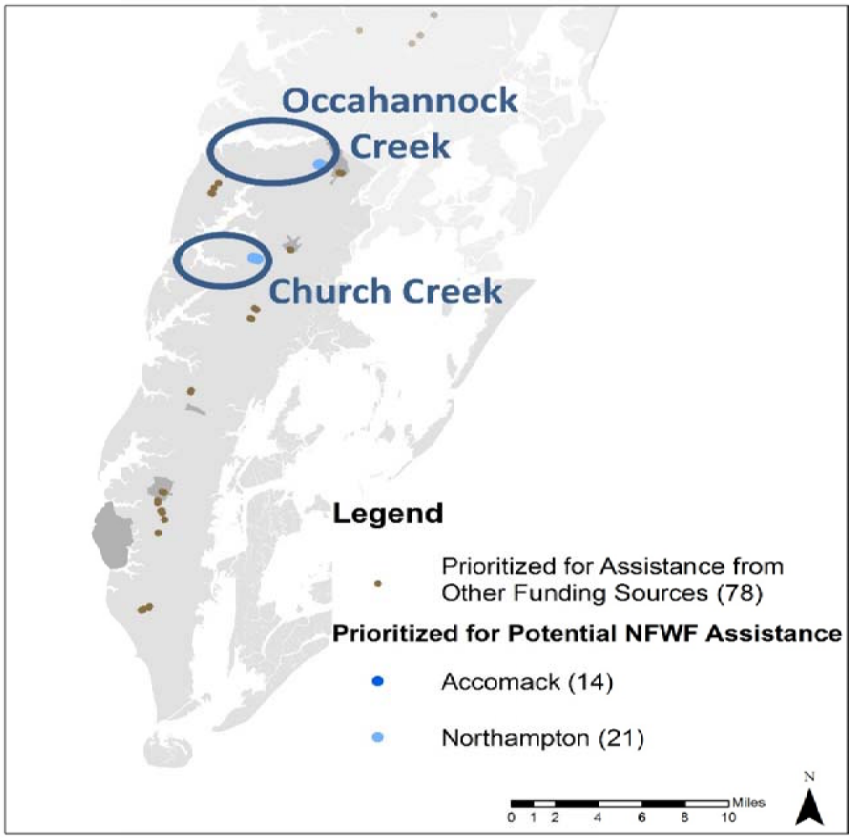
	Known Indoor Plumbing Needs[12]	**Inside Bojac Soils[13]**	**Outside of Bojac Soils[14]**	**Cost Estimate**
Accomack	14	2	12	**$332,000**
Northampton	21	2	19	$514,000
TOTAL				*$846,000*

[16] Based on current windshield survey data.
[17] Assumes a cost of $10,000 per home.
[18] Assumes a cost of $23,000-$29,000 per home. Averaged to $26,000 for cost estimate.

Map 8. NFWF Funding Assistance Priorities



Accomack County



Northampton County

Funding Needs Summary

The funding framework captures the following funding needs:

1. Complete Needs Assessment
    - Bayside: $60,000
    - Seaside: $50,000

2. Install Wells and Septic Systems at Homes with Known Indoor Plumbing Needs
    - Homes Prioritized for NFWF Funding: $846,000
    - Homes Prioritized for Other Funding Sources: $1,666,000

VII. Technical Working Session

On May 26, 2015, Skeo Solutions and the A-NPDC hosted a technical working session to share the results of the 2014 windshield survey and gather feedback on funding framework recommendations. The purpose of the meeting was to:

- Share indoor plumbing status, past successes and data gaps.
- Share recommended funding priorities and potential funding sources.
- Identify near-term priorities and longer-term strategy for resolving indoor plumbing needs.

The flyer advertising this working session and the working session agenda can be found in Appendix B.

Participants included representatives from the following organizations and agencies:

- Accomack Northampton Planning District Commission
- Eastern Shore of Virginia Housing Alliance
- Indoor Plumbing Rehab Program, Virginia Department of Housing and Community Development
- National Fish and Wildlife Foundation
- Skeo Solutions
- Southeast Rural Community Assistance Project
- Virginia Department of Health
- Virginia House of Delegates, District 100

Participants agreed on the following priorities:

- *Needs Assessment*: Completing the Needs Assessment is a priority. A full needs assessment would provide a complete picture of indoor plumbing needs on the Eastern Shore and would serve as a helpful baseline and prioritization tool for future investments. A-NPDC could pursue additional funding from NFWF to complete the Bayside portion of the needs assessment, while funding for the Seaside could come from other foundation sources.

- *Rehab Priorities for NFWF Funding*: A-NPDC could prioritize proximity to sensitive environmental features and clusters of homes for a NFWF funding application focused on installation of wells and septic systems at prioritized homes. Participants affirmed the four priority areas of Holden's Creek, Pocomoke Sound, Occohannock Creek and Church Creek.

VIII. Conclusion

The A-NPDC has long been a champion of a comprehensive rehabbing effort to improve water quality on the Eastern Shore, protect the local economy, and provide basic plumbing for families without access. This report provides the A-NPDC with a set of priorities to support funding requests to solve the indoor plumbing challenge on Virginia's Eastern Shore.

With NFWF technical assistance, this study was able to complete a windshield survey that documented the indoor plumbing status of 1,226 homes on the Eastern Shore, including all homes in known hotspots for indoor plumbing needs. Nine percent of the homes surveyed, a total of 112 homes, were confirmed to need indoor plumbing.

In addition to documenting indoor plumbing needs, the study provides a recommended framework for pursuing funding to complete a full needs assessment and rehabbing the 112 homes identified in the 2014 windshield survey. This framework was affirmed by stakeholders who attended the May 26, 2015 Technical Working Session. The funding framework captures the following funding needs:

1. Complete Needs Assessment
    - Bayside: $60,000
    - Seaside: $50,000

2. Install Wells and Septic Systems at for Homes with Known Indoor Plumbing Needs
    - Homes Prioritized for NFWF Funding: $846,000
    - Homes Prioritized for Other Funding Sources: $1,666,000

The Appendices capture a wide range of potential funding sources for addressing these needs. The A-NPDC should be well positioned to pursue additional NFWF funding for the Bayside needs assessment and for installing wells and septic systems at prioritized homes. New funding sources captured in Appendices C and D could be evaluated to complete the Seaside needs assessment, provide complementary rehab funding for homes that may receive NFWF assistance with installation of wells and septic systems, and provide first-time indoor plumbing and rehab assistance to homes not prioritized for potential NFWF assistance.

As implied by the cost estimates for homes already identified by the 2014 windshield survey, the task ahead is significant. Identifying and rehabbing all of the homes on the Eastern Shore that have indoor plumbing needs will require persistence and creative collaboration from the many organizations and entities who are to improving quality of life and environmental conditions on the Eastern Shore.

Appendix A. Indoor Plumbing Needs Solicitation Materials

The following documents were used to solicit input from Eastern Shore stakeholders on locations of potential indoor plumbing needs.

PUBLIC SERVICE ANNOUNCEMENT

Contact : Curt Smith, A-NPDC
Phone: 787-2936 x 114
Email: csmith@a-npdc.org

A-NPDC Seeks Information on Properties Lacking Indoor Plumbing

The Accomack-Northampton Planning District Commission (A-NPDC) is asking Eastern Shore residents to provide information regarding the location of properties that lack indoor plumbing in Accomack and Northampton Counties. Properties that lack indoor plumbing do not have the capability to dispose of sewage waste inside the residence. These properties typically utilize an outdoor pit privy or outhouse, although some properties fail to have outdoor facilities as well. While pit privies may be permitted by the Virginia Health Department if constructed and maintained properly, many do not meet the regulated standards and pose a significant public health risk and have extremely adverse impacts on the quality of adjacent water bodies and the environment.

The Eastern Shore is one of very few areas where this issue remains a significant problem in Virginia. To date, a comprehensive survey to identify properties lacking indoor plumbing has not been performed for the region. Historic estimates of the number of properties lacking indoor plumbing included over 1,300 in 1990, 782 in 1998, and nearly 150 most recently in 2002; however, none of these efforts covered the entire region. The A-NPDC is planning to perform a comprehensive survey of Accomack and Northampton Counties in September 2014 to be able to properly manage this problem in order to improve living conditions for Eastern Shore residents and to protect sensitive natural resources.

The A-NPDC requests that anyone with information on where these conditions exist contact Curt Smith, Director of Planning, at 787-2936 or csmith@a-npdc.org. For confidentiality purposes, the only information that will be recorded is the street address of a property.

A-NPDC
ACCOMACK-NORTHAMPTON PLANNING DISTRICT COMMISSION
P.O. BOX 417 • 23372 FRONT STREET • ACCOMAC, VIRGINIA 23301
(757) 787-2936 • TOLL FREE (866) 787-3001 • FAX: (757) 787-4221
EMAIL: anpdc@a-npdc.org • WEBSITE: www.a-npdc.org

July 3, 2014

RE: Request for Information on Properties Lacking Indoor Plumbing

Dear Town Mayors and Staff,

The Accomack-Northampton Planning District Commission (A-NPDC) is conducting a survey to identify properties that lack indoor plumbing in Accomack and Northampton Counties. A windshield survey from state-maintained roads will be conducted by a consultant, Skeo Solutions, during August to develop a comprehensive map and baseline dataset of where these properties are in existence. The A-NPDC intends to use this information to enhance management of the Indoor Plumbing Rehabilitation (IPR) Program as we pursue federal and state funding opportunities to provide adequate wastewater treatment to these properties. The A-NPDC is currently working with the consultant to develop the survey methodology and to provide local knowledge regarding locations that are known to lack indoor plumbing and require additional attention.

We are asking that you notify us of any properties within your town that are known to lack indoor plumbing or may not have indoor plumbing so that the consultant will know where to focus their survey efforts. Specific street addresses are not necessary but would be useful. Names of owners or occupants are not being collected under any circumstance. Any street address or general location information you are able to provide will greatly enhance this project and increase the likelihood that these conditions be remedied on the Eastern Shore, making our communities healthier and more prosperous places to live.

Please contact me at 787-2936 x114 or csmith@a-npdc.org at your earliest convenience with any information.

Sincerely,

Curtis Smith
Director of Planning

Appendix B. Technical Working Session Materials

MAY 26, 2015 | 1:00 PM

WORKING SESSION: IMPROVING RESIDENTIAL SEWAGE DISPOSAL

Funding from the National Fish and Wildlife Foundation has supported a windshield survey of Bayside homes lacking indoor plumbing. At this working session, you can:

- Learn about what has been accomplished to date to address homes lacking indoor plumbing, and see the results of a recent windshield survey.
- Explore strategies and potential funding sources for addressing these needs.
- Help identify a set of criteria and priorities to inform future investments.

Project supported by:

NFWF

A-NPDC

ESCC Eastern Shore Community College Workforce Development Services ... set a course for success

Attend a technical working session on residential sewage disposal conditions.

Tuesday, May 26, 2015

1:00 – 4:00 p.m.

Workforce Development Building, Eastern Shore Community College 29300 Lankford Hwy Melfa, VA 23410

FOR MORE INFORMATION:

Curt Smith, Director
Accomack-Northampton Planning District Commission

757.787.2936 x114

csmith@a-npdc.org

Improving Residential Sewage Disposal Conditions in Accomack and Northampton Counties

Technical Working Session Agenda
May 26, 2015
Eastern Shore Community College

Purpose

- Share indoor plumbing status, past successes, and data gaps.
- Share recommended funding priorities and potential funding sources.
- Identify near-term priorities and longer-term strategy for resolving IPR needs.

1:00 p.m. **Opening Remarks**

- Welcome (David Annis, A-NPDC)
- Agenda overview (Alisa Hefner, Skeo Solutions)
- Introductions (name; affiliation; what drew you to this working session?)

1:15 p.m. **Existing Conditions and Opportunities**

- Presentation (Sarah Malpass, Skeo Solutions)
  - Indoor plumbing needs and successes on the Eastern Shore
  - Status of current indoor plumbing data and windshield survey results
  - Draft funding priorities
- Q & A (facilitated by Alisa Hefner)

2:00 p.m. **Dialogue: Assessment Priorities and Funding Sources** (facilitated by Alisa Hefner)

- Is completing the assessment a priority?
- Do the assessment funding categories make sense?
  - Bayside, Seaside?
- What funding sources fit these needs?

2:25 p.m. **BREAK**

2:35 p.m. **Dialogue: Retrofit Priorities and Funding Sources** (facilitated by Alisa Hefner)

- Do the prioritization criteria for a NFWF application make sense?
  - Proximity to sensitive environmental areas
  - Clusters of homes in need
- What funding sources fit the needs of remaining homes in the inventory?

3:50 p.m. **Recap and Next Steps** (Alisa Hefner)

4:00 p.m. **Adjourn**

Appendix C. Potential Government and Nonprofit Funders

Note: Funding sources listed in blue are government sources. Funding sources listed in orange are non-profit sources.

New to PDC	Program	Potential Strategies[19, 20]			Description	Level of Funding
		Expand utility	Shared drain field	Site-based[21]		
EDA						
✓	Public Works Program	✓		?	Construction/rehabilitation of public infrastructure to support economic development goals. It is not clear if a case could be made for using these funds in residential areas. Needs more research.	The average size of a Public Works investment has been approximately $1.4 million, and investments range from $200,000 to $3,000,000. Historically, EDA has awarded funds for between 80 and 150 Public Works projects a year. Matching funds may be required.
✓	Economic Adjustment Assistance	✓		?	The Economic Adjustment Assistance Program provides a wide range of technical, planning and public works and infrastructure assistance in regions experiencing adverse economic changes that may occur suddenly or over time.[4] It is not clear if a case could be made for using these funds in residential areas. Needs more research.	The average size of an EAA investment has been approximately $820,000, and investments range from $100,000 to $1,250,000. Historically, EDA has awarded funds for between 70 and 140 EAA projects a year. Matching funds may be required.

[19] Note: Strategies organized by potential mapping criteria (proximity to existing WWTF, clusters, other homes); however, funding sources may fund only work outside of a home, only inside the home, or both.
[20] Due to changing state regulations, the decentralized system approach that utilizes a shared drain field is not efficient or cost effective at this time. At present, nearly 100% of the projects the A-NPDC leads utilize the site-based strategy. This is because the state has made permitting so much easier (nearly by-right) for homes that utilize tertiary systems.
[21] Site-based solutions for individual homes could include a septic system, peat system, mounded system, composting toilets, etc. All funding sources state that they will fund any site-based solution that receives a permit from the state.

New to PDC	Program	Potential Strategies[19, 20]			Description	Level of Funding
		Expand utility	Shared drain field	Site-based[21]		
EPA/DEQ – Virginia Clean Water Revolving Loan Fund						
✓	Wastewater loan program	✓	✓	✓	Loans provided to Virginia local governments to assist with wastewater treatment plant and/or collection system improvements. Localities may apply for a loan from the VCWRLF Wastewater Loan Program for any expansion, upgrade, extension, replacement, repairs, rehabilitation, and/or additions to publicly-owned wastewater collection and treatment facilities; construction of any needed new facility or new conveyance system; and any planning and/or design costs associated with the above improvements. According to the state, although this is not highlighted on web, localities could lend to homeowners directly.	State has about $110M each year to lend. The minimum Stormwater Loan amount is $50,000 and there is no maximum loan amount established. Loans may be made for 100% of the eligible costs of the project. Starting in federal fiscal year 2010, EPA began allowing a portion of the VCWRLF funding to be provided in the form of principal forgiveness (PF), which is similar to a grant. Currently, this PF allowance is determined through the annual federal appropriation bill. To the extent that principal forgiveness is allowed and available in any fiscal year, stormwater loans will be considered for principal forgiveness up to a maximum of 50% of each loan amount. Preference in this regard will be given to localities that have adopted a dedicated source of revenue to implement a stormwater control program in accordance with 15.2-2114 of the Code of Virginia.

New to PDC	Program	Potential Strategies[19, 20]			Description	Level of Funding
		Expand utility	Shared drain field	Site-based[21]		
✓	Hardship Grants Program	✓	✓	✓	EPA guidelines encourage states to assist rural communities by supplementing CWSRF loans with hardship grant assistance. Fundable projects for qualifying communities include: • the planning, design, and construction of publicly owned treatment works • the planning, design, and construction of alternative wastewater services, such as on-site treatment systems--including septic.	
EPA						
✓	**Water Innovation Financing Center**	✓	✓	✓	Forthcoming program. A finance clearing center for wastewater infrastructure financing. Will offer technical assistance to evaluate appropriate technologies and funding sources. However, no direct funding for wastewater projects available. According to EPA, may be interested in looking for a pilot community to partner with. Needs success stories before administration change.	

New to PDC	Program	Potential Strategies[19, 20]			Description	Level of Funding
		Expand utility	Shared drain field	Site-based[21]		
HUD/DHCD						
	Indoor Plumbing Rehab	?	?	✓	Can assist with plumbing upgrades and additional housing repair. Must work with Region 6 provider (Housing Partnerships Incorporated).[22]	Funding caps per unit: • Demo + new home construction: $85,000 + demolition costs • Rehab: $60,000
	CDBG	✓	✓	✓	Provides funding to eligible units of local government for planning and implementing projects that address critical community development needs, including housing, infrastructure and economic development.	Funding caps depend on the type of project.
USDA – Rural Development						
	Water and Waste Disposal Loan and Grant Program	✓			Provides funding for clean and reliable drinking water systems, sanitary sewage disposal, sanitary solid waste disposal, and storm water drainage to households and businesses in eligible rural areas.	
	Single Family Housing Repair and Loan Grant **(Section 504)**			✓	Loans ($20K at 1%) and grants ($7500) for home repair, improvements and modernization for very low-income and/or elderly home owners.[23]	Loans ($20K at 1%) and grants ($7500).
	Single Family Housing Direct Home Loan **(Section 502)**			✓	Loan funds may be used to help low-income individuals or households purchase homes in rural areas. Funds can be used to build, repair, renovate or relocate a home, or to purchase and prepare sites, including providing water and sewage facilities.[5]	

[22] Intended for use at individual homes; however ANPDC thinks that if it was more cost effective to use another strategy (e.g., sewer hookup) the state would be open to that.
[23] ANPDC notes that these are VERY difficult to access because of the qualification requirements. Also, ANPDC does not get reimbursed for staff time to help applicants apply. Therefore, they can only help a limited number of people with the applications.

New to PDC	Program	Potential Strategies[19, 20]			Description	Level of Funding
		Expand utility	Shared drain field	Site-based[21]		
National Rural Water Association						
✓	Training and technical assistance **(via Circuit Riders)**	✓			NRWA provides training and technical assistance to small and rural water and wastewater utilities. Can work with existing utilities and/or help with technical assistance to start a new utility. Virginia office is the lead.	n/a
✓	Revolving Loan Fund **(via grant from USDA)**	✓			The Rural Water Loan Fund (RWLF) is a funding program specifically designed to meet the unique needs of small water and wastewater utilities. The RWLF provides low-cost loans for short-term repair costs, small capital projects, or pre-development costs associated with larger projects. National office is the lead.	Loan amounts may not exceed $100,000 or 75% of the total project cost, whichever is less. Below market interest rate (currently 3%) and a maximum repayment period of 10 years.
SE Rural Communities Assistance Program						
	Septic Loan Program			✓	Available to communities across the state. For individual homes.	
	Facilities Develop-ment		✓		Need someone to maintain it; there is awaiting period.	

Appendix D. Potential Foundation Funders

Organization (Program Name)	Geographic Focus	Focus of Funding	Example Grants	Level of Funding
Beirne Carter Foundation	Virginia	Organizations involved in environmental, conservation, or preservation activities that directly benefit Virginians		
Blue Moon Fund	North America-Virginia	In Chesapeake-Appalachia, the fund supports work to value and preserve the ecosystems that support rural mountain populations and feed the Bay, and works to identify cleaner, sustainable ways to produce energy and manage natural resources. Must be invited to submit a Letter of Intent	Harnessing community support to improve water quality in the Rivanna River watershed (2012); Business Plan Development for Viability of Farmer Incubator and Land Based Learning Center in Southwest Virginia (2012);	
Dominion Foundation (Environ-mental Stewardship Grants Program)	Virginia	Supports specific, short-term projects that promise measurable results to improve the environment. The projects should support one or more of the following priorities: Protecting and preserving natural habitats; Monitoring and enhancing water quality; Preventing pollution and improving open spaces; Making nature accessible; Educating the public about environmental stewardship.	Fluvanna County Department of Parks and Recreation (Trail enhancement)($5K, 2015); Upper Tennessee River Roundtable, Abingdon (St. Paul stormwater and habitat improvement) ($25K, 2015)	The Dominion Foundation will consider grant requests up to $50,000 that focus on specific, short-term projects that promise measurable results to improve the environment.

Organization (Program Name)	Geographic Focus	Focus of Funding	Example Grants	Level of Funding
Cedar Tree Foundation (Environmental health, and environmental justice)	PA, MD, greater DC metro	Environmental Justice	Winrock International for project support for the Wallace Center's Pasture Project ($65K yr 1, $95K yr2, 2014); Land for Good Inc. for general support ($60K/yr for 2 years, 2014); Nuestras Raíces ($15K, 2014). We give particular consideration to proposals that demonstrate strong elements of environmental justice.	Grants are often multi-year grants. Funds received by current grantees range from $20K for 1 year to $100K/yr for 3 years.
Charles Stewart Mott Foundation (Environment: climate, freshwater, special initiatives)	US and focus on Michigan			Grants range between 15K-250K annually.
Harry Chapin Foundation (Agricultural and Environmental Programs)	US, with a focus on New York, but national program	Funds agriculture and environmental programs		Grant sizes range from a few hundred dollars to our maximum of $10,000.
Jesse Smith Noyes Foundation (Environmental Justice and Food and Agricultural Systems)	US	We support grassroots organizations engaged in community organizing and advocacy to change environmental, social, economic and political conditions. The funding priorities are ENVIRONMENTAL JUSTICE; SUSTAINABLE AGRICULTURE AND FOOD SYSTEMS; REPRODUCTIVE RIGHTS; and SUSTAINABLE NEW YORK CITY.		Projects currently highlighted on website range from $20-45K.

Organization (Program Name)	Geographic Focus	Focus of Funding	Example Grants	Level of Funding
Mary Reynolds Babcock Foundation	South-eastern US (includes, but not limited to: Central Appalachia, South Carolina, Georgia, Alabama and the Gulf Coast)	Assists people in the Southeastern US to build just and caring communities that nurture people, spur enterprise, bridge differences and foster fairness. Our mission is to help people and places to move out of poverty and achieve greater social and economic justice. We support organizations and networks that work across race, ethnic, economic and political differences to make possible a brighter future for all. We support grassroots groups and networks in low-wealth communities who are poised to expand their scale of impact. We also support statewide and regional organizations and networks that are achieving large-scale impact. We are interested in both new approaches and proven strategies.	West Virginia Food and Farm Coalition ($50K, 2014); West Virginia Community Development Hub ($150K, 2013).	Organizations and networks with track records of impact are eligible for grants ranging from $50,000 to $200,000 annually, depending on their scale of impact
Norman Foundation (Environmental Justice)	National	Seek to promote economic justice and development through community organizing, coalition building and policy reform efforts; work to prevent the disposal of toxics in communities, and to link environmental issues with economic and social justice; link community-based economic and environmental justice organizing to national and international reform efforts.	Coal River Mountain Watch - $25,000, Whitesville, WV, Renewed support for efforts to stop mountaintop removal mining and build sustainable communities in the Coal River Valley; Multicultural Alliance for a Safe Environment - $25,000, Albuquerque, NM, Renewed support for efforts to address the impacts of uranium mining on public health, water resources and sacred places.	Grants range from $25-30K.

Organization (Program Name)	Geographic Focus	Focus of Funding	Example Grants	Level of Funding
PNC Foundation		The PNC Foundation supports a variety of nonprofit organizations with a special emphasis on those that work to achieve sustainability and touch a diverse population, in particular, those that support early childhood education and/or economic development. Supports social services organizations that benefit the health, education, quality of life or provide essential services for low- and moderate-income individuals and families.		
Surdna Foundation (Sustainable Environments, Strong Local Economies)	National	William Cordery, an experienced grantmaker with deep roots in social justice work, has been appointed Program Officer for the Strong Local Economies program. He will begin on May 18, 2015, joining a team working on economic development and economic justice issues around the country.William's hire will strengthen the commitment of the foundation's Strong Local Economies program to creating opportunities for upward economic mobility among low-income people, communities of color, women, and immigrants.	Zofnass Program for Sustainable Infrastructure ($200K, 2 years, 2014) to perform applied research for the Urban Water Management infrastructure category and its synergies at the large scale with Energy and Food Infrastructure Systems for existing and expanding urban settlements; Winrock International ($375K, 2 years, 2014) to support the Wallace Center's leadership of the National Food Hub Collaborative.	Projects currently highlighted on website range from $5-350K.