



Commonwealth of Virginia

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

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Travis A. Voyles
Secretary of Natural and Historic Resources

Michael S. Rolband, PE, PWD, PWS Emeritus
Director
(804) 698-4020

May 24, 2024

Matthew Spuck
Town of Onancock
15 North Street
Onancock, VA 23417

SENT VIA EMAIL: matt.spuck@onancock.com

RE: Final Groundwater Withdrawal Permit GWI000240
Town of Onancock Water System, Accomack County, Virginia

Dear Mr. Spuck:

Pursuant to Chapter 25 of Title 62.1 § 62.1-254 of the Code of Virginia, 1950, as amended, (The Ground Water Management Act of 1992) the Director has authorized issuance of a permit to utilize groundwater. This permit limits the volume of withdrawal to 10,597,000 gallons of groundwater per month, and 120,000,000 gallons of groundwater per year.

The completed permit is enclosed for your records. Please note the requirement to record meter readings each month. Monthly use of groundwater shall be reported to the Department of Environmental Quality by the tenth (10th) day of each January, April, July, and October on a Ground Water Withdrawal Reporting Form acceptable to the of the Department of Environmental Quality. Other reporting requirements are included in the permit conditions. The well identification tags required to be installed on each system well by permit conditions will be mailed to you separately once received from our contractor.

As provided by Rule 2A:2 of the Supreme Court of Virginia, you have thirty days from the date of service (the date you actually receive this decision or the date it was mailed to you, whichever occurred first) within which to appeal this decision by filing a notice of appeal in accordance with the Rules of the Supreme Court of Virginia with the Director, Department of Environmental Quality. In the event that this decision is served on you by mail, three days are added to that period. Refer to Part 2A of the Rules of the Supreme Court of Virginia for additional requirements governing appeals from administrative agencies.

If you have any questions, please contact Caitlin Kelly at (804) 774-0828 or by email at caitlin.kelly@deq.virginia.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "Scott Morris". The signature is written in a cursive style with a large initial "S".

Scott Morris, DBA, P.E.
Director, Water Division

Enclosures

cc: DEQ, Water Withdrawal Permitting Program Manager – VIA EMAIL
VDH Office of Drinking Water – VIA EMAIL



COMMONWEALTH of VIRGINIA
 DEPARTMENT OF ENVIRONMENTAL QUALITY
PERMIT

TO WITHDRAW GROUNDWATER IN THE
 EASTERN SHORE GROUNDWATER MANAGEMENT AREA

Permit Number: GWI000240

Effective Date: May 24, 2024

Expiration Date: May 23, 2039

Pursuant to the Ground Water Management Act of 1992 (Section 62.1-254 et seq. of the Code of Virginia) and the Groundwater Withdrawal Regulations (Regulations) (9VAC25-610), the Department of Environmental Quality hereby authorizes the Permittee to withdraw and use groundwater in accordance with this permit.

Permittee Town of Onancock
 Facility Town of Onancock Water System
 Facility Address 15 North Street
Onancock, VA 23417

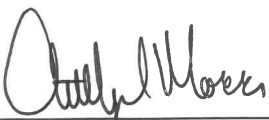
The Permittee's authorized groundwater withdrawal shall not exceed:

120,000,000 gallons per year,
10,597,000 gallons per month

The permitted withdrawal will be used to provide water for a municipal public water supply. Other uses are not authorized by this permit.

The Permittee shall comply with all conditions and requirements of the permit.

By direction of the Department of Environmental Quality, this Permit is granted by:

Signed 
 Scott Morris, DBA, P.E.
 Director, Water Division

Date 5/24/2024

This permit is based on the Permittee’s application received on October 27, 2017 and subsequently amended to include supplemental information provided by the Permittee. The following are conditions that govern the system set-up and operation, monitoring, reporting, and recordkeeping pertinent to the Regulations.

Part I
Operating Conditions

A. Authorized Withdrawal

1. The withdrawal of groundwater shall be limited to the following wells identified in the table below. Withdrawals from wells not included in Table 1 are not authorized by this permit and are therefore prohibited. 9VAC25-610-140 A

Table 1

Owner Well Name	DEQ Well #	Well Depth (ft/bls)	Screen Intervals	Aquifer	Latitude	Longitude	Datum
Hartman Ave Well #7 (PW #1)	100-01015	208.7	168.3-198.7	Middle Yorktown-Eastover	37° 42' 24.9"	75° 44' 14.4"	NAD27
Hartman Ave Well #8 (PW #2)	100-01016	210.4	170-200.4	Middle Yorktown-Eastover	37° 42' 27.1"	75° 44' 19.1"	NAD27
Hartman Ave Well #9 (PW #3)	100-01017	210	169.3-199.8	Middle Yorktown-Eastover	37° 42' 29.3"	75° 44' 13.9"	NAD27

2. Any actions that result in a change to the status, construction, or pump intake setting of wells included in this permit must be pre-approved by the Department of Environmental Quality (Department or DEQ) in writing prior to implementing the change and a revised GW-2 Form must be submitted to the Department within 30 days after the physical construction of a well is altered or the pump intake setting has been changed. If changes are a result of an emergency, notify the Department within 5 days from the change. 9VAC25-610-140 C

B. Public Water Supplies

1. Daily withdrawal limits set forth in this permit are consistent with the requirements and conditions of the Virginia Department of Health (VDH) Waterworks Operation Permit No. 3001620. 9VAC25-610-140 A 5
2. The Permittee shall submit copies of an updated Waterworks Operation Permit and the associated Engineering Description Sheets to the Department within 30 days of receipt from the Virginia Department of Health. 9VAC25-610-140 C

C. Pump Intake Settings

1. The Permittee shall not place a pump or water intake device lower than the top of the uppermost confined aquifer that a well utilizes as a groundwater source or lower than the bottom of an

unconfined aquifer that a well utilizes as a groundwater source in order to prevent dewatering of the aquifer, loss of inelastic storage, or damage to the aquifer from compaction. 9VAC25-610-140 A 6

2. Pump settings in individual wells are limited as follows. Any change in the pump setting must receive prior approval by the Department.

Owner Well Name	DEQ Well #	Max Pump Setting (feet below land surface)
Hartman Ave Well #7	100-01015	160
Hartman Ave Well #8	100-01016	170
Hartman Ave Well #9	100-01017	165

D. Reporting

1. Water withdrawn from each well shall be recorded monthly at the end of each month and reported to the Department, in paper or electronic format, on a form provided by the Department by the tenth (10th) day of each January, April, July and October for the respective previous calendar quarter. Records of water use shall be maintained by the Permittee in accordance with Part III.F, 1 through 5 of this permit. 9VAC25-610-140 A 9
2. The Permittee shall report any amount in excess of the permitted withdrawal limit by the fifth (5th) day of the month following the month when such a withdrawal occurred. Failure to report may result in compliance or enforcement activities. 9VAC25-610-140 C
3. All required notifications and submittals shall include facility name and permit number and be submitted electronically to withdrawal.permitting@deq.virginia.gov or mailed to the office stated below, unless otherwise directed in writing by the Department subsequent to the issuance of this permit: Virginia Department of Environmental Quality, Attn: Groundwater Withdrawal Compliance, P.O. Box 1105, Richmond VA 23218.
4. The following is a summary of reporting requirements for specific facility wells:

Owner Well Name	DEQ Well #	Reporting Requirements
Hartman Ave Well #7 (PW#1)	100-01015	Water Use
Hartman Ave Well #8 (PW#2)	100-01016	Water Use
Hartman Ave Well #9 (PW#3)	100-01017	Water Use

E. Water Conservation and Management Plan

1. The Water Conservation and Management Plan (WCMP) submitted in the application received June 18, 2019 and subsequently amended and then approved by the Department is incorporated by reference into this permit and shall have the same effect as any condition contained in this permit and may be enforced as such.
2. By the end of the first year of the permit cycle (May 23, 2025) the Permittee shall submit documentation to the Department that the leak detection and repair program defined in the WCMP has been initiated. This documentation shall include activities completed during the first year of the permit term. 9VAC25-610-100 B

3. As soon as completed but not later than the end of the second year of the permit cycle (May 23, 2026) the Permittee shall submit to the Department results of an audit of the total amount of groundwater used in the distribution system and operational processes. This documentation shall include any resulting changes to the leak detection and repair program in the WCMP. 9VAC25-610-100 B
4. A report on the plan's effectiveness in reducing water use, including revisions to those elements of the WCMP that can be improved and addition of other elements found to be effective based on operations to date shall be submitted by the end of years five (May 23, 2029) and ten (May 23, 2034) of the permit term. These reports shall include as appropriate: 9VAC25-610-140 C
 - a. Any new water saving equipment installed or water saving processes adopted;
 - b. WCMP actions taken to reduce the volume of water needed to supply the system;
 - c. Planned short or long term efforts and actions to be added to the WCMP to improve the efficiency of water use in the system or by customers and for reducing the loss of water;
 - d. Results of additional water audits completed;
 - e. Review of water use category (residential, commercial, industrial) per-connection use in municipal systems;
 - f. Evaluation of the leak detection and repair program;
 - g. Description of educational activities completed; and
 - h. Identification of any water reuse opportunities identified.
5. If revisions or additions to the plan are necessary, an updated WCMP shall be submitted to the Department for approval along with the report prior to implementation of the revised plan.
6. Records of activities conducted pursuant to the WCMP are to be submitted to the Department upon request.

F. Mitigation Plan

The Mitigation Plan approved on September 17, 2020 by the Department is incorporated by reference into this permit and shall have the same effect as any condition contained in this permit and may be enforced as such. 9VAC25-610-110 D 3 g

G. Well Tags

1. Each well that is included in this permit shall have affixed to the well casing, in a prominent place, a permanent well identification plate that records, at a minimum, the Department well identification number, the groundwater withdrawal permit number, the total depth of the well, and the screened intervals in the well. Such well identification plates shall be in a format specified by the Department and are available from the Department. 9VAC25-610-140 A 12

2. Well tags shall be affixed to the appropriate well casing within 30 days of receiving the tags from the Department. The accompanying well tag installation certification form shall be returned to the Department within 60 days of receipt of the tags. 9VAC25-610-140 C

Part II
Special Conditions

Review of the applicant's well construction data, facility operations, and Technical Evaluation did not identify a need for water quality or water level monitoring, pump intake reset, or well abandonment conditions in the permit. There are no new wells currently planned for construction during the permit term. Aquifer testing has been completed at the facility. Construction of observation wells or well nests, and geophysical boreholes to assist in monitoring or characterizing the local or regional aquifer system are not required at this time.

Part III
General Conditions

A. Duty to Comply

The Permittee shall comply with all conditions of the permit. Nothing in this permit shall be construed to relieve the permit holder of the duty to comply with all applicable federal and state statutes, regulations and prohibitions. Any permit violation is a violation of the law and is grounds for enforcement action, permit termination, revocation, modification, or denial of a permit application. 9VAC25-610-130 A

B. Duty to Cease or Confine Activity

It shall not be a defense for a Permittee in an enforcement action that it would have been necessary to halt or reduce the activity for which a permit has been granted in order to maintain compliance with the conditions of the permit. 9VAC25-610-130 B

C. Duty to Mitigate

The Permittee shall take all reasonable steps to avoid all adverse impacts that may result from this withdrawal as defined in 9VAC25-610-10 and provide mitigation of the adverse impact when necessary as described in 9VAC25-610-110 D 3 g and 9VAC25-610-130 C.

D. Inspection, Entry, and Information Requests

Upon presentation of credentials, the Permittee shall allow the Department, or any duly authorized agent of the Department, at reasonable times and under reasonable circumstances, to enter upon the Permittee's property, public or private, and have access to, inspect and copy any records that must be kept as part of the permit conditions, and to inspect any facilities, well(s), water supply system, operations, or practices (including sampling, monitoring and withdrawal) regulated or required under the permit. For the

purpose of this section, the time for inspection shall be deemed reasonable during regular business hours. Nothing contained herein shall make an inspection time unreasonable during an emergency.
9VAC25-610-130 D

E. Duty to Provide Information

The Permittee shall furnish to the Department, within a reasonable time, any information that the Department may request to determine whether cause exists for modifying or revoking, reissuing, or terminating the permit, or to determine compliance with the permit. The Permittee shall also furnish to the Department, upon request, copies of records required to be kept by regulation or this permit.
9VAC25-610-130 E

F. Monitoring and Records Requirements

1. The Permittee shall maintain a copy of the permit on-site and/or shall make the permit available upon request. 9VAC25-610-130 E
2. Monitoring of parameters shall be conducted according to approved analytical methods as specified in the permit. 9VAC25-610-130 F 1
3. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. 9VAC25-610-130 F 2
4. The Permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart or electronic recordings for continuous monitoring instrumentation, copies of all reports required by the permit, and records of all data used to complete the application for the permit, for a period of at least three years from the date of the expiration of a granted permit. This period may be extended by request of the Department at any time. 9VAC25-610-130 F 3
5. Records of monitoring information shall include as appropriate: 9VAC25-610-130 F 4
 - a. the date, exact place and time of sampling or measurements;
 - b. the name(s) of the individual(s) who performed the sampling or measurements;
 - c. the date the analyses were performed;
 - d. the name(s) of the individual(s) who performed the analyses;
 - e. the analytical techniques or methods supporting the information, such as observations, readings, calculations and bench data used;
 - f. the results of such analyses; and
 - g. chain of custody documentation.

G. Environmental Laboratory Certification

The Permittee shall comply with the requirement for certification of laboratories conducting any tests, analyses, measurements, or monitoring required pursuant to the State Water Control Law (§ 62.1-44.2 et seq. of the Code of Virginia), Environmental Laboratory Certification Program (§ 2.2-1105 et seq. of the Code of Virginia), Certification for Noncommercial Environmental Laboratories (1VAC30-45), and/or Accreditation for Commercial Environmental Laboratories (1VAC30-46), and

1. Ensure that all samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.
2. Conduct monitoring according to procedures approved under 40CFR Part 136 or alternative methods approved by the U.S. Environmental Protection Agency.
3. Periodically calibrate and perform maintenance procedures on all monitoring and analytical instrumentation at intervals that will ensure accuracy of measurements. 1VAC30-45-20

H. Future Permitting Actions

1. A permit may be modified or revoked as set forth in Part VI of the Groundwater Withdrawal Regulations. 9VAC25-610-290 and 9VAC25-610-130 G
2. If a Permittee files a request for permit modification or revocation, or files a notification of planned changes, or anticipated noncompliance, the permit terms and conditions shall remain effective until the Department makes a final case decision. This provision shall not be used to extend the expiration date of the effective permit. 9VAC25-610-130 G
3. Permits may be modified or revoked upon the request of the Permittee, or upon Department initiative, to reflect the requirements of any changes in the statutes or regulations. 9VAC25-610-130 G
4. The Permittee shall schedule a meeting with the Department prior to submitting a new, expanded or modified permit application. 9VAC25-610-85
5. A new complete permit application shall be submitted 270 days prior to the expiration date of this permit, unless permission for a later date has been granted by the Department, to continue a withdrawal greater than or equal to 300,000 gallons in any month while an application for a renewal is being processed. 9VAC25-610-96
6. A new complete permit application shall be submitted 270 days prior to any proposed modification to this permit that will (i) result in an increase of withdrawal above permitted limits; or (ii) violate the terms and conditions of this permit. 9VAC25-610-96
7. The applicant shall provide all information described in 9VAC25-610-94 for any reapplication. 9VAC25-610-96 C
8. The Permittee must notify the Department in writing of any changes to owner and facility contact

information within 30 days of the change. 9VAC25-610-140 C

I. Metering and Equipment Requirements

1. Each well and/or impoundment or impoundment system shall have an in-line totalizing flow meter to read gallons, cubic feet, or cubic meters installed prior to beginning the permitted use. Meters shall produce volume determinations within plus or minus 10% of actual flows. An alternative method for determining flow may be approved by the Department on a case-by-case basis. 9VAC25-610-140 A 7 b
 - a. A defective meter or other device must be repaired or replaced within 30 days.
 - b. A defective meter is not grounds for not reporting withdrawals. During any period when a meter is defective, generally accepted engineering methods shall be used to estimate withdrawals. The period during which the meter was defective must be clearly identified in the groundwater withdrawal report required by Part I, Subsection D of this permit.
2. Each well shall be equipped in a manner such that water levels can be measured during pumping and non-pumping periods without dismantling any equipment. Any opening for tape measurement of water levels shall have an inside diameter of at least 0.5 inches and be sealed by a removable plug or cap. The Permittee shall provide a tap for taking raw water samples from each permitted well. 9VAC25-610-140 A 7 e

J. Minor Modifications

1. A minor modification to this permit must be made to replace an existing well(s) or add an additional well(s) provided that the well(s) is screened in the same aquifer(s) as the existing well(s), and is in the near vicinity of the existing well(s), the total groundwater withdrawal does not increase, the area of impact does not increase, and the well has been approved by the Department prior to construction. 9VAC25-610-330 B 4 and B 5
2. A minor modification to this permit must be made to combine withdrawals governed by multiple permits when the systems are physically connected as long as interconnection will not result in additional groundwater withdrawal and the area of impact will not increase. 9VAC25-610-330 B 6
3. Minor modifications to this permit must also be made to:
 - a. Change an interim compliance date up to 120 days from the original compliance date, as long as the change does not interfere with the final compliance date. 9VAC25-610-330 B 7
 - b. Allow for change in ownership when the Department determines no other change in the permit is necessary and the appropriate written agreements are provided in accordance with the transferability of permits and special exceptions. 9VAC25-610-320 and 9VAC25-610-330 B 8
 - c. Revise a Water Conservation and Management Plan to update conservation measures being implemented by the Permittee that increase the amount of groundwater conserved. 9VAC25-610-330 B 9

K. Well Construction

At least two weeks prior to the scheduled construction of any well(s), the Permittee shall notify the Department of the construction timetable and receive prior approval of the well(s) location(s) and acquire the Department Well number (DEQ Well #). All wells shall be constructed in accordance with the following requirements.

1. A well site approval letter or well construction permit must be obtained from the Virginia Department of Health prior to construction of the well. 9VAC25-610-130 A
2. A complete suite of geophysical logs (16"/64" Normal, Single Point, Self-Potential, Lateral, and Natural Gamma) shall be completed for the well and submitted to the Department along with the corresponding completion report. 9VAC25-610-140 C
3. The Permittee shall evaluate the geophysical log and driller's log information to estimate the top of the target aquifer and; therefore, a depth below which the pump shall not be set. The Permittee's determination of the top of the target aquifer shall be submitted to the Department for review and approval, or approved on site by the Department's Groundwater Characterization staff, prior to installation of any pump. 9VAC25-610-140 A 6
4. The Permittee shall install gravel packs and grout in a manner that prevents leakage between aquifers. Gravel pack shall be terminated close to the top of the well screen(s) and shall not extend above the top of the target aquifer. 9VAC25-610-140 C
5. A completed GW-2 Form and any additional water well construction documents shall be submitted to the Department within 30 days of the completion of any well and prior to the initiation of any withdrawal from the well. The assigned Department Well number shall be included on all well documents. 9VAC25-610-140 C
6. In addition to the above requirements, if required by the permit, construction of a Water Level Monitoring State Observation Well (SOW) requires:
 - a. The Permittee shall coordinate activities with the Department's Groundwater Characterization Program (GWCP) to determine the appropriate observation well location and construction schedule, along with the needed screen interval(s), and other completion details following review of geophysical logging. 9VAC25-610-140 C
 - b. Prior to preparation of bid documents for construction of the observation well, the Permittee shall notify the Department and shall include any GWCP requirements in the bid documents. At a minimum, the Department will require a pre-bid meeting with interested drilling contractors and a pre-construction meeting with the successful bidder. 9VAC25-610-140 C
 - c. Instrumentation to meet the requirements for real-time data transmission consistent with the State Observation Well Network shall be purchased by the Permittee. The Permittee shall submit a purchase order based on the Department's equipment specifications for review and approval prior to purchase of the equipment. The Permittee shall install the real-time equipment infrastructure with Department oversight. The Department will conduct the

installation of the transducer and final hook-up of the equipment. 9VAC25-610-140 C

7. In addition to the above requirements, if required by the permit, construction of a Chloride Monitoring SOW requires:
 - a. The Permittee shall coordinate activities with the Department’s Groundwater Characterization Program (GWCP) to determine the appropriate observation well location and construction schedule, along with the needed screen interval(s), and other completion details following review of geophysical logging. 9VAC25-610-140 C
 - b. Prior to preparation of bid documents for construction of the observation well, the Permittee shall notify the Department and shall include any GWCP requirements in the bid documents. At a minimum, the Department will require a pre-bid meeting with interested drilling contractors and a pre-construction meeting with the successful bidder. 9VAC25-610-140 C
 - c. Instrumentation to meet the requirements for real-time data transmission consistent with the State Observation Well Network shall be purchased by the Permittee. The Permittee shall submit a purchase order based on the Department’s equipment specifications for review and approval prior to purchase of the equipment. The Permittee shall install the real-time equipment infrastructure with Department oversight. The Department will conduct final hook-up of the equipment. 9VAC25-610-140 C
 - d. Instrumentation to meet the requirements for continuous measurement of specific conductance from multiple levels within the well screen shall be purchased by the Permittee. The Permittee shall submit a purchase order based on the Department’s equipment specifications for review and approval prior to purchase of the equipment. The Permittee shall install the real-time equipment infrastructure with Department oversight. The Department will conduct the final hook-up of the equipment. 9VAC25-610-140 C

L. Permit Reopening

This permit may be reopened for the purpose of modifying the conditions of the permit as follows:

1. To meet new regulatory standards duly adopted by the Board. 9VAC25-610-140 A 11
2. When new information becomes available about the permitted withdrawal, or the impact of the withdrawal, which had not been available at permit issuance and would have justified the application of different conditions at the time of issuance. 9VAC25-610-310 B 1
3. When the reported withdrawal is less than 60% of the permitted withdrawal amount for a five year period. 9VAC25-610-310 B 2
4. If monitoring information indicates the potential for adverse impacts to groundwater quality or level due to this withdrawal. 9VAC25-610-140 C

**COMMONWEALTH of VIRGINIA
DEPARTMENT OF ENVIRONMENTAL QUALITY**

PERMIT ISSUANCE FACT SHEET

Groundwater Withdrawal Permit Number: GWI000240

Application Date: October 27, 2017

The Department of Environmental Quality (Department or DEQ) has reviewed the application for a Groundwater Withdrawal Permit. This document provides the pertinent information concerning the legal basis, scientific rationale, and justification for the issuance/reissuance/modification of the Groundwater Withdrawal Permit listed below. Based on the information provided in the application and subsequent revisions, the Department has determined that there is a reasonable assurance that the activity authorized by the permit is a beneficial use as defined by the regulations. Groundwater impacts have been minimized to the maximum extent practicable. The following details the application review process and summarizes relevant information for developing the Permit and applicable conditions.

Permittee / Legal Responsible Party

Name & Address: Town of Onancock
15 North Street
Onancock, VA 23417
Phone: (757) 787-3363

Facility Name and Address

Name & Address: Town of Onancock Water System
15 North Street
Onancock, VA 23417
Phone: (757) 787-4274

Contact Information:

Name: Matthew Spuck, Town Manager
Email: matt.spuck@onancock.com
Phone: (757) 787-3363

Proposed Beneficial Use Type: The requested withdrawal is for a municipal public water supply.

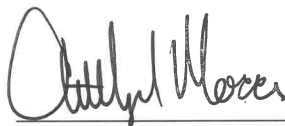
Staff Findings and Recommendations

Based on review of the permit application, staff provides the following findings.

- The proposed activity is consistent with the provisions of the Ground Water Management Act of 1992, and will protect other beneficial uses.
- The proposed permit addresses minimization of the amount of groundwater needed to provide the intended beneficial use.
- The effect of the impact will not cause or contribute to significant impairment of state waters.
- This permit includes a plan to mitigate adverse impacts on existing groundwater users.
- The permit reflects the required consultation with and full consideration of the written recommendations of the Virginia Department of Health (VDH).

Staff recommends Groundwater Withdrawal Permit Number GWI000240 be issued as proposed.

Approved:



Scott Morris, DBA, P.E.
Director, Water Division

Date:

5/24/2024

Processing Dates

Processing Action	Date Occurred/Received
Notification of Renewal:	Not Documented
Pre-Application Meeting:	September 28, 2017
Application Received by DEQ:	October 27, 2017
Permit Fee Deposited by Accounting:	December 13, 2017
Application Review Conducted:	October 1, 2017
Notice of Deficiency Sent	October 31, 2017
Response to Notice of Deficiency Received:	December 12, 2017
Request for Additional Information Sent:	November 30, 2018
Response to Additional Information Received:	December 21, 2018
Request for Additional Information Sent:	December 28, 2018
Response to Additional Information Received:	January 9, 2019
Request for Additional Information Sent:	May 4, 2020
Response to Additional Information Received:	May 29, 2020
Local Government Ordinance Form Received by DEQ:	December 12, 2017
Application Complete:	September 17, 2020
Submit Request for Technical Evaluation:	January 5, 2024
Technical Evaluation Received by DEQ:	January 9, 2024
Draft Permit Package Sent:	March 31, 2023
Public Notice Published:	March 8, 2024
End of 30-Day Public Comment Period:	April 8, 2024
Response to Public comment:	May 14, 2024
Public Meeting or Hearing:	NA

Application

Application Information

Description and History:

Purpose of Facility:

The Town of Onancock (“Town”) water system supplies water to approximately 600 residential connections and 125 commercial connections within the Town limits, unmetered municipal connections, the wastewater treatment plant, and fire departments for firefighting and fire protection purposes. In addition, Riverside Shore Memorial Hospital was added to the system in 2017. Accomack County is installing a water line connection to the Town’s system at a point near the new hospital with plans to supply new and existing users in the County’s service area with water from the Town.

The Town was first permitted on December 1, 1994 to withdraw 61,000,000 gallons per year (gal/yr) and 6,140,000 gallons per month (gal/mo) under Groundwater Withdrawal Permit No. GW0035400. This permit expired on November 30, 2004 and was reissued on March 1, 2008 under Groundwater Withdrawal Permit No. GW0049200 which authorized withdrawals of 80,615,000 gal/yr and 8,079,200

gal/mo. This permit (GW0049200) expired on February 28, 2018 and was administratively continued pursuant to 9VAC25-610-96.

Location of Facility/Withdrawal:

Water Supply Planning Unit: Accomack County & Towns

County: Accomack

GWMA/Aquifer: Eastern Shore GWMA / Middle Yorktown-Eastover aquifer

Conjunctive Use Source: No conjunctive use.

Withdrawal Use, Current Need, and Projected Demand:

Basis of Need:

The Town of Onancock Water System currently provides potable water to a total of 778 metered connections for domestic use (includes residential, commercial, and unmetered municipal connections), fire protection purposes, and wastewater treatment processing.

At the time of application submission, the Town did not expect significant population growth or new developments that would significantly increase their historic water demand. Since then, the Town has identified four development projects that are planned to complete construction and connect to the system during the upcoming permit term. The four development projects include a 21-unit single family housing development (Carnival Grounds) and a 40-unit condominium complex associated with the senior living community (Commonwealth). The Carnival Grounds and Commonwealth projects are currently in development with construction expected to be completed prior to the end of 2024. The other two development projects are multi-year plans and include mixed use retail, apartment, townhouse, and single-family dwellings (Liberty Street and Coastal Square). The Liberty Street development includes 300 units with a 10-year construction timeline and the Coastal Square development includes 700 units with a 15-year construction timeline. The Liberty Street and the Coastal Square developments are in the permitting and approval process.

Water Demand and Projections:

The Town originally requested 83,296,000 gal/yr and 8,843,060 gal/mo. Additional evaluation and supporting information was requested during the application review and the amount was reduced to 80,615,000 gal/yr based on the maximum reported use of 58,500,000 gallons in 2019 and the projected additional demand of 50,000 gallons per day (gal/day) or 18,250,000 gal/yr for the Northern Water and Wastewater Spur Project to bring water to provide for possibly connecting additional doctor offices located by the Hospital, Chesapeake Square Shopping Center, Four Corners Shopping Center, and parts of the Town of Onley and A&N Electric Co. In addition, a new dialysis center requiring 1,702,000 gal/yr was under construction at time of application submission bringing the projected total annual water demand to 78,452,000 gal/yr which is close to the previous permit (GW0049200) annual withdrawal limit of 80,615,000 gal/yr. Therefore, the facility requested the same withdrawal limits permitted by GW0049200.

On September 8, 2023, the Town updated and revised the requested withdrawal amounts and justification due to four new development projects expected to be completed during the upcoming 15-year permit term. The four development projects include a 21-unit single family housing development (Carnival Grounds), 40-unit condominium complex associated with senior living community (Commonwealth

Senior Living), and the other two developments are multi-year plans with a combined total of 1,000 units for mixed use retail, apartment, townhouse, and single-family dwellings (Liberty Street-300 units and Coastal Square-700 units).

To determine the projected demand for the proposed development projects, the applicant used the current average water usage per connection to calculate the demand for each development based on the number of units. The applicant determined the current average system demand as 9,000,000 gal/mo or 108,000,000 gal/yr for 778 metered connections. The total projected water demand for all four development projects was determined to be 1,597,000 gal/mo and 19,163,000 gal/yr. Combining the current and projected demands results in a total demand of 10,597,000 gallons per month and 127,163,000 gallons per year. In correspondence dated September 29, 2023, the Town committed to an annual withdrawal of 120,000,000 gallons per year.

Withdrawal Volumes Requested:

The applicant requested the following withdrawal volumes based upon the projected groundwater demand.

Period of Withdrawal	Total Volume (gal.)	Volume in gal/day
Maximum Annual:	120,000,000	328,767
Maximum Monthly:	10,597,000	341,839

Department Evaluation

Historic Withdrawals:

Reported withdrawals from the last ten years (2013-2023) ranged from 37,454,200 gal/yr in 2013 to 89,288,900 gal/yr in 2023. Data shows that since 2016 there has been a steady and significant increase in reported withdrawals. The reported withdrawal for 2020 was a significant increase to 69,350,400 gallons from 59,157,740 gallons reported in 2019. The County reported that hydrant flushing was needed during the year, the dialysis center is now in operation, and the hospital was at full capacity for several months during the year due to COVID-19 related cases. The amount for 2021 was expected to be lower as the hospital operations return to normal but the system withdrew 79,289,500 gals for the year. The Town reported that this elevated use was associated with cleaning and painting of the water tower during November and December rather than due to a significant leak. The elevated use observed in 2020 and 2021 continued through 2023 as demonstrated by recently reported annual withdrawals of 77,115,200 gallons in 2022 and 89,288,900 gallons in 2023.

The monthly withdrawals prior to October 2019 were generally in the 4,000,000 to 5,000,000 gal/mo range with monthly amounts increasing to the 5,000,000 to 6,000,000 gal/mo range for 2020-2021 (with the exception of the months reported to be affected by the tank cleaning). Recently reported monthly withdrawals from 2022-2023 were generally in the 6,000,000 to 8,000,000 gal/mo range (with the exception of the maximum monthly withdrawal in July 2023). During the last 10 years (2013-2023), the maximum monthly withdrawal occurred at 10,404,800 gallons in July 2023.

Analysis of Alternative Water Supplies:

The water quality of the deeper confined aquifers on the Eastern Shore below the Upper, Middle, and Lower Yorktown Eastover Aquifers are reduced due to chloride content and would require significant treatment. The water quality of the Surficial aquifer is at a higher risk for impacts from contamination and is not expected to be capable of yielding an adequate and reliable supply of potable water for the Town.

The North and Central Branch's of Onancock Creek run through the Town but the flow from these creeks would not support the Town's water needs. Onancock Creek is a larger water body that connects to the Chesapeake Bay, but the salinity content and other water quality issues would require significant water treatment. Onancock is the largest municipal water system in the area and supplies sections of the Town of Onley, which does not have a central water system. The closest town with a central water system is Parksley which is also supplied from the Yorktown-Eastover aquifer and is over 7 miles to the north.

The confined aquifer system on the Eastern Shore is considered to be of higher quality than the Surficial aquifer and is the potable water supply for the majority of the Eastern Shore. Since this permit includes an increase of groundwater withdrawal for an existing facility, a site-specific investigation of the Surficial aquifer is recommended but not required during this permit term.

Public Water Supply:

The Town operates under the Virginia Department of Health (VDH) Waterworks Operation Permit (WWOP) No. 3001620 with an effective date of January 31, 2019 and a permitted capacity of 600,000 gallons per day (gpd). Storage capacity is stated to be the limiting factor on the permitted capacity. The permit includes the three active production wells.

Water Supply Plan Review:

Town of Onancock is included in the Accomack County Regional Water Supply Plan (2011). Water Supply Plan demand projections for the facility were included in the Plan, and could be considered in the evaluation of the permit request. The Water Supply Plan states that existing sources for Accomack County were projected to meet demands through 2040.

Department Recommended Withdrawal Limits:

Department staff reviewed the updated water demand and projections provided by the applicant on September 8, 2023. The updated water demand justifications for the requested withdrawal limits were deemed justified to meet the beneficial use and need identified for a municipal public water supply.

The Department recommends the following withdrawal volumes based upon evaluation of the groundwater withdrawal permit application.

Period of Withdrawal	Total Volume (gal)	Volume in gal/day
Maximum Annual:	120,000,000	328,767
Maximum Monthly:	10,597,000	341,839

Technical Evaluation:

Aquaveo, LLC performed a technical evaluation of the application for the Department based on the VAHydro Groundwater Eastern Shore model (VAHydro-GW-ES). The objectives of this evaluation were to determine the areas of any aquifers that will experience at least one foot of water level decline due to the proposed withdrawal (the Area of Impact or AOI), to determine the potential for the proposed withdrawal to cause salt-water intrusion, and to determine if the proposed withdrawal meets the 80% drawdown criteria. Aquaveo, LLC also evaluated water levels in the Eastern Shore model compared to measured field values.

The Department concluded that the proposed withdrawal satisfies the technical evaluation criteria for permit issuance. A summary of the results of the evaluation and the AOIs for the Upper, Middle, and Lower Yorktown-Eastover aquifers are provided in the Technical Evaluation (Attachment 1).

The VAHydroGW-ES model results do establish a potential for adverse changes to water quality as a result of the proposed withdrawal. There is not a numeric regulatory standard for chloride. The Department uses the EPA's 250 mg/L Health Advisory for chloride in drinking water as a guide for assessing the magnitude of these changes. The model simulation results indicate that the majority of model cells with simulated water quality reduction were located within the Upper and Middle Yorktown-Eastover confining units or along and off-shore in the Middle Yorktown-Eastover aquifer. Residential supply wells would not likely be screened in the confining units. However chloride increases are modeled in the Upper and Middle Yorktown-Eastover aquifers. The simulated increases in Chloride in the Upper Yorktown-Eastover aquifer are off-shore. It is noted that some of the simulated increases in chloride concentrations in the Middle Yorktown-Eastover aquifer are over residential areas along the western shoreline of the County. However, the modeling also indicates that the timing of the potential change for model cells simulated to have a chloride concentration increase of greater than 50 mg/L is more than 20 years from when the Technical Evaluation was conducted. This includes the cells that are outside the AOI and over residential areas along the western shoreline of the County. Since the potential changes occur outside of the 15-year permit term, water quality monitoring and reporting are not being required as part of the permit conditions.

The withdrawal requested by the Town of Onancock satisfies the technical evaluation criteria for permit issuance. The AOIs for the Upper, Middle, and Lower Yorktown-Eastover aquifers are provided in Attachment 1.

Part I Operating Conditions

Authorized Withdrawals:

Owner Well Name	DEQ Well #	Aquifer	Type	Pump Intake Limit (ft/bls)
Hartman Ave Well #7 (PW #1)	100-01015	Middle Yorktown-Eastover	Production	160
Hartman Ave Well #8 (PW #2)	100-01016	Middle Yorktown-Eastover	Production	170
Hartman Ave Well #9 (PW #3)	100-01017	Middle Yorktown-Eastover	Production	165

Apportionment:

The three production wells withdraw from the same aquifer and are located within 450 feet of each other. The need to restrict the well apportionment was not identified through the modeling and is not being applied in the permit.

Additional Wells

Observation Wells:

Well #6, OW-1 (DEQ Well #100-01014) is located within the same area as the Hartman Ave. Production Wells.

Owner Well Name	DEQ Well #	Aquifer	Type
Well #6, OW-1	100-01014	Middle Yorktown-Eastover	Water Level

Abandoned Wells:

Owner Well Name	DEQ Well #	Aquifer
Justice St #1	100-00002	Upper and Middle Yorktown-Eastover
Justice St #2 (Old Well #3)	100-00036	Upper Yorktown-Eastover
Justice St #3 (Old Well #2)	100-00004	Upper Yorktown-Eastover
Well #4, Parker St #1	100-00037	Unknown
Well #5, Parker St #2	100-00038	Unknown

Out of Service Wells: No out of service wells.

Pump Intake Settings:

A Department staff geologist has reviewed available information and made the following determinations regarding the location of the aquifer tops for the following wells. Information reviewed in this process included geophysical logs, GW-2 forms, and the Eastern Shore: Hydrogeologic Framework of the Virginia Eastern Shore (USGS Scientific Investigations Report 2019-5093).

Unit	Well #7 (ft/bls)	Well #8 (ft/bls)	Well #9 (ft/bls)
Middle Yorktown-Eastover Top	160	170	165
Middle Yorktown-Eastover Bottom	200	210	200

All well pumps are correctly positioned in accordance with 9VAC25-610-140 A 6. Hartman Ave Well #7 (DEQ Well #100-01015) and Hartman Ave Well #9 (DEQ Well #100-01017) are both set at 153.2 feet below land surface (ft/bls). Hartman Ave Well #8 (DEQ Well #100-01016) is set at 153.6 ft/bls.

Withdrawal Reporting:

Groundwater withdrawals are to be recorded monthly and reported quarterly. All required notifications and submittals shall include facility name and permit number and be submitted electronically to withdrawal.permitting@deq.virginia.gov or mailed to the office stated below, unless otherwise directed in writing by the Department subsequent to the issuance of this permit: Virginia Department of Environmental Quality, Attn: Groundwater Withdrawal Compliance, P.O. Box 1105, Richmond VA 23218.

Water Conservation and Management Plan:

A Water Conservation and Management Plan (WCMP) meeting the requirements of 9VAC25-610-100 B was submitted and reviewed as part of the application process. The accepted Plan is to be followed by the permittee as an operational Plan for the facility/water system, is incorporated by reference into this permit, and shall have the same effect as any condition contained in this permit and may be enforced as such (Attachment 2). In addition, the Permit includes conditions requiring the following:

- Documentation that the leak detection and repair program defined in the WCMP has been initiated is due by the end of the first year of the permit term (May 23, 2025).
- A result of an audit of the total amount of groundwater used in the distribution system and operational processes is due by the end of the second year of the permit term (May 23, 2026).
- A report on the plan's effectiveness in reducing water use, including revisions to those elements of the WCMP that can be improved and addition of other elements found to be effective based on operations to date shall be submitted by the end of years five (May 23,

2029) and ten (May 23, 2034) of the permit term.

Mitigation Plan:

The predicted AOI resulting from the Technical Evaluation extends beyond the property boundaries in the Upper, Middle, and Lower Yorktown-Eastover aquifers. Given this prediction, a Mitigation Plan to address potential claims from existing well owners within the predicted area of impact is incorporated by reference in the permit and shall have the same effect as any condition contained in this permit and may be enforced as such (Attachment 3).

Well Tags:

Well tags will be transmitted by the Department after issuance of the final permit.

**Part II
Special Conditions**

Review of the applicant’s well construction data, facility operations, and Technical Evaluation did not identify a need for water quality or water level monitoring, pump intake reset, or well abandonment conditions in the permit. There are no new wells currently planned for construction during the permit term. Aquifer testing has been completed at the facility. Construction of observation wells or well nests, and geophysical boreholes to assist in monitoring or characterizing the local or regional aquifer system are not required at this time.

**Part III
General Conditions**

General Conditions are applied to all Groundwater Withdrawal Permits, as stated in the Groundwater Withdrawal Regulations (9VAC25-610).

Public Comment

Relevant Regulatory Agency Comments:

Summary of VDH Comments and Actions:

The Office of Drinking Water Southeast Virginia Field Office responded to the Draft Permit Review request on March 8, 2024. The review noted that the reported maximum water usage for the past 12 months is within the capacity defined in the Waterworks Operation Permit. It also noted that the waterworks’ service area has increased since the last Groundwater Withdrawal Permit issuance (the hospital was added). Lastly, it noted that the requirements indicated in the draft Groundwater Withdrawal Permit are not more restrictive than the historical monthly or annual withdrawal for the past 12 months.

Public Involvement during Application Process:

Local and Area wide Planning Requirements:

The Accomack County Administrator certified on November 21, 2017, that the Town’s operations are consistent with all ordinances. The Department received this certification on December 12, 2017.

Public Comment/Meetings:

The public notice was published in the Eastern Shore Post on March 8, 2024. The public comment period ran from March 8, 2024 to April 8, 2024.

Administrative Changes to Permit

Permit number updated from GW0049201 to GWI000240.

Changes in Permit Part II Due to Public Comments

No changes were made in Permit Part II due to public comments.

Changes in Permit Part III Due to Public Comments

No changes were made in Permit Part III due to public comments.

Attachments

- 1. Technical Evaluation**
- 2. Water Conservation and Management Plan**
- 3. Mitigation Plan**
- 4. Public Comment Sheet**

**COMMONWEALTH of VIRGINIA
DEPARTMENT OF ENVIRONMENTAL QUALITY**

TECHNICAL EVALUATION FOR PROPOSED GROUNDWATER WITHDRAWAL

Date: January 9, 2024

Application /Permit Number: GWI000240

Owner / Applicant Name: Town of Onancock

Facility / System Name: Town of Onancock Water System

Facility Type: Public Water Supply – Municipal

Facility / System Location: Accomack County

The Commonwealth of Virginia’s Groundwater Withdrawal Regulations (9VAC25-610) provide that, for a permit to be issued for a new withdrawal, to expand an existing withdrawal, or reapply for a current withdrawal, a technical evaluation shall be conducted. This report documents the results of the technical evaluation conducted to meet the requirements for the issuance of a permit to withdraw groundwater within a Designated Groundwater Management Area (9VAC25-600).

This evaluation determines the:

- (1) The Area of Impact (AOI): The AOI for an aquifer is the areal extent of each aquifer where one foot or more of drawdown is predicted to occur as a result of the proposed withdrawal.
- (2) Water Quality: The potential for the proposed withdrawal to cause salt water intrusion into any portion of any aquifers or the movement of waters of lower quality into areas where such movement would result in adverse impacts on existing groundwater users or the groundwater resource.
- (3) The Eighty Percent Drawdown (80% Drawdown): The proposed withdrawal in combination with all existing lawful withdrawals will not lower water levels, in any confined aquifer that the withdrawal impacts, below a point that represents 80% of the distance between the land surface and the top of the aquifer at the points where the one-foot drawdown contour is predicted for the proposed withdrawal.

Requested withdrawal amount:

Requested Withdrawal Amount	
Annual Value	120,000,000 (328,767 average gpd)
Monthly Value	10,597,000 (341,838 average gpd)

Summary of Requested Withdrawal:

The Town of Onancock (“Town”) water system supplies around 600 residential connections, 125 commercial connections within the Town limits, unmetered municipal connections, the wastewater treatment plant, and water to fire departments for firefighting and fire protection purposes. In addition, Riverside Shore Memorial Hospital was added to the system in 2017. Accomack County is installing a water line connection to the Town’s system at a point near the new hospital with plans to supply new and existing users in the Four Corners commercial area with water from the Town. On September 8, 2023, the Town updated and revised the requested withdrawal amounts and justification due to four new development projects expected to be completed during the upcoming 15-year permit term and recently reported withdrawal data trends from 2023.

Requested Apportionment of Withdrawal:

The three wells are used alternately with Well #7 (DEQ Well #100-01015) often having the higher monthly withdrawal. The wells are located within 450 feet of each other. Given this configuration and the wells being constructed within the same aquifer, assigning equal apportionment is requested to represent the withdrawal and to allow operational flexibility.

DEQ Well #	Owner Well #	Aquifer	Percent of Withdrawal
100-01015	Well #7	Middle Yorktown-Eastover	33.3
100-01016	Well #8	Middle Yorktown-Eastover	33.3
100-01017	Well #9	Middle Yorktown-Eastover	33.4

Production Wells:

Identification	Location	Construction	Pump Intake	Source Aquifer
Owner Well Name: Hartman Ave Well #7 DEQ Well Number: 100-01015 MPID: 374225075441401 Hydro ID: 220	Lat: 37° 42' 24.9" Lon: -75° 44' 14.4" Datum: NAD27 Elevation: 19 feet (Datum: NAVD88)	Completion Date: December 5, 2004 Screens (ft/bls): 168.4-198.85 Total Depth (ft/bls): 208.85	153.2 ft. bls	Middle Yorktown-Eastover
Owner Well Name: Hartman Ave Well #8 DEQ Well Number: 100-01016 MPID: 374227075441901 Hydro ID: 221	Lat: 37° 42' 27.1" Lon: -75° 44' 19.1" Datum: NAD27 Elevation: 19 feet (Datum: NAVD88)	Completion Date: January 7, 2005 Screens (ft/bls): 170-200.45 Total Depth (ft/bls): 210.45	153.6 ft. bls	Middle Yorktown-Eastover
Owner Well Name: Hartman Ave Well #9 DEQ Well Number: 100-01017 MPID: 374229075441401 Hydro ID: 222	Lat: 37° 42' 29.3" Lon: -75° 44' 13.9" Datum: NAD27 Elevation: 19 feet (Datum: NAVD88)	Completion Date: January 24, 2005 Screens (ft/bls): 169.4-199.10 Total Depth (ft/bls): 210	153.2 ft. bls	Middle Yorktown-Eastover

Abandoned Well(s):

Identification	Location	Construction	Pump Intake	Source Aquifer
<p>Owner Well Name: Justis Street Well #1</p> <p>DEQ Well Number: 100-00002</p> <p>MPID: 374233075443001</p> <p>Hydro ID: 21</p>	<p>Lat: 37° 42' 33.2" Lon: -75° 44' 30.7" Datum: NAD27</p> <p>Elevation: 5 feet (Datum: NAVD88)</p>	<p>Completion Date: May 30, 1968 (Abandoned April 11, 2008)</p> <p>Screens (ft/bls): 108-123, 130-145, 168-188</p> <p>Total Depth (ft/bls): 282</p>	NA	Middle & Upper Yorktown-Eastover
<p>Owner Well Name: Justis Street Well #2</p> <p>DEQ Well Number: 100-00036</p> <p>MPID: 374234075443001</p> <p>Hydro ID: 33</p>	<p>Lat: 37° 42' 34" Lon: -75° 44' 30" Datum: NAD27</p> <p>Elevation: 22 feet (Datum: NAVD88)</p>	<p>Completion Date: January 7, 1953 (Abandoned April 13, 2008)</p> <p>Screens (ft/bls): 106-110, 110-119, 119-132, 132-138, 138-145, 145-156</p> <p>Total Depth (ft/bls): 159</p>	NA	Upper Yorktown-Eastover
<p>Owner Well Name: Well #3</p> <p>DEQ Well Number: 100-00004</p> <p>MPID: 373735075400001</p> <p>Hydro ID: 22</p>	<p>Lat: 37° 42' 33" Lon: -75° 44' 30" Datum: NAD27</p> <p>Elevation: 22 feet (Datum: NAVD88)</p>	<p>Completion Date: January 7, 1953 (Abandoned April 14, 2008)</p> <p>Screens (ft/bls): 106-156</p> <p>Total Depth (ft/bls): 159</p>	NA	Not Determined
<p>Owner Well Name: Well #4</p> <p>DEQ Well Number: 100-00037</p> <p>MPID: 374259075445301</p> <p>Hydro ID: 34</p>	<p>Lat: 37° 42' 59" Lon: -75° 14' 53" Datum: NAD27</p> <p>Elevation: 6 feet (Datum: NAVD88)</p>	<p>Completion Date: January 21, 1971 (Abandoned April 20, 2008)</p> <p>Screens (ft/bls): Unknown</p> <p>Total Depth (ft/bls): 177</p>	NA	Not Determined

Owner Well Name: Well #5	Lat: 37° 42' 59" Lon: -75° 44' 54" Datum: NAD27	Completion Date: January 21, 1971 (Abandoned April 20, 2008)	NA	Not Determined
DEQ Well Number: 100-00038	Elevation: 6 feet (Datum: NAVD88)	Screens (ft/bls): Unknown		
MPID: 374259075445302		Total Depth (ft/bls): 183		
Hydro ID: 35				

Observation Well(s):

Identification	Location	Construction	Pump Intake	Source Aquifer
Owner Well Name: Well #6 OW-1	Lat: 37° 42' 25.9" Lon: -75° 44' 15" Datum: NAD27	Completion Date: November 4, 2004	NA	Middle Yorktown- Eastover
DEQ Well Number: 100-01014	Elevation: 19 feet	Screens (ft/bls): 158-198		
MPID: 374226075441599		Total Depth (ft/bls): 230		
Hydro ID: 219				

Geologic Setting:

The Town of Onancock Water System wells (applicant wells) are located in Accomack County. The production wells are screened in the Middle Yorktown-Eastover aquifer. The upper portion of the Yorktown-Eastover aquifer (described in the 2006 Virginia Coastal Plain Hydrologic Framework¹ (VCPHF) as a combination of the Upper, Middle, and Lower Yorktown-Eastover aquifers) is composed primarily of estuarine to marine quartz sands of the Yorktown Formation of Pliocene age. The nearest USGS geologic cross section found in the USGS Scientific Investigations Report 2019-5093 is cross-section A-A' (see attached figure at the end of the report)².

Virginia Eastern Shore Model data:

The following table lists the locations of the applicant production wells within the Virginia Eastern Shore Model³ (VAHydroGW-ES).

VAHydroGW-ES Model Grid					
Well	Hydro ID	Well Number	MPID	Row	Column
Well #7	220	100-01015	374225075441401	143	35
Well #8	221	100-01016	374227075441901	143	35
Well #9	222	100-01017	374229075441401	142	35

¹ McFarland, E.R., and Bruce, T.S., 2006, The Virginia Coastal Plain Hydrogeologic Framework: U.S. Geological Survey Professional Paper 1731, 118 p., 25 pls.

² McFarland, E.R., and Beach, T.A., 2019, Hydrogeologic framework of the Virginia Eastern Shore: U.S. Geological Survey Scientific Investigations Report 2019-5093, 26 p., 13 pl., <https://doi.org/10.3133/sir20195093>.

³ Sanford, W.E., Pope, J.P., and Nelms, D.L., 2009, Simulation of groundwater-level and salinity changes in the Eastern Shore, Virginia: U.S. Geological Survey Scientific Investigations Report 2009-5066, 125 p.

Hydrologic Framework:

Data from the VCPHF is reported in this technical report to illustrate the hydrogeologic characteristics of the aquifers in the Virginia Eastern Shore near the applicant wells and identify major discrepancies between regional hydrogeology and site logs interpreted by the DEQ.

The following average aquifer elevations were estimated from the VAHydroGW-ES at the model cells containing the applicant production wells.

VAHydroGW-ES Average Hydrologic Unit Information		
Aquifer	Elevation (feet msl)	Depth (feet bls)
Surface	19.3	0
Columbia aquifer (bottom)	-19	38
Upper Yorktown-Eastover aquifer (top)	-83	102
Upper Yorktown-Eastover aquifer (bottom)	-130	149
Middle Yorktown-Eastover aquifer (top)	-144	164
Middle Yorktown-Eastover aquifer (bottom)	-188	207
Lower Yorktown-Eastover aquifer (top)	-224	243
Lower Yorktown-Eastover aquifer (bottom)	-275	295

Groundwater Characterization Program Recommendations:

DEQ staff reviewed available information and made the following determinations regarding the location of the aquifer tops for the following wells. Information reviewed in this process included geophysical logs, GW-2 forms, and the Eastern Shore: Hydrogeologic Framework of the Virginia Eastern Shore (USGS Scientific Investigations Report 2019-5093).

Unit	Well #7 (ft/bls)	Well #8 (ft/bls)	Well #9 (ft/bls)
Middle Yorktown-Eastover Top	160	170	165
Middle Yorktown-Eastover Bottom	200	210	200

Comparison of the Hydrogeologic Framework and Groundwater Characterization Program Recommendations:

The average top elevation of the Middle Yorktown-Eastover aquifer obtained from the VAHydroGW-ES framework of 102 ft-bl is 63 feet higher than, but in general agreement with, the average value provided by the DEQ of 165 ft-bl. The average bottom elevation of the Middle Yorktown-Eastover aquifer obtained from the VAHydroGW-ES framework of 207 ft-bl is 3.6 feet higher than, but also in general agreement with, the average value provided by the DEQ of 203.3 ft-bl.

Water Level Comparison:

Below water levels retrieved from the USGS regional observation network wells are compared to the simulated water levels reported in the *Virginia Eastern Shore Model (VAHydroGW-ES) 2022-2023 Simulation of Potentiometric Groundwater Surface Elevations of Reported and Total Permitted Use* report (the 2022-2023 report) and simulation files.⁴ This comparison is made in order to evaluate the

⁴ See *Virginia Eastern Shore Model 2022-2023 Simulation of Potentiometric Groundwater Surface Elevations of Reported and Total Permitted Use* report and simulation files on file with the VA DEQ.

performance of the regional model in the vicinity of the applicant wells and assess historical groundwater trends.

The 2022-2023 report provides two sets of simulated potentiometric water surface elevations. The VAHydroGW-ES model is divided into three parts. The first portion of the model simulates water levels within the Eastern Shore aquifers from 1900 through 2022 based upon historically reported pumping amounts (the “*Historic Use Simulation*”). This portion of the model has been calibrated to match water levels observed in USGS regional observation network wells situated throughout the peninsula. The water levels reported in the 2022-2023 report are based upon two separate simulations, each simulation running from 2021 through 2072. The simulated pumping amount in these two simulations are based upon, 1) the average 2018-2022 reported withdrawal amount of wells in the VAHydroGW-ES model (the “*Reported Use Simulation*”) and, 2) the current (2023) maximum withdrawal amount allowed under their current permit for wells in the VAHydroGW-ES model (the “*Total Permitted Simulation*”). Both these simulations are an extension of the *Historic Use Simulation* and the water levels reported in the 2022-2023 report are the final water levels simulated at the end of the simulations (2072).

The “VAHydroGW-ES 2072 Reported Use Water Level,” reported in the tables below, is the simulated water level – 50 years from present – if all permitted pumping continued at the average 2018-2022 reported withdrawal amount for the next 50 years. The “VAHydroGW-ES 2072 Total Permitted Water Level,” reported in the tables below, is the simulated water level – 50 years from present – if all Eastern Shore permitted wells were to pump at the maximum permitted amount allowed under their current permit for the next 50 years. Finally, the “VAHydroGW-ES 2022 Historic Use Water Level,” reported in the tables below, is the water level simulated for the year 2022 in the *Historic Use Simulation*.

The nearest USGS regional observation network wells to the applicant wells completed in the Middle Yorktown-Eastover aquifer are listed in the following tables and shown in Figure 1. For the USGS regional observation network wells, average 2022 reported water levels are shown in the following tables. Simulated water levels for the Middle Yorktown-Eastover aquifer for the VAHydroGW-ES cells containing the USGS regional observation network wells are also shown in the following tables.

Comparing the VAHydroGW-ES 2022 Historic Use Water Level with the USGS Network Well 2022 Water Level provides a method for judging the accuracy of the VAHydroGW-ES. Figures 2 and 3 show graphs of the recorded water levels from the USGS observation wells listed in the following tables. These figures also show the simulated VAHydroGW-ES *Historic Use Simulation* water levels for the model cell containing each USGS well. Observing the simulated and observed water elevations together provides a second method for assessing the accuracy of the VAHydroGW-ES in the vicinity of the applicant wells.

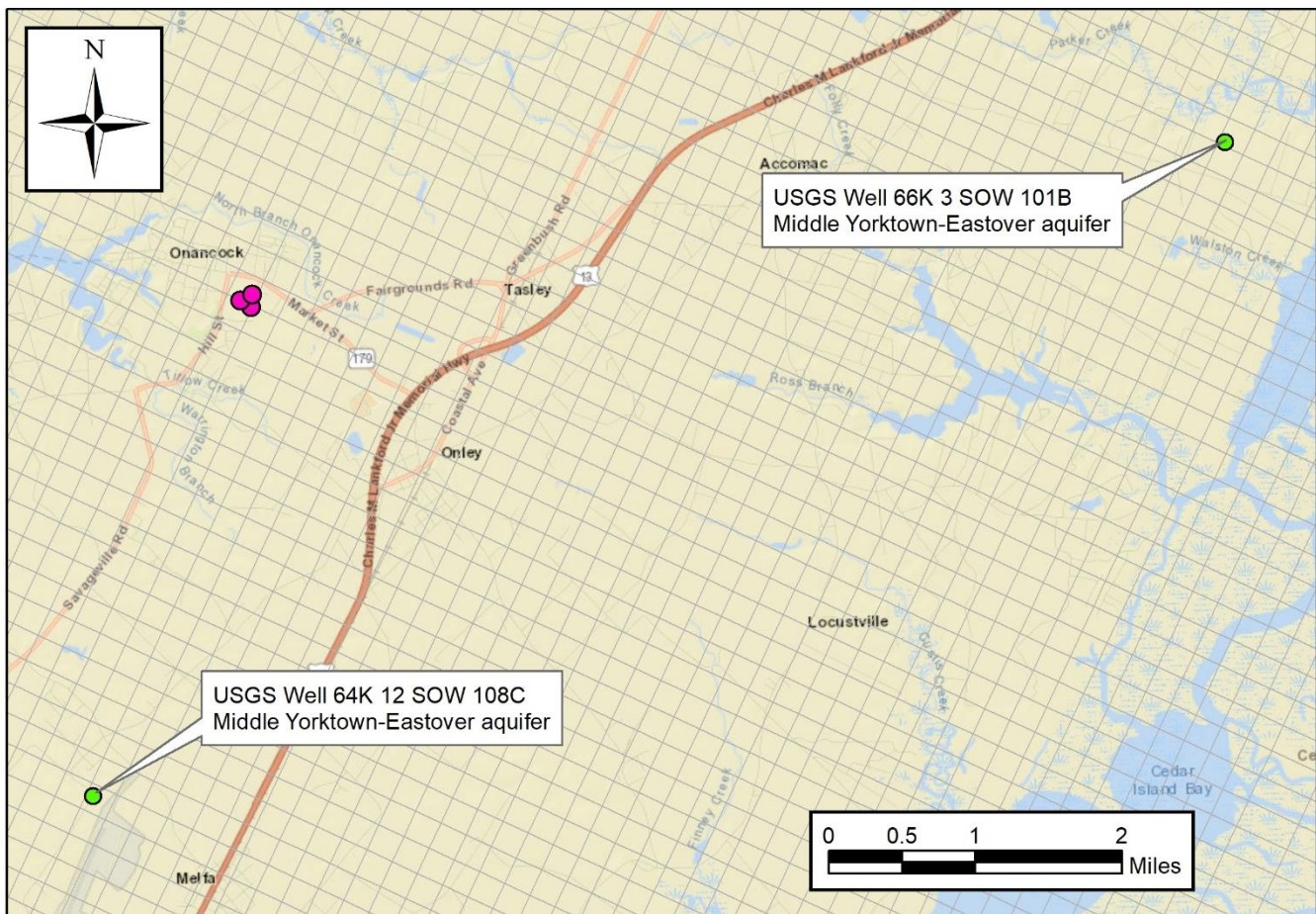
The VAHydroGW-ES Reported Use simulated water level elevations are in general agreement with the water levels observed in the USGS regional observation network Well 66K 3 SOW 101B screened in the Middle Yorktown-Eastover aquifer.

The VAHydroGW-ES Reported Use water levels are within a few feet of the USGS regional observation network Well 64K 12 SOW 108C (also screened in the Middle Yorktown-Eastover aquifer) until around 2000 when the USGS observed water levels decrease steadily while the Reported Use water levels remain steady. By 2022 the Reported Use water levels are about 20 feet higher than the USGS Well 64K 12 SOW 108C observed water levels.

Both of the USGS regional observation wells exhibit yearly fluctuations in water levels of approximately 2 to 10 feet. Water levels simulated by the VAHydroGW-ES do not fluctuate in the same manner because the pumping and recharge simulated in the model for any given year are averaged over the year and entered in

the model as the average value for the year. Water levels for both wells are in general agreement with the water level simulated by the VAHydroGW-ES.

Middle Yorktown-Eastover Aquifer Measurements	66K 3 SOW 101B	64K 12 SOW 108C
Distance from applicant wells (miles)	6.7	3.8
VAHydroGW-ES Row	122	161
VAHydroGW-ES Column	65	38
VAHydroGW-ES Land Surface Elevation (ft-msl)	10	44
USGS Well Land Surface Elevation (ft-msl)	8	47
USGS Network 2022 Water Level (ft-msl)	-0.4	9.2
VAHydroGW-ES 2022 Reported Use Water Level (ft-msl)	0.6	22.5
VAHydroGW-ES 2072 Reported Use Water Level (ft-msl)	0.6	22.4
VAHydroGW-ES 2072 Total Permitted Water Level (ft-msl)	0.0	19.2



- Town of Onancock Wells
- USGS Regional Network Wells
- Virginia Eastern Shore Model Cells



Figure 1. Nearest USGS regional observation network wells.

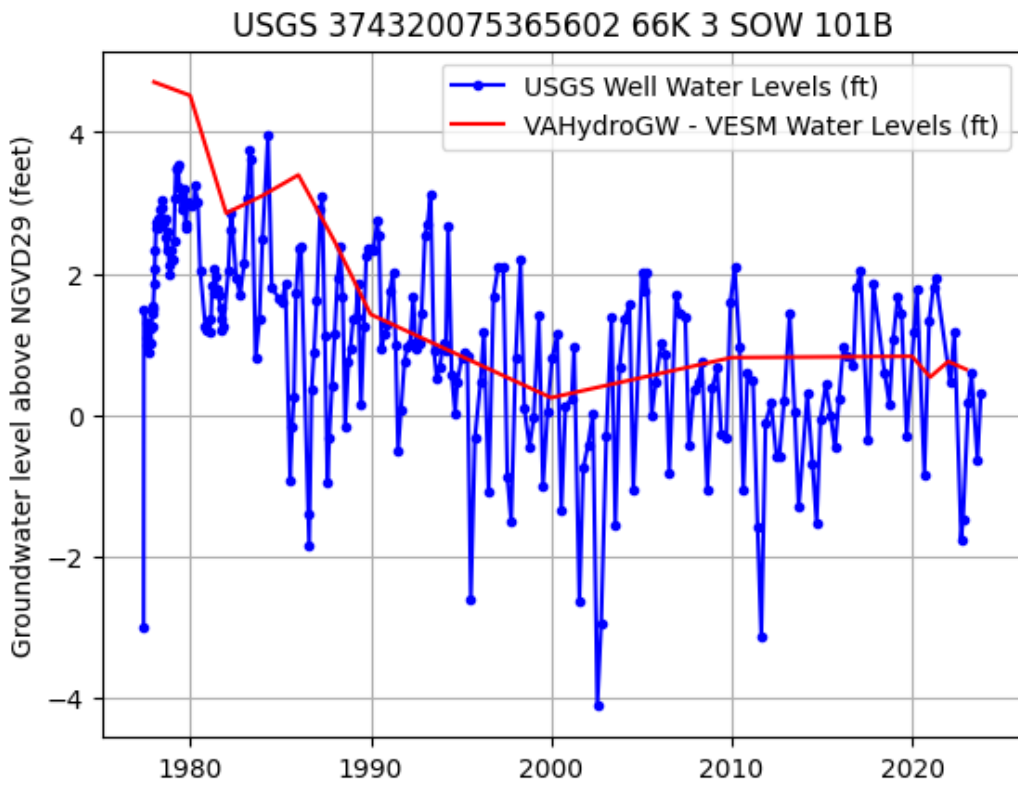


Figure 2. USGS Regional Observation Well 66K 3 SOW 101B, Middle Yorktown-Eastover aquifer water level recorded from 1977 to present (well depth 222 ft bls, land surface 8 ft msl).

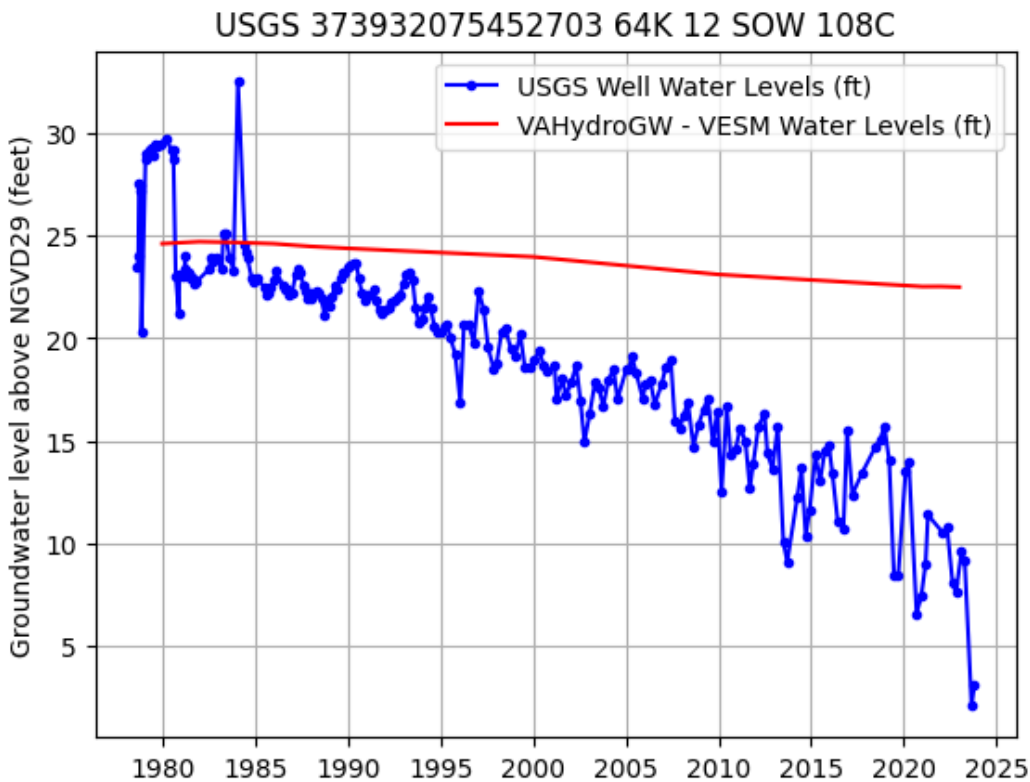


Figure 3. USGS Regional Observation Well 64K 12 SOW 108C, Middle Yorktown-Eastover aquifer water level recorded from 1978 to present (well depth 284 ft bls, land surface 47 ft msl).

Aquifer Test(s):

An aquifer test was conducted at this site after the installation of Hartman Avenue wells (100-01015, 100-01016, and 100-01017). An observation well (100-01014) was constructed 50.25 feet from the production well (100-01015) in the source aquifer. Drawdown during 24-hours of continuous pumping, at a rate of 150 gpm, was monitored in the production well, observation well, and the other two remaining Hartman Avenue wells. Recovery was also measured in the same wells for 8 hours after pumping had ceased. Unfortunately, the existing production wells were pumping during the test causing background interference that was not addressed during the test and a transducer error occurred for the observation well. DEQ staff made a number of efforts to correct the data but could not obtain values that fit the observed drawdown or appeared to be realistic.

The following table provides the average hydrogeologic properties assigned to the VAHydroGW-ES cells containing the applicant wells.

Virginia Eastern Shore Model Hydrogeologic Properties							
Aquifer	Top Elevation (feet msl)	Top Elevation (feet bls)	Aquifer Thickness (feet)	Horizontal Conductivity (feet/day)	Vertical Conductivity (feet/day)	Specific Storage (1/feet)	Specific Yield
Columbia	19	0	38	60	0.5	0.00001	0.15
Upper Yorktown-Eastover	-83	102	47	2	1.5	0.000004	N/A
Middle Yorktown-Eastover	-144	164	43	12	14.3	0.000004	N/A
Lower Yorktown-Eastover	-224	243	51	5	3.9	0.000004	N/A

Model Results

Evaluation of Withdrawal Impacts:

The VAHydroGW-ES model was used to simulate the effects resulting from the proposed withdrawal due to the multi-aquifer impacts. The stabilized effects resulting from the proposed withdrawal were simulated using an annual withdrawal rate of 120,000,000 gallons per year (328,767 average gpd). The stabilized effects were simulated by replacing the reported use amounts in the 2022 VAHydroGW-ES Reported Use Simulation with the current maximum annual withdrawal limit allowed under the terms of their permit for all Ground Water Management Area (GWMA) permit holders. That same simulation was executed twice, once with the proposed withdrawal removed (the *baseline simulation*), and once with the proposed withdrawal added (the *proposed withdrawal simulation*). The stabilized effects of the proposed withdrawal were considered by simulating both simulations for 50 years and observing the difference in water potentiometric levels at the end of the simulations.

Area of Impact:

The area of impact (AOI) for an aquifer is the area where the additional drawdown due to the proposed withdrawal exceeds one foot. The results of the VAHydroGW-ES simulations, outlined in the preceding section, predict areas of impact in the Upper, Middle, and Lower Yorktown-Eastover aquifers. The AOI areas extend a maximum distance of approximately 3.1, 3.2, and 3.2 miles from the production center for Upper, Middle, and Lower Yorktown-Eastover aquifers, respectively. These areas are shown in the accompanying maps at the end of this report. The existing permitted wells located within the applicant’s AOIs are listed in the accompanying tables.

80 % Drawdown:

The 80% drawdown criterion was evaluated for all impacted, confined aquifers in the Virginia Eastern Shore using the VAHydroGW-ES *proposed withdrawal simulation*. The elevations of the top of the Upper, Middle, and Lower Yorktown-Eastover aquifers at the VAHydroGW-ES cell simulating the greatest

drawdown (row 143, column 35) are -83, -144, and -224 feet msl, respectively. Based on the results of the *proposed withdrawal simulation* the predicted potentiometric water levels at the same VAHydroGW-ES cell are 4.6, -14.7, and 3.4 feet msl for the Upper, Middle, and Lower Yorktown-Eastover aquifers, respectively. The 80% drawdown criterion allows the potentiometric water level (based on the critical surface elevation calculated from the VAHydroGW-ES data) to be reduced to -62.6, -111.4, and -175.4 feet msl in the Upper, Middle, and Lower Yorktown-Eastover aquifers, respectively. Therefore, the water levels in the VAHydroGW-ES cells containing the applicant wells for each confined aquifer are not simulated to fall below the critical surface. Additionally, the AOIs for the Upper, Middle, and Lower Yorktown-Eastover aquifers do not intersect or contain any existing critical cells and no new VAHydroGW-ES cells are simulated to have water levels fall below the critical surface. Therefore, this withdrawal is within the limits set by the 80% drawdown criterion.

Water Quality:

The EPA has established the National Secondary Drinking Water Regulations (NSDWRs) which are non-enforceable guidelines regulating contaminants that may cause cosmetic or aesthetic (such as taste, odor, or color) effects in drinking water. The EPA recommends the secondary standards to water systems – states may choose to adopt them as enforceable standards. The EPA NSDWRs specify the limit on chloride as 250 mg/L.

The VAHydroGW-ES was created "to help the Commonwealth and local water managers better plan water use and estimate future changes in water and salinity levels in response to changes in water use."⁵ Use of the model to predict future chloride concentrations results in a "general useful understanding of system behavior, but water-resource managers must be careful in trusting the accuracy of predictions at individual wells from a regional model."⁶ Further, chloride concentrations at individual wells, predicted using the regional model, should not be relied upon to predict actual concentrations at those locations.

The potential for adverse changes to water quality due to the requested withdrawal was evaluated using transient, density-dependent, SEAWAT simulations using the VAHydroGW-ES. Two simulations were executed – one simulation without the proposed withdrawal included and a second with the proposed withdrawal included. Both simulations were executed for 50 years. Both used the 2023 total permitted stresses, concentrations, and heads as starting conditions. In an effort to simulate the long-term effects on water quality due to the proposed withdrawal, the total annual amount of 120,000,000 gallons per year (328,767 average gallons per day) was used for the duration of the second simulation. The two simulations were compared to evaluate the potential for adverse changes to water quality. The results indicated that one model cell representing the Upper Yorktown-Eastover confining unit simulates an increase in chloride concentrations greater than 250 mg/L due to the proposed withdrawal. Additionally, 15 model cells representing the Upper Yorktown-Eastover confining unit, 2 model cells representing the Middle Yorktown-Eastover confining unit, and 6 model cells representing the Middle Yorktown-Eastover aquifer simulate an increase in chloride concentrations greater than 100 mg/L due to the proposed withdrawal. Additionally, many cells in the Upper Yorktown-Eastover confining unit, Upper Yorktown-Eastover aquifer, Middle Yorktown-Eastover confining unit, and Middle Yorktown-Eastover aquifer simulate an increase in chloride concentrations greater than 50 mg/L due to the proposed withdrawal (see figures at the end of this report). As a result, the VAHydroGW-ES model results establish a potential for adverse changes to water quality as a result of the proposed withdrawal.

⁵ Sanford, W.E., Pope, J.P., and Nelms, D.L., 2009, Simulation of groundwater-level and salinity changes in the Eastern Shore, Virginia: U.S. Geological Survey Scientific Investigations Report 2009–5066, 125 p.

⁶ Sanford, W.E. and Pope, J.P., 2009, Current challenges using models to forecast seawater intrusion: lessons from the Eastern Shore of Virginia, USA. Hydrogeology Journal (2009), Volume: 18, Issue: 1, p: 73-93

The first year when simulated chloride concentration increase is 50 mg/L or more within each AOI is shown in the following table.

Aquifer	First year when simulated concentration increase is 50 mg/L or greater within AOI
Upper Yorktown-Eastover Aquifer	2049
Middle Yorktown-Eastover Aquifer	2045
Lower Yorktown-Eastover Aquifer	N/A

Upconing:

The reversal of vertical flow between two confined aquifers so that the underlying aquifer begins to flow upward into the layer above is called upconing. Upconing is predicted when the modeled head in the upper layer drops below the head in the lower layer directly beneath the referenced head. Upconing has the potential to degrade water quality when the contributing area of the lower aquifer is of a poorer quality than that in the receiving aquifer. The predicted water level in the Middle Yorktown-Eastover aquifer for the VAHydroGW-ES cells containing the applicant wells is simulated to fall below the simulated water level for the Lower Yorktown-Eastover aquifer. This indicates, based upon VAHydroGW-ES results, the potential for upconing of the potentially more brackish Lower Yorktown-Eastover waters into the overlying Middle Yorktown-Eastover source aquifer. Consequently, the model results do establish a potential for adverse changes to water quality due to an influx of more saline waters in the general vicinity of the withdrawal as a result of the proposed pumping.

Conclusion:

The withdrawal requested by Town of Onancock for Town of Onancock Water System satisfies the technical evaluation criteria for permit issuance. The AOIs for the Upper, Middle, and Lower Yorktown-Eastover aquifers are shown in the following maps. Modeling results do establish a potential for adverse changes to water quality due to simulated chloride concentration increases as a result of the proposed pumping. Additionally, the VAHydroGW-ES model results establish potential for upconing of the potentially more saline waters of the Lower Yorktown-Eastover aquifer into the Middle Yorktown-Eastover source aquifer.

Upper Yorktown-Eastover Aquifer - Existing Permittees within the Town of Onancock AOI

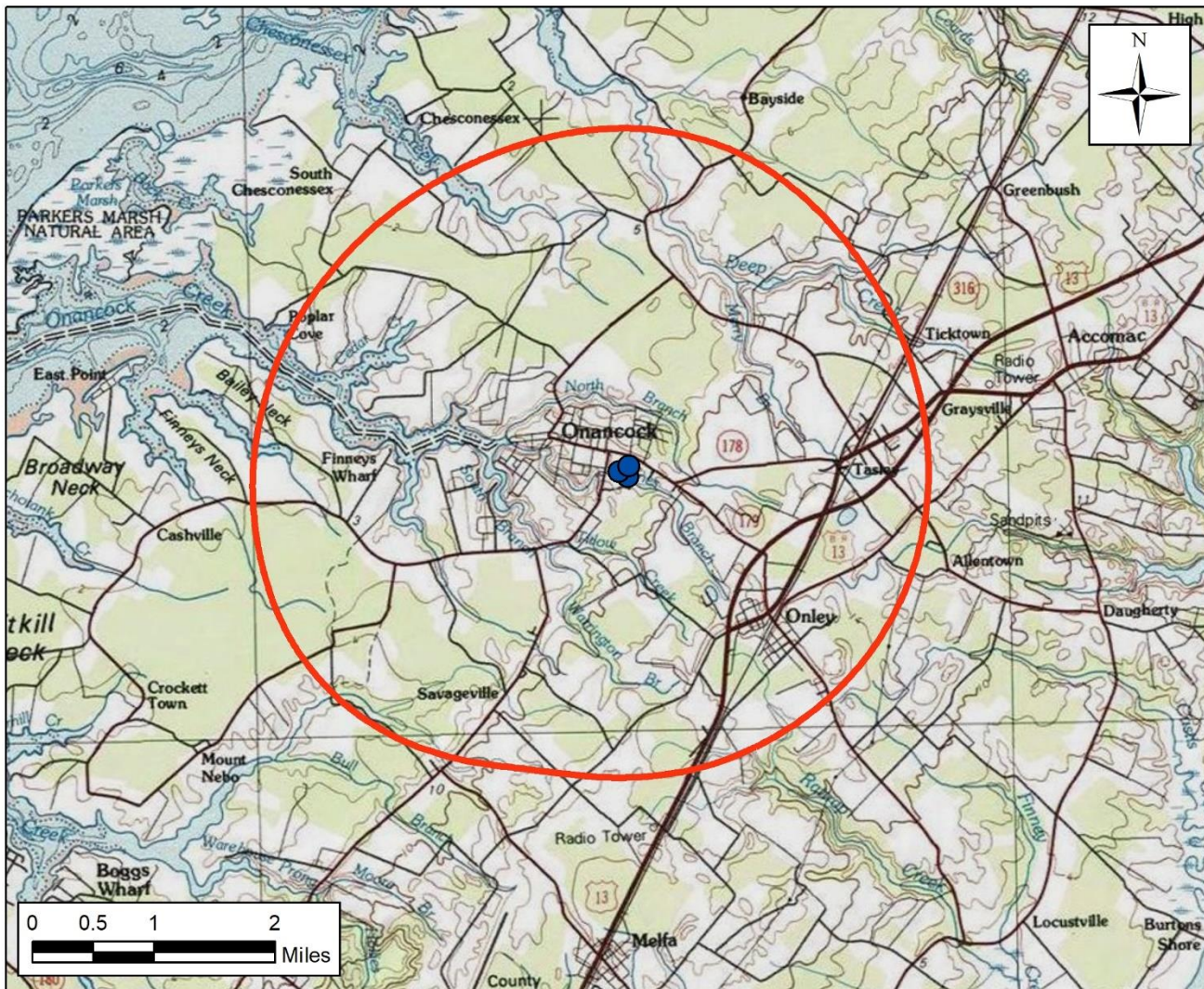
Permittee	Permit	Well	Latitude	Longitude
Richard F Hall III	GW0063100	100-00960	37.688625	-75.738056
	GW0063100	100-00961	37.691114	-75.729747
	GW0063100	100-00962	37.688628	-75.751394

Middle Yorktown-Eastover Aquifer - Existing Permittees within the Town of Onancock AOI

Permittee	Permit	Well	Latitude	Longitude
Del Monte Fresh Production Inc	GW0063800	100-00984	37.682239	-75.700847

Town of Onancock

Area of Impact - Upper Yorktown-Eastover Aquifer



- Town of Onancock Wells
- Upper Yorktown-Eastover Area of Impact

Simulated drawdown at or exceeding one foot in the Upper Yorktown-Eastover aquifer resulting from a 120,000,000 gallons per year (328,767 average gpd), 50 year withdrawal from the Middle Yorktown-Eastover aquifer using the VAHydroGW-ES.

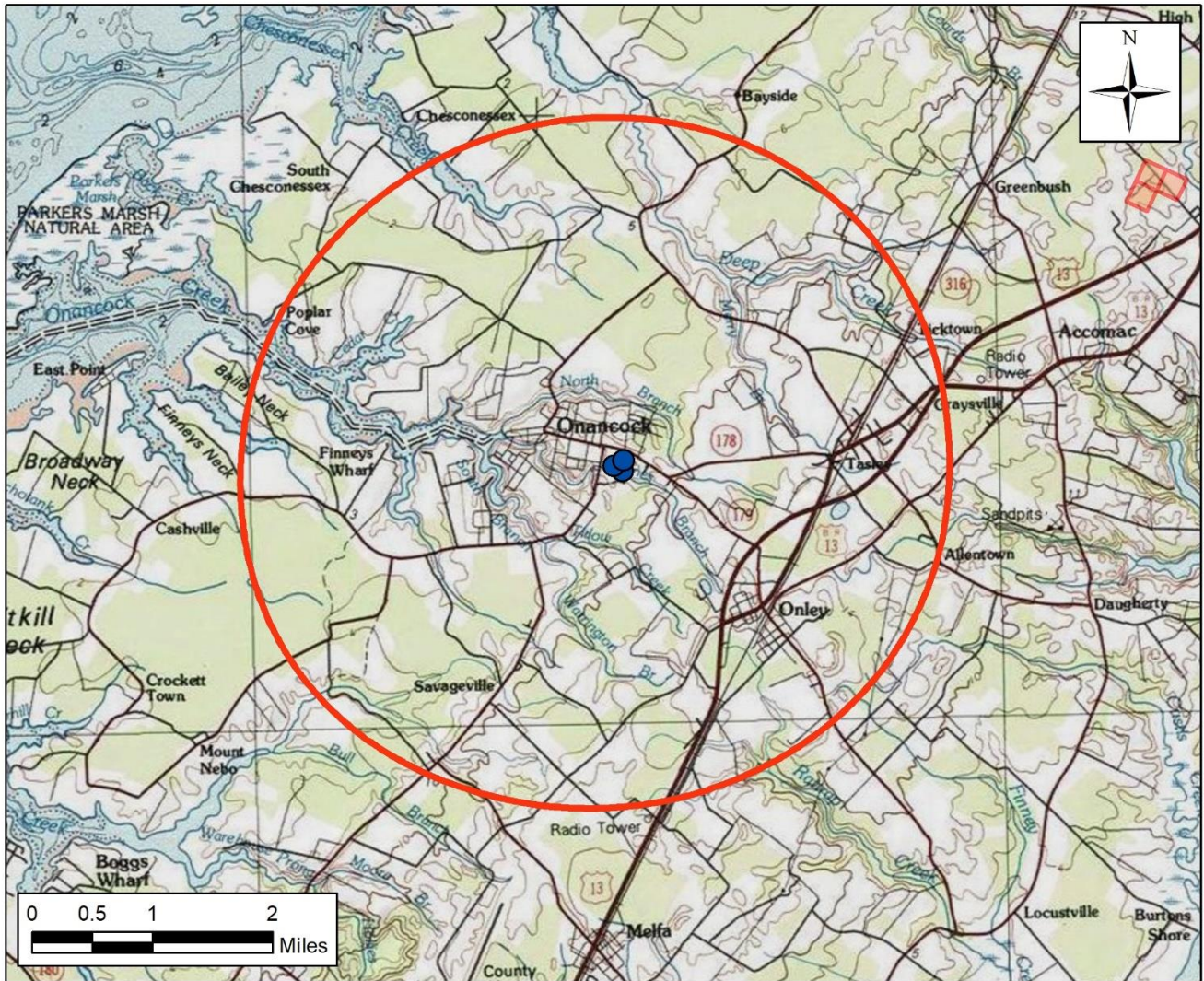
Maximum radius of one foot drawdown (Area of Impact) extends approximately 3.1 miles from the pumping center.

Technical evaluation performed by Aquaveo, LLC for the Virginia DEQ, Office of Water Supply
January 9, 2024



Town of Onancock

Area of Impact - Middle Yorktown-Eastover Aquifer



- Town of Onancock Wells
- Middle Yorktown-Eastover Area of Impact
- MYE Aquifer Critical Cells

Simulated drawdown at or exceeding one foot in the Middle Yorktown-Eastover aquifer resulting from a 120,000,000 gallons per year (328,767 average gpd), 50 year withdrawal from the Middle Yorktown-Eastover aquifer using the VAHydroGW-ES.

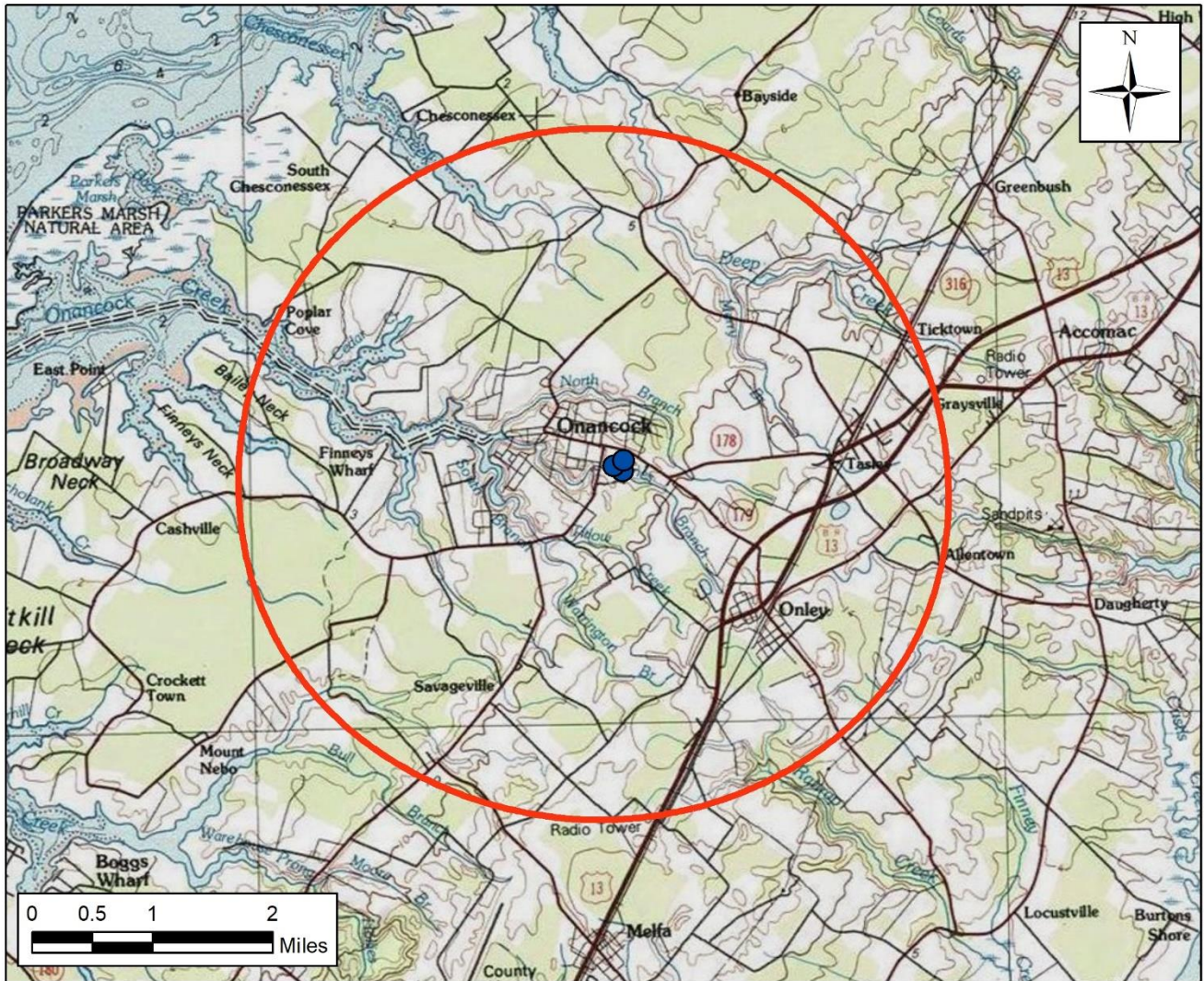
Maximum radius of one foot drawdown (Area of Impact) extends approximately 3.2 miles from the pumping center.

Technical evaluation performed by Aquaveo, LLC for the Virginia DEQ, Office of Water Supply
January 9, 2024



Town of Onancock

Area of Impact - Lower Yorktown-Eastover Aquifer



- Town of Onancock Wells
- Lower Yorktown-Eastover Area of Impact

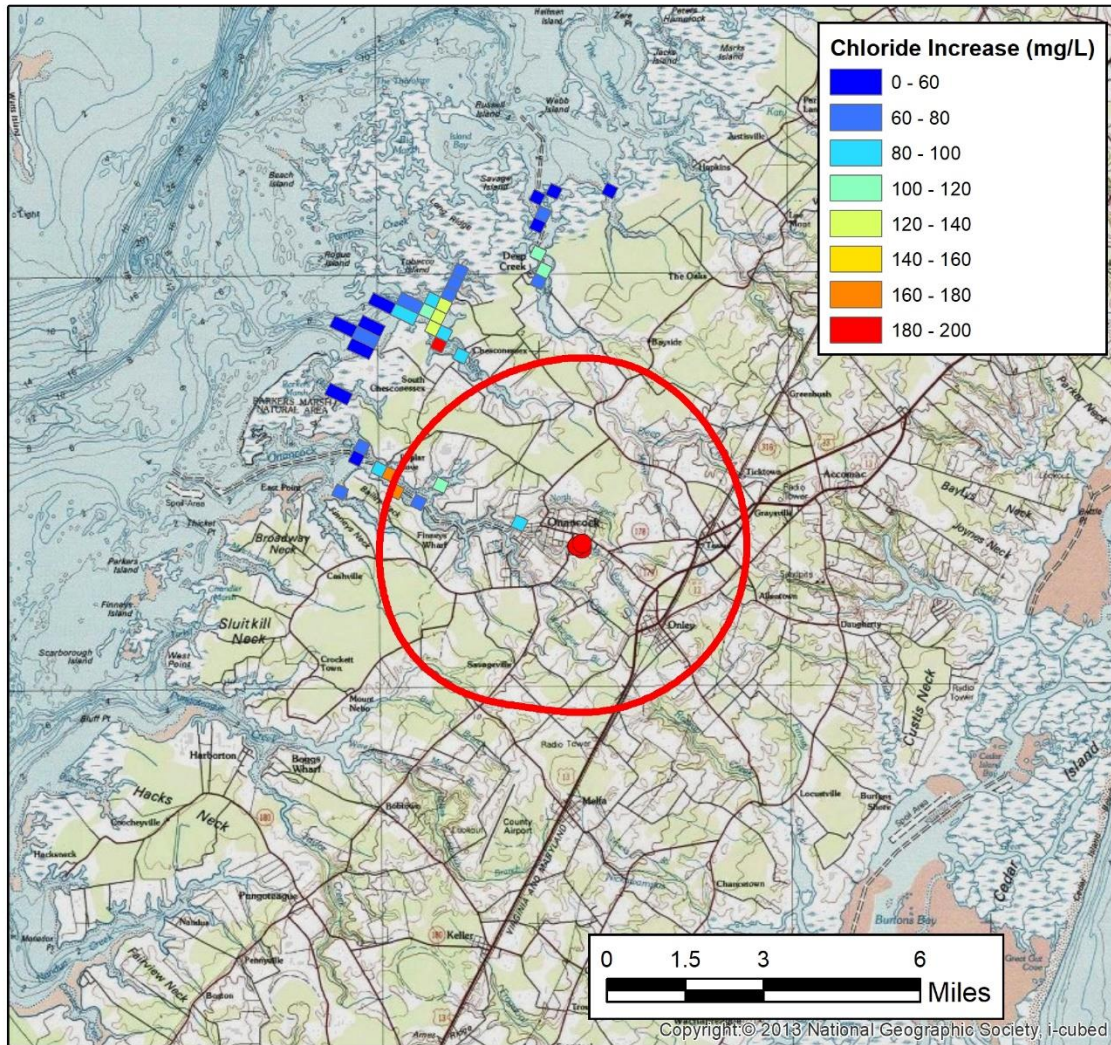
Simulated drawdown at or exceeding one foot in the Lower Yorktown-Eastover aquifer resulting from a 120,000,000 gallons per year (328,767 average gpd), 50 year withdrawal from the Middle Yorktown-Eastover aquifer using the VAHydroGW-ES.

Maximum radius of one foot drawdown (Area of Impact) extends approximately 3.2 miles from the pumping center.

Technical evaluation performed by Aquaveo, LLC for the Virginia DEQ, Office of Water Supply
January 9, 2024



Town of Onancock- Upper Yorktown-Eastover Confining Unit - Simulated VESM Chloride Concentration Increase



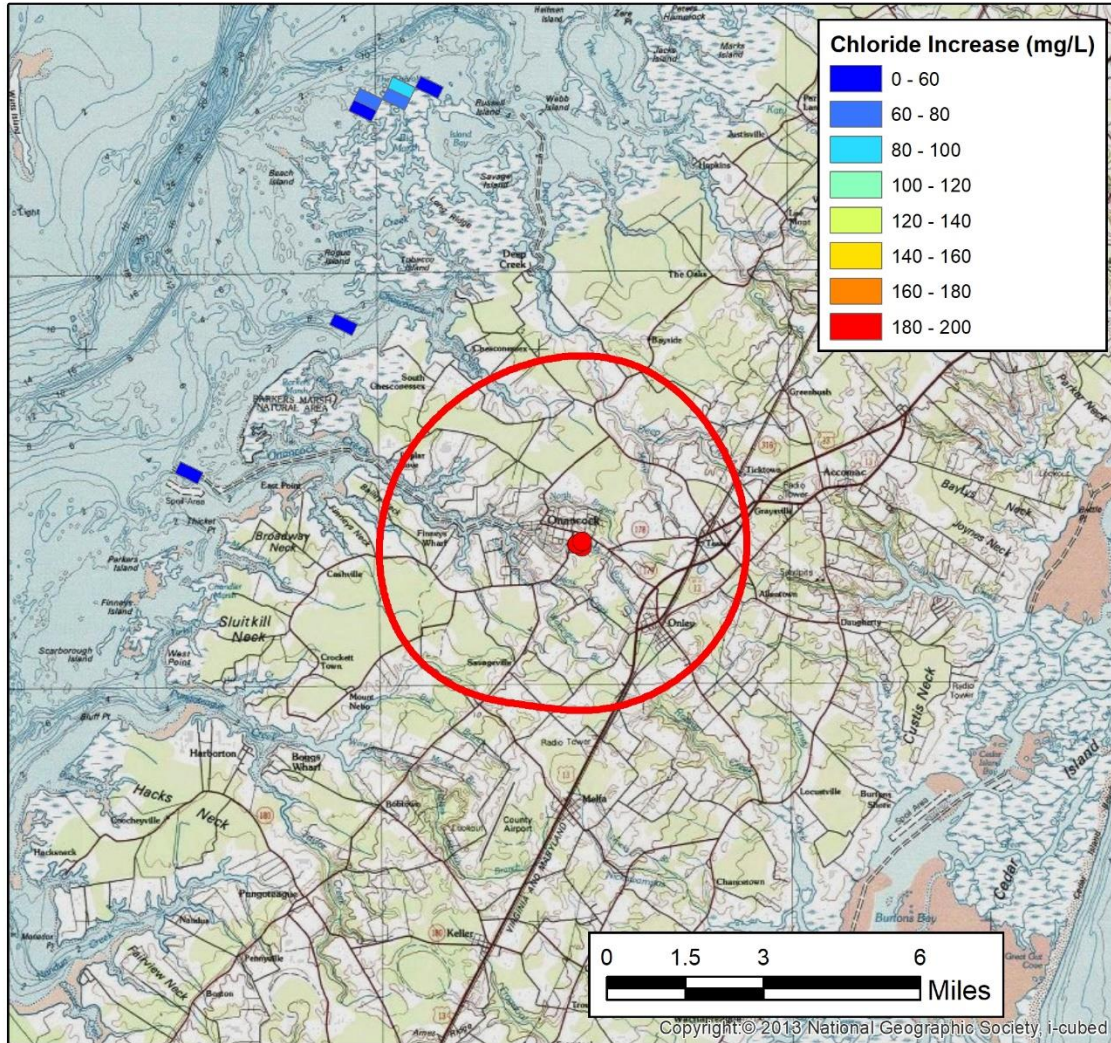
- Town of Onancock Wells
- Upper Yorktown-Eastover Aquifer AOI

Simulated chloride concentration increase in the Upper Yorktown-Eastover confining unit resulting from a 50 year simulation of 120,000,000 gallons per year from the Middle Yorktown-Eastover aquifer.

Technical Evaluation performed by Aquaveo, LLC for the Virginia DEQ, Office of Water Supply January 9, 2024



Town of Onancock- Upper Yorktown-Eastover Aquifer - Simulated VESM Chloride Concentration Increase



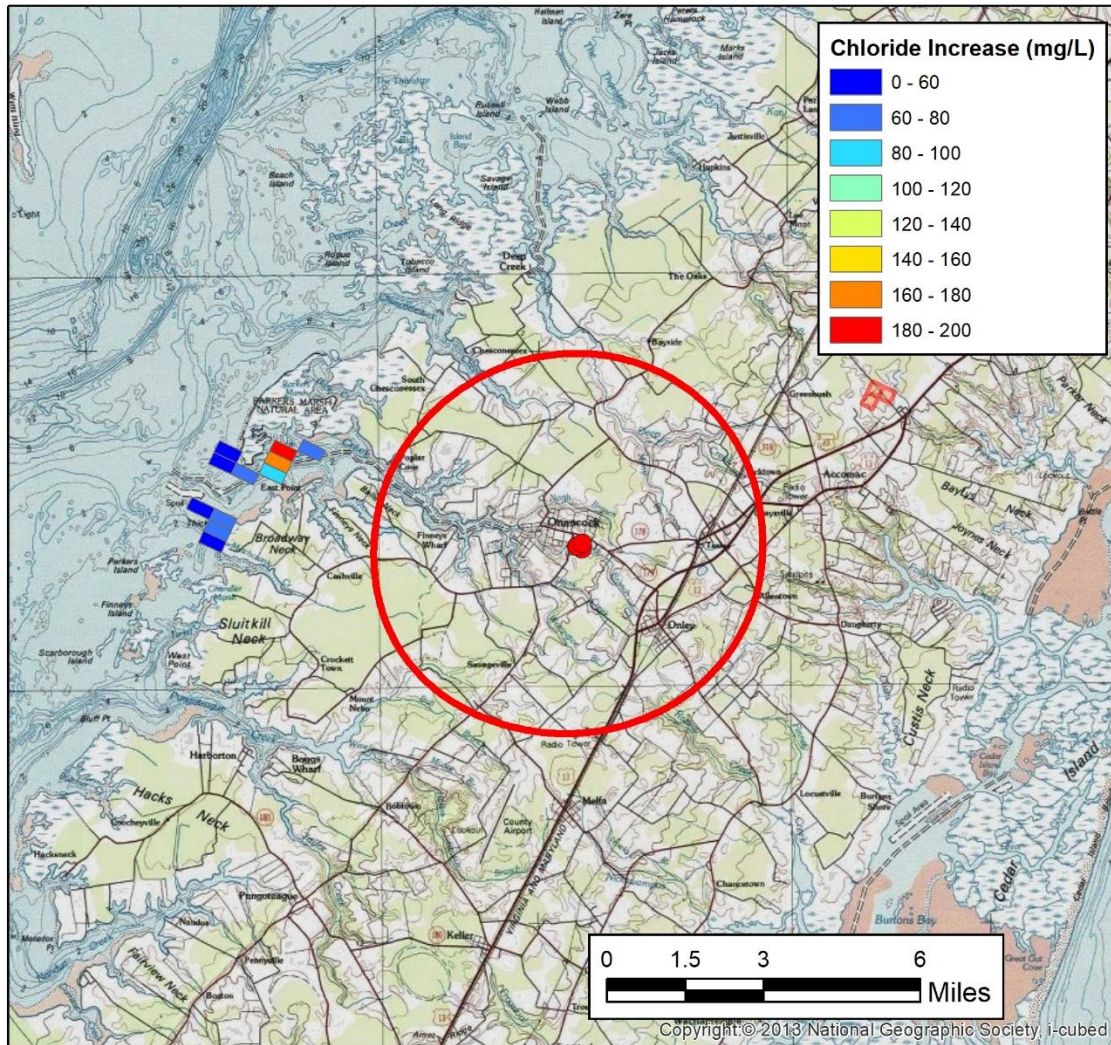
- Town of Onancock Wells
- Upper Yorktown-Eastover Aquifer AOI

Simulated chloride concentration increase in the Upper Yorktown-Eastover aquifer resulting from a 50 year simulation of 120,000,000 gallons per year from the Middle Yorktown-Eastover aquifer.

Technical Evaluation performed by Aquaveo, LLC for the Virginia DEQ, Office of Water Supply January 9, 2024



Town of Onancock- Middle Yorktown-Eastover Confining Unit- Simulated VESM Chloride Concentration Increase



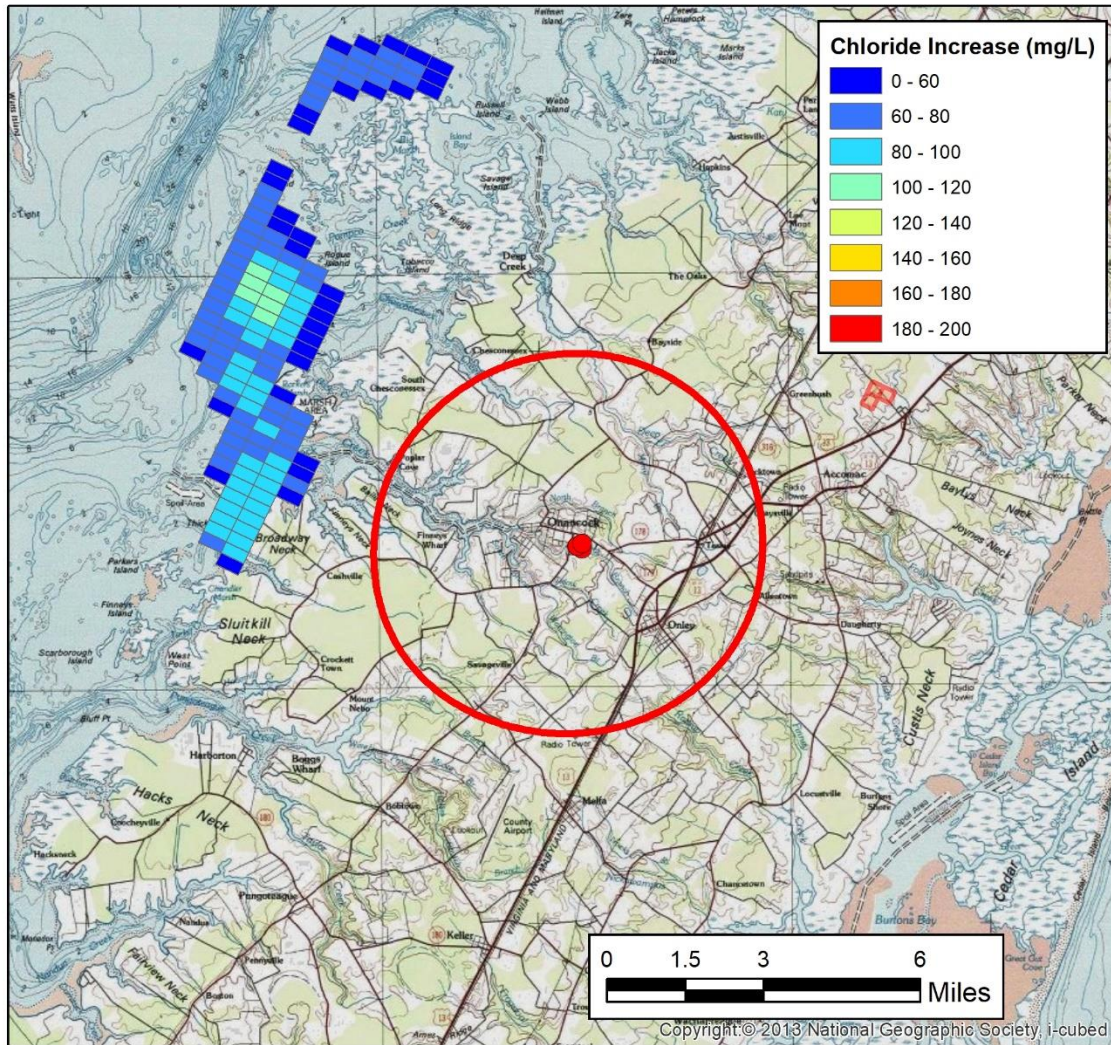
- Town of Onancock Wells
- Middle Yorktown-Eastover Aquifer AOI
- MYE Aquifer Critical Cells

Simulated chloride concentration increase in the Middle Yorktown-Eastover confining unit resulting from a 50 year simulation of 120,000,000 gallons per year from the Middle Yorktown-Eastover aquifer.

Technical Evaluation performed by Aquaveo, LLC for the Virginia DEQ, Office of Water Supply January 9, 2024



Town of Onancock- Middle Yorktown-Eastover Aquifer- Simulated VESM Chloride Concentration Increase



- Town of Onancock Wells
- Middle Yorktown-Eastover Aquifer AOI
- MYE Aquifer Critical Cells

Simulated chloride concentration increase in the Middle Yorktown-Eastover aquifer resulting from a 50 year simulation of 120,000,000 gallons per year from the Middle Yorktown-Eastover aquifer.

Technical Evaluation performed by Aquaveo, LLC for the Virginia DEQ, Office of Water Supply
January 9, 2024



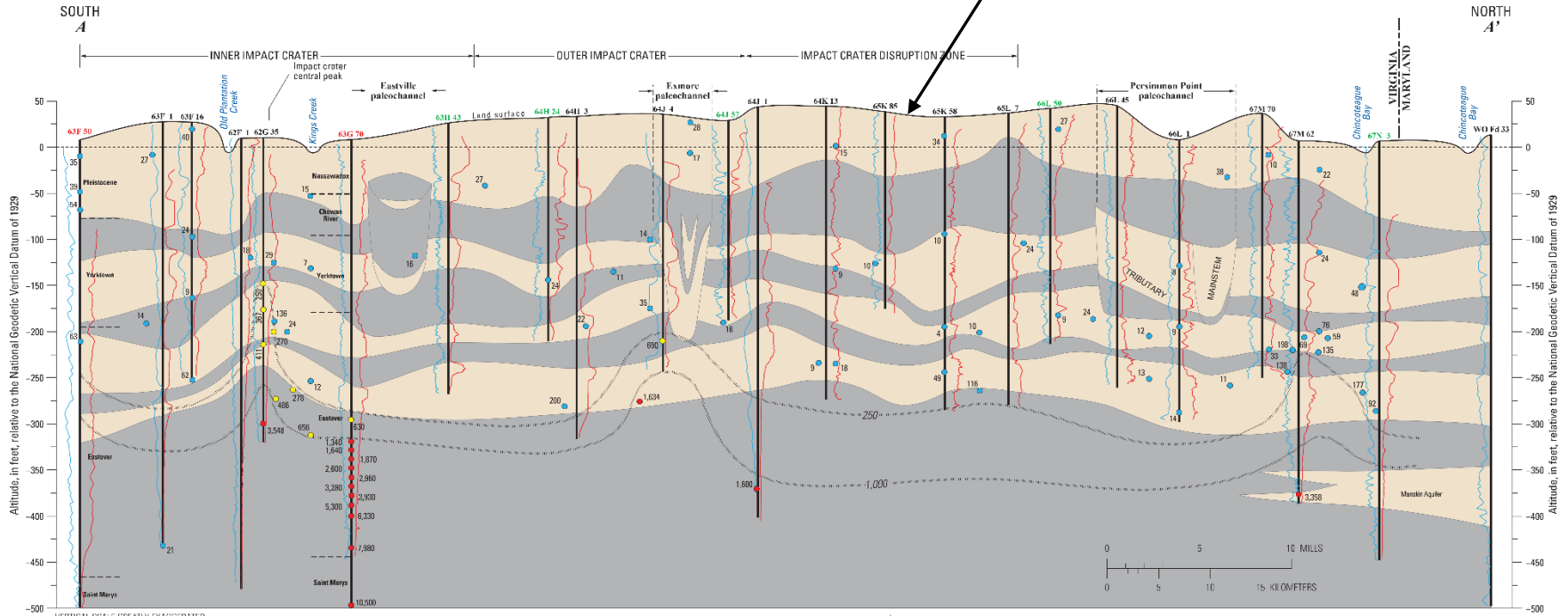


U.S. Department of the Interior
U.S. Geological Survey

Prepared in cooperation with the
Virginia Department of Environmental Quality

Scientific Investigations Report 2019-5093
Plate 2 of 13

Approximate location of
applicant wells, which are
west of this cross-section



EXPLANATION

Hydrogeology

- Light tan: Aquifer
- Dark tan: Confining unit
- Red dashed line: Line of equal chloride concentration
- Black dashed line: Geologic contact
- Blue dot: Location of water-quality sample—Number is chloride concentration, in milligrams per liter
 - 200: Less than 250
 - 630: Equal to or greater than 250 and less than 1,000
 - 1,340: Equal to or greater than 1,000
- Color: Borehole number—Color indicates lithologic control from core (red), lithologic control from detailed cuttings descriptions (green), or no lithologic information available (black)

Borehole geophysical log

Increasing →

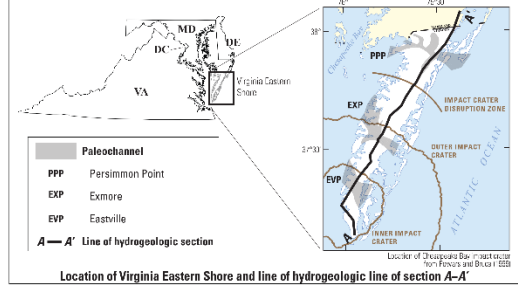
63H 43

- 63H 43: Resistivity curve (red line)
- 63H 43: Lithologic control from detailed cuttings descriptions (green text)
- 63H 43: Lithologic control from core (red text)
- 63H 43: No lithologic information available (black text)

Other features in log: Surface aquifer, Upper confining unit, Yorktown/Conover aquifer system, Middle confining unit, Vicksburg aquifer, Lower confining unit, Lower confining unit, Lower confining unit, Saint Marys confining unit.

Geologic designation: Pleistocene, Yorktown, Eastover, Saint Marys.

Hydrogeologic unit: Surface aquifer, Yorktown/Conover aquifer system, Middle confining unit, Vicksburg aquifer, Lower confining unit, Lower confining unit, Lower confining unit, Saint Marys confining unit.



Hydrogeologic Section through the Virginia Eastern Shore

By
E. Randolph McFarland and Todd A. Beach
2019



Cross-Section A-A' from USGS Scientific Investigations Report 2019-5093 (2019).

Water Conservation and Water Shortage Management Plan

Town of Onancock Accomack County, Virginia

I. Water Conservation Plan

A. Introduction

Inadequate public water supplies with respect to projected population growth have raised public awareness in the State of Virginia. The quality and quantity of the surface water and groundwater resources have always been a pressing matter in the region. The adequacy of groundwater and surface water supplies to meet current and projected demands during drought conditions is a major area of concern. Based on these and other reasons, this Water Conservation and Water Shortage Management Plan for the Town of Onancock has been developed as a long-range strategy for water management.

Since the Town and surrounding areas have a limited source of available water supply, it is imperative to understand that by adopting the Conservation Policy, the finite water supply sources can be extended rather inexpensively compared with the costs of increasing the available sources. Conservation should mitigate some of the effects of future growth by extending this limited resource. The Town residences and other customers benefit directly from less costly water service. Water conservation can also lessen the risk of disruptive shortages.

The water conservation program goals are as follows:

1. The limited water supplies are protected by reducing future demands.
2. Seasonal peak water demands are reduced.
3. Water conservation is fully integrated into long-range resource planning and management and land use planning and development.

B. Conservation Measures

1. Public Information and Education

Proper information and education shall be provided to the Public for their better understanding of the Conservation Program. The primary goals of the education program are the following :

- a. Local water supply issues and problems shall be brought to their attention so that they become aware of the situation in their community.
- b. Inform the Public of the benefits of water conservation, which include:
 - 1. Optimal usage of available water supplies
 - 2. Cost savings by not expanding the existing utility system
 - 3. No increment to the utility cost to customers
 - 4. Reduces risk of severe water supply shortages
 - 5. Protects the economic viability of the area
- c. The citizens shall be educated in efficient water use measures, such as water efficient landscaping and low flow fixtures.

Target groups for education are identified as the following groups which include most citizens and water users in the Town:

- Industrial and commercial establishments
- Farmers
- Students and teachers
- Community leaders and influential citizens
- Professionals and tradesmen
- Industries and businesses with high water use

The education plan will be focused on the resources available in the Town. The effectiveness of the plan will depend on how well each institution, organization, or group is approached. Potential public education "forums" are as follows:

- a. Meetings of local government boards or commissions
- b. Media releases
- c. Billing inserts
- d. Meetings of property owners associations
- e. School meetings
- f. Social club meetings

To make the education program effective, the Town will do the following:

- a. An ongoing education program will be established.
- b. Criteria will be developed to measure the effectiveness of the education program at regular intervals.
- c. The program will be adequately funded.

2. Plumbing Code Requirements

One of the major ways to conserve water supplies is to improve the end use efficiency for interior demands.

There are two basic categories of increasing interior water-use efficiency. The first is code standards for new construction and the second is the retrofitting of existing structures. The potential water savings for each category is similar.

The current Uniform Statewide Building Code (USBC), 2000 Edition, as adopted in 1993, references the 2000 International Plumbing Code which requires the installation of low-flow shower heads (2.5 gpm) and sinks (2.2 gpm), and low-volume toilets (1.6 gallons per flush).

The Town will rigorously enforce the codes as part of the building permit process.

3. Water Conservation Retrofit Program

Because more than half of the structures in Town predate the 1982 building code, the Town may have to implement a more active program than a voluntary retrofit program to realize the decreasing per capita water-consumption rates.

A wide range of options are available for implementing a retrofit program. The Town will consider the general types of retrofit programs described below.

a. Voluntary Retrofit Programs

By this Program, Property owners are encouraged to retrofit existing structures at their own expense. Overall program effectiveness, is likely to be low since this type of program requires significant educational and promotional effort about the need for and the benefits of the retrofits.

b. Mandatory Retrofit Programs

By this Program, Property owners are required by government ordinances to retrofit all existing structures according to prescribed standards. The ordinances could require compliance by prescribed dates or at a point-of-sale. This option requires inspections to ensure compliance. The overall effectiveness of this program is likely to be high if public resistance can be overcome.

c. Utility-Sponsored Retrofit Programs

By this Program, the water purveyor purchases and distributes retrofit "kits" to property owners, free of charge or sold to them at or below cost. Some programs also offer assistance with the purchase and installation of water-conserving plumbing fixtures. This option would also require inspection to ensure compliance and proper installation. The overall effectiveness of this program varies, depending on the type of devices provided and the distribution method.

The public education program will emphasize the benefits of and the technologies for water-conserving retrofits to motivate individuals to undertake such retrofits voluntarily. This material will focus on low- and moderate-cost "do-it-yourself" retrofits and underscore their favorable cost payback.

4. Water Conservation Oriented Rate Structure

Conservation pricing and marginal cost pricing are the key issues that must be addressed to achieve demand reductions through the rate structure.

a. Conservation Pricing

Water price and usage is inversely proportional. Studies show that water use within the home, for example, is less responsive to price increases than exterior water use.

Estimates of the price elasticity in water demand from other areas vary widely. Estimates for residential use range from -.01 to -.60, and estimates for sprinkler use range from -.27 to -.70. A price elasticity of -.02 means water use would decrease 2 percent with a 100 percent increase in price. The studies indicate consumer behavior can be modified with price, but permanent behavioral adjustment may take several years.

b. Marginal Cost Pricing

In the past, utilities have set water rates to reflect the average cost of water. Research showed that water rates should reflect the cost of the next unit of water to be obtained by the utility, or the marginal cost. The charge for water from a new and expensive source should reflect that additional cost even if it is greater than the average cost. Rates based on these marginal costs would reflect the increasing scarcity and cost of new water supplies.

The Town will evaluate the following measures for attaining the conservation goals in their water demand projections.

- a. Rates: The Town currently has a single block rate structure with a surcharge on consumption above the average usage. Other rate options

that will be implemented if needed are replacing the single block rate with increasing block rates.

- b. Incentives: A variety of incentives may be introduced to encourage and promote water conservation. The Town may offer lower hook-up fees for remodeling, renovation, or expansion of existing structures when existing fixtures that would not otherwise be replaced are replaced with fixtures that meet the requirements of the "advanced" plumbing code.

The Town also may offer a reduction or rebate of fees in return for implementation of commercial or industrial reuse/recycle operations.

Another incentive might be a revolving loan program for financing water-saving appliances and fixtures or water-reuse programs, e.g., graywater irrigation systems.

5. Universal Metering and Meter Repair and Replacement

By providing meters for individual entities, unauthorized usage of water can be minimized. Metering is also an aid to detect leaks on both sides of the meter. Studies show that metering results in lower water use because customers become cautious to the amount of water used through the effect it has on the water bill. It is essential to have maintenance programs for water meters ensuring that an accurate measure of system integrity is being obtained. Under-registration by meters may result in a significant percentage of unaccounted-for water and loss of revenue.

The Town is also considering a program for routine maintenance and replacement of the meters. At the present time, the meters are calibrated and repaired by special request for a customer or on the basis of irregular readings if they are found to be in error by 3 percent or greater.

6. Water Efficient Landscaping

Irrigation of lawns and other landscaping can create seasonal peak water demands. Because use of irrigation is largely dependent on weather conditions, large variations in peak demand occur between wet, normal, and dry years. Drought conditions typically result in an overall increase in total water use and peak water demands. If the seasonal peak water demands can be reduced then the potential for optimal sizing of water treatment and distribution facilities, increases significantly.

One method of reducing the seasonal peak demand for irrigation is to promote and encourage water efficient landscaping. The fundamentals of water efficient landscaping are the following:

- a. Planning and designing the landscape to increase water efficiency.
- b. Replacing turf with mulch or groundcover.
- c. Improving the soil to ensure water-holding capacity, absorption properties, and nutrients for plant growth.
- d. Mulching areas to cool the soil, reduce weed growth, minimize evaporation, and slow erosion.
- e. Using native and other adapted water efficient plants.
- f. Irrigating at the most effective times and applying proper amounts.
- g. Using water efficient practices such as drip irrigation.
- h. Properly maintaining the water efficient landscaping to maximize the effectiveness of a well planned and well installed landscape.

The acceptance and use of the water efficient landscape concept by the majority of the customers is necessary for the longterm success of this conservation plan. To achieve widespread use of water efficient landscape fundamentals, the Town will do the following:

- a. Use all available educational resources to ensure public awareness of the fundamentals, long-term benefits, and cost-effectiveness of the concept.
- b. Install and properly maintain demonstration landscapes in highly visible areas within town.
- c. Recommend and encourage builders, developers, and owners to install landscaping using water efficient landscaping fundamentals.

7. Leak Detection and Water Audit

The most effective ways to minimize leaks are to use high quality materials to construct the water system, ensure that they are properly installed, and maintain all of the components in good operating condition. Therefore, standards for constructing durable, reliable water systems and a program for replacing water mains in areas where leaks are recurrent should result in a low level of system losses from water systems.

The Town is considering adopting standards and creating an active program for leak detection and repair.

Water audits are a means to identify and eliminate system losses. Water purveyors routinely compare the metered amount of water they produce with the metered usage of their customers to determine the amount and percentage of unaccounted-for water in their system. The last audit of the Town water system was done in 2013/2014 and the conclusion was that the unaccounted-for water, which included water used by unmetered public connections, equaled 10 percent of the total water system production. Based on estimates of the unmetered usage, the amount attributed to system losses was estimated to be 7 percent. This percentage is very favorable when compared with a national average that ranges from 10 to 15 percent.

The Town will audit the water system during the first two years of the permit. The results of the audit will be used to identify study areas for the Town's leak detection and repair program.

8. Wastewater Reuse and Recycling as a Conservation Measure

"Wastewater reuse" is a general term applied to any process in which a wastewater stream is utilized for any beneficial use. Wastewater recycling is a subclass of wastewater reuse and refers to a situation where the same water is used over and over to satisfy the same demand. For this discussion, wastewater reuse is defined as a deliberate strategy of directly reusing wastewater effluent, treated to a degree appropriate for the intended reuse, to satisfy nonpotable demands.

Other areas have evaluated wastewater reuse as a long-term alternative supply. Due to strong opposition to this alternative from the Virginia Department of Health (VDH), it is not likely that the Commonwealth of Virginia would approve a wastewater reuse project for potable use. It was determined, however, that wastewater reuse to meet non-potable demands, such as industrial cooling, irrigation, and car washing, is more viable.

Sewage treatment in the area is provided by the town wastewater treatment plant. The need for large amounts of non-potable water in the area is not sufficient for consideration of wastewater reuse.

II. Water Shortage Contingency Plan

A. Water System Background

The Town draws water from wells located in Town. Three (3) wells pump water to the 300,000 gallon elevated tank.

The system currently serves approximately 600 residential connections, 129 commercial/business connections, 25 un-metered connections, and the WWTP.

The system is expected to serve 668 residential connections and 139 commercial/business connections by the year 2019.

B. System Capacity/Demands and Well Water Levels

The system demand is expected to be approximately 83 MG per year by the year 2015. The system improvements should, when completed, be permitted for .6 MGD which is more than an adequate supply for the required demand.

Fire flow at any point in the distribution system is to be at least 500 GPM based on the water system improvements underway.

The static water levels in the new wells at the time of construction were approximately 15 feet below ground. The well pumps will be set approximately 140 feet below ground surface, at the top of the aquifer being withdrawn from.

C. Water Shortage Municipal Ordinance

A water shortage ordinance, or ordinances, will be ratified as soon as possible to give the Town standby emergency powers. The ordinance(s) will provide for the following:

1. Affirmation of a water shortage situation, identified by stage.
2. Enforcement capabilities with penalties for usage above identified amounts and incentives for lower water usage as defined in each stage of conservation.
3. Stiffer penalties for non-compliance of conservation directives as listed above after adequate public notice. Similar restrictions, penalties, and incentives will also be imposed upon all industrial and commercial users within town.

E. Parameters for Water Shortage Declaration

Stage I: A water shortage declaration will be issued when the average daily production of the water system exceeds 75 percent of the VDH operating permit capacity for 30

consecutive days or the pumping levels in the water supply wells drop to 40% of the allowable drawdown. The allowable drawdown is defined as the difference between the static water level at the time the wells were drilled and a level approximately 10 feet above the well pumps. The declaration is described in Section IV, "Water Shortage Declaration," and will be carried out in accordance with that section. The Stage I emergency plan will be initiated as outlined in Section G, "Emergency Actions."

Stage II: Emergency actions will start when the average daily production exceeds 80 percent of the VDH operating permit for 60 consecutive days or the pumping levels in the water supply wells drop to 60% of the allowable drawdown.. The Stage II emergency plan will then be initiated as outlined in Section G, "Emergency Actions."

Stage III: Emergency actions will start when the average daily production exceeds 85 percent of the VDH operating permit for 30 days, Stage II has been in effect for 30 days, and the demand has not stabilized at the Stage II trigger level, or the pumping levels in the water supply wells drop to 80% of the allowable drawdown.. The Stage III emergency plans will then be initiated as outlined in Section G, "Emergency Actions."

Stage IV: Emergency actions will start when the average daily production exceeds 90 percent of the VDH operating permit for 30 days, Stage III has been in effect for 30 days and the demand has not stabilized at the Stage III trigger level, or the pumping levels in the water supply wells drop to 90% of the allowable drawdown.. The Stage IV emergency plans, which are additional restrictions as deemed necessary by the Town Council, will then be initiated.

F. Water Shortage Declaration

Once the parameters for water shortage determination are met as listed in Section V above, or the Director of DEQ declares a water shortage emergency, the Town will issue an emergency declaration that will initiate the appropriate conservation measures as defined below. The declaration will be issued to the public and to commercial and industrial customers through local newspapers and radio and will state specific conservation efforts to be taken. The VDH and the Virginia Department of Environmental Quality will also be advised of any actions taken. The Town Council will be apprised of the status of water demands and asked to approve the declaration of all stages of the water shortage contingency plan.

G. Emergency Actions

1. Stage I

Once a water shortage declaration has been issued, the following emergency actions for Stage I will be put into effect.

- a. Voluntary water conservation measures will be encouraged.

- b. A public awareness and information process will be implemented to distribute additional water conservation information and other special notices to customers. Industrial and commercial users will be asked to initiate in-house water conservation plans for their respective facilities.
- c. A plan will be established to reward customers who reduce usage. The plan will be based on normal consumption records and will offer financial incentives per 1,000 gallons of water saved.
- d. A water system leak survey will be initiated to identify and repair additional system losses.
- e. Hydrants and water mains will not be flushed.

2. Stage II

If Stage I fails to adequately reduce the system water production, or when the parameter described in Section V for Stage II has been reached, Stage III will be put into effect.

- a. Mandatory water conservation of at least 10 percent for each household and 25 percent for industrial and commercial users unless exempt by the Town Manager or his/her designee will be implemented. Increased charges will be applied for water used in excess of the conservation goals.
- b. Nonessential uses of potable water (such as lawn watering; car washing; flushing of sewer lines under construction; construction-related activities, such as dust control and hydro seeding; and other such uses) will not be permitted, and the prohibition will be enforced through local ordinance.
- c. Serving water in restaurants except upon request of customers will not be permitted.
- d. Leaks found in the survey in Stage I and not yet repaired will be repaired.
- e. No new water service connections will be sold, and permits for installing private wells will not be issued except for replacement of failed private domestic wells.

3. Stage III

If Stage II fails to reduce the system production sufficiently, or when the parameter described in Section V for Stage III has been reached, Stage III will be put into effect. The following will occur in Stage III:

- a. Mandatory reduction of domestic water consumption by 25 gallons per person perday.
- b. Mandatory reduction of industrial, commercial and school use of water to 25 percent of normal consumption.
- c. Suspension of installation new water service connections.
- d. Retrofitting of public buildings with low usage fixtures.
- e. Application for appropriate state or federal drought emergency grants.

3. Stage IV

If Stage III fails to reduce the system production sufficiently, or when the parameter described in Section V for Stage IV has been reached, Stage IV will be put into effect. The Town Council may implement such additional restrictions deemed to be necessary.

H. Emergency Equipment and Manpower

Emergency manpower shall be available to operate the system wells to ensure that fire flows are provided when needed.

I. Revocation of Water Shortage Declaration

When the average daily water production of the system has declined to below the trigger level(s) and /or the well water levels have increased above the trigger level(s) for 30 consecutive days, or the Director of DEQ declares that the water shortage emergency is no longer in effect, the water shortage management requirements for that stage will be lifted. All customers will be notified in accordance with Section F. It should be emphasized that personal conservation efforts shall be maintained to avert other water shortage situations.

M. Water Shortage Ordinance

Section 1: Authority to Declare a Potential Shortage of Water and to Impose Water Conservation Measures

The Town Manager is authorized to take special measure for prudent management to prevent a critical shortage when a potential shortage of water and/or emergency water conditions exists in the Town of Onancock.

Section 2: Conditions for the Declaration of Potential Shortage of Water

Upon a determination by the Town Manager of the existence of the following conditions, the Town Manager shall take the following actions:

Stage I: When moderate but limited supplies of water are available, the Town Manager shall, through appropriate means, call upon the general population to employ prudent restraint in water usage and to conserve water voluntarily by whatever methods are available.

Stage II: When very limited supplies of water are available, the Town Manager shall order curtailment of less essential usages of water, including, but not limited to, one or more of the following:

- The watering of shrubbery, trees, lawns, grass. Plants, or any other vegetation, except indoor plantings, greenhouse or nursery stocks and except watering by commercial nurseries of freshly planted plants upon planting once a week for five weeks following planting.
- The washing of automobiles, trucks, trailers, boats, airplanes, or any other types of mobile equipment, excepting in facilities operating with a water recycling system approved by the Town, or except from a bucket or other container not exceeding three (3) gallons in capacity; provided, however, that any facility operating with an approved water recycling system shall prominently display in public view a notice stating that such recycling system is in operation. In lieu of the provisions hereof the Town Manager may curtail the hours of operation of commercial enterprises offering such services or washing their own equipment.
- The washing of streets, driveways, parking lots, service station aprons, office buildings, exteriors of homes or apartments, or other outdoor surfaces, except by commercial washing/cleaning services or except from a bucket or other container not exceeding three (3) gallons of capacity.

- The operation of any ornamental fountain or other such structure making similar use of water.
- The filling of swimming and/or wading pools, or the refilling of swimming and/or wading pools which were drained after the effective date of the order.
- The use of water from fire hydrants for any purpose other than fire suppression or other emergency except as authorized by the Town Manager.
- The serving of drinking water in restaurants, cafeterias or any food establishment unless requested by the individual.
- The Town Manager or his designee may authorize exceptions to the restrictions imposed by Stages I and II.

Stage III: When supplies of water are critically limited, the Town Manager shall institute mandatory restrictions on each customer which include those restrictions applicable to Stage II as well as reductions of water to each customer as follows:

- At the Town Manager's or his designee's discretion, allocations of water to customers shall be based on a twenty-five percent reduction of either their average consumption of the last twelve months billing or water consumption data available from similar activities of equal intensity.
- The amount of water allocated for consumption shall not be less than fifty (50) gallons per person per day per household.
- If the monthly, bi-monthly, or quarterly usage of water as established above is exceeded, the customer shall be charged, in addition to the regular rate, the following charges for excess water use:
 - o Any water use over the allocated amount will be billed at 300% (three hundred percent) of the current effective rate.
- The above additional charges for excess water usage shall be applicable to bills for service periods beginning on or after the declaration that a potential shortage of water exists.

Stage IV: When supplies of water are drastically limited, the Board of Supervisors may implement such additional restrictions as are determined necessary.

Section 3: Violation of Stage IV Water Restrictions

Upon implementation of Stage IV, the Town Council may impose appropriate fines and penalties for excess water usage.

Section 4: Notice to the Public

The determination of Stages II, III, and IV by the Town Council, Town Manager, or his/her designee shall be accompanied by a written report which shall set out the criteria utilized and data relied upon in making such determination including a narrative summary reporting the determination. Each report shall be promptly filed with the Town Clerk who shall make the same available for public inspection. The Town Clerk shall transmit a copy of each report to the Town Council.

Section 5: Appeals

An appeals review board shall be established upon declaration of Stage ID. It shall be composed of three members appointed by the Town Council. One of the three members shall be a representative of the Town. The appeals board shall hear appeals from the determinations as to allocation of water and additional charges of excess usage and shall have the power by the vote of two members to approve, modify, or revoke such determinations. The action of the appeals review board shall be final.

Section 6: Repeal of Other Town Ordinances

All other town ordinances inconsistent with this ordinance are hereby repealed; provided, however, that no enforcement action or prosecution of any sort now pending shall be abated because of the adoption of this ordinance.

Section 7: Effective Date

This Ordinance shall be effective on and after _____

MITIGATION PLAN

DEQ GROUNDWATER WITHDRAWAL PERMIT NO. GWI000240

OWNER NAME: Town of Onancock

FACILITY NAME: Town of Onancock Water System

LOCATION: 15 North Street, Onancock, VA 23417

INTRODUCTION

On October 27, 2017, Town of Onancock submitted a Groundwater Withdrawal Permit Application to the Virginia Department of Environmental Quality (DEQ) to withdraw groundwater. Groundwater withdrawals associated with this permit will be utilized to provide potable water for domestic and commercial use.

The purpose of this Mitigation Plan is to provide existing groundwater users a method to resolve claims that may arise due to the impact of the withdrawal from Town of Onancock Water System well field. Predicted drawdown of water levels due to the withdrawal(s) from the Middle Yorktown-Eastover aquifer(s) are shown in the attached maps(s).

Modeled impacts, as shown on the attached maps, extend beyond the boundary of the Town of Onancock Water System facility. Due to these findings, Town of Onancock recognizes that there will be a rebuttable presumption that water level declines that cause adverse impacts to existing groundwater users within the area of impact are due to this withdrawal. Claims may be made by groundwater users outside this area; however, there is a rebuttable presumption that Town of Onancock/Town of Onancock Water System has not caused the adverse impact. Town of Onancock proposes this plan to mitigate impacts to existing users and excludes impacts to wells constructed after the effective date of this permit.

CLAIMANT REQUIREMENTS

To initiate a claim, the claimant must provide written notification of the claim to the following address:

Contact Name: Bryan Horton
Title: Public Works Director
Permittee Name: Town of Onancock
Address: 15 North Street
City, State Zip Code Onancock, VA 23417

The claim must include the following information: (a) a deed or other available evidence that the claimant is the owner of the well and the well was constructed and operated prior to the effective

date of the permit; (b) all available information related to well construction, water levels, historic yield, water quality, and the exact location of the well sufficient to allow Town of Onancock to locate the well on the claimant's property; (c) the reasons the claimant believes that the Town of Onancock Water System withdrawal has caused an adverse impact on the claimants well(s).

CLAIM RESOLUTION

Town of Onancock will review any claim within **five (5) business days**. If Town of Onancock determines that no rebuttal will be made and accepts the claim as valid, Town of Onancock will so notify the claimant and will implement mitigation within **thirty (30) business days**. If the claim is not accepted as valid, Town of Onancock will notify the claimant that (a) the claim is denied or (b) that additional documentation from the claimant is required in order to evaluate the claim. Within **fifteen (15) business days** of receiving additional documentation from the claimant, Town of Onancock will notify the claimant (a) that Town of Onancock agrees to mitigate adverse impacts or (b) the claim is denied. If the claim is denied, the claimant will be notified that the claimant may request the claim be evaluated by a three (3) member committee. This committee will consist of one (1) representative selected by Town of Onancock, one (1) representative selected by the claimant, and one (1) representative mutually agreed upon by the claimant and Town of Onancock.

Any claimant requesting that a claim be evaluated by the committee should provide the name and address of their representative to Town of Onancock. Within **five (5) business days** of receipt of such notification, Town of Onancock will notify the claimant and claimant's representative of the identity of Town of Onancock representative and instruct the representatives to select a third representative within **ten (10) business days**. Representatives should be a professional engineer or hydrogeologist with experience in the field of groundwater hydrology. Town of Onancock agrees to reimburse the members of the committee for reasonable time spent, at a rate prevailing in the area for experts in the above listed fields, and for direct costs incurred in administering the plan. The claimant may, at his or her option, choose to provide the reimbursement for the member of the committee selected by the claimant and up to half of the reimbursement for the mutual representative.

Within **ten (10) business days** of selection of the third representative, the committee will establish a **reasonable deadline** for submission of all documentation it needs to evaluate the claim. Both the claimant and Town of Onancock will abide by this deadline.

Within **fifteen (15) business days** of receipt of documentation, the committee will evaluate the claim and reach a decision by majority vote. The committee will notify the claimant regarding its decision to (a) deny or (b) approve the claim. If the claim is approved, Town of Onancock will mitigate the adverse impacts within **thirty (30) business days** of making the decision or as soon as practical. If the claim is denied by the committee, Town of Onancock may seek reimbursement from the claimant for the claimant's committee representative and one half of the 3rd representative on the committee.

If a claimant within the indicated area of impact indicates that they are out of water, Town of Onancock will accept the responsibility of providing water for human consumptive needs within **seventy-two (72) hours** and to cover the claim review period. Town of Onancock reserves the right to recover the cost of such emergency supply if the claim is denied by Town of Onancock or found to be fraudulent or frivolous. If Town of Onancock denies a claim and the claimant elects to proceed with the three (3) member committee, Town of Onancock will continue the emergency water supply at the claimants request during the committee's deliberations, but reserves the right to recover the total costs of emergency water supply in the case that the committee upholds the denial of the claim. Similarly, Town of Onancock reserves the right to recover costs associated with the claim process if a claim is found to be fraudulent or frivolous.

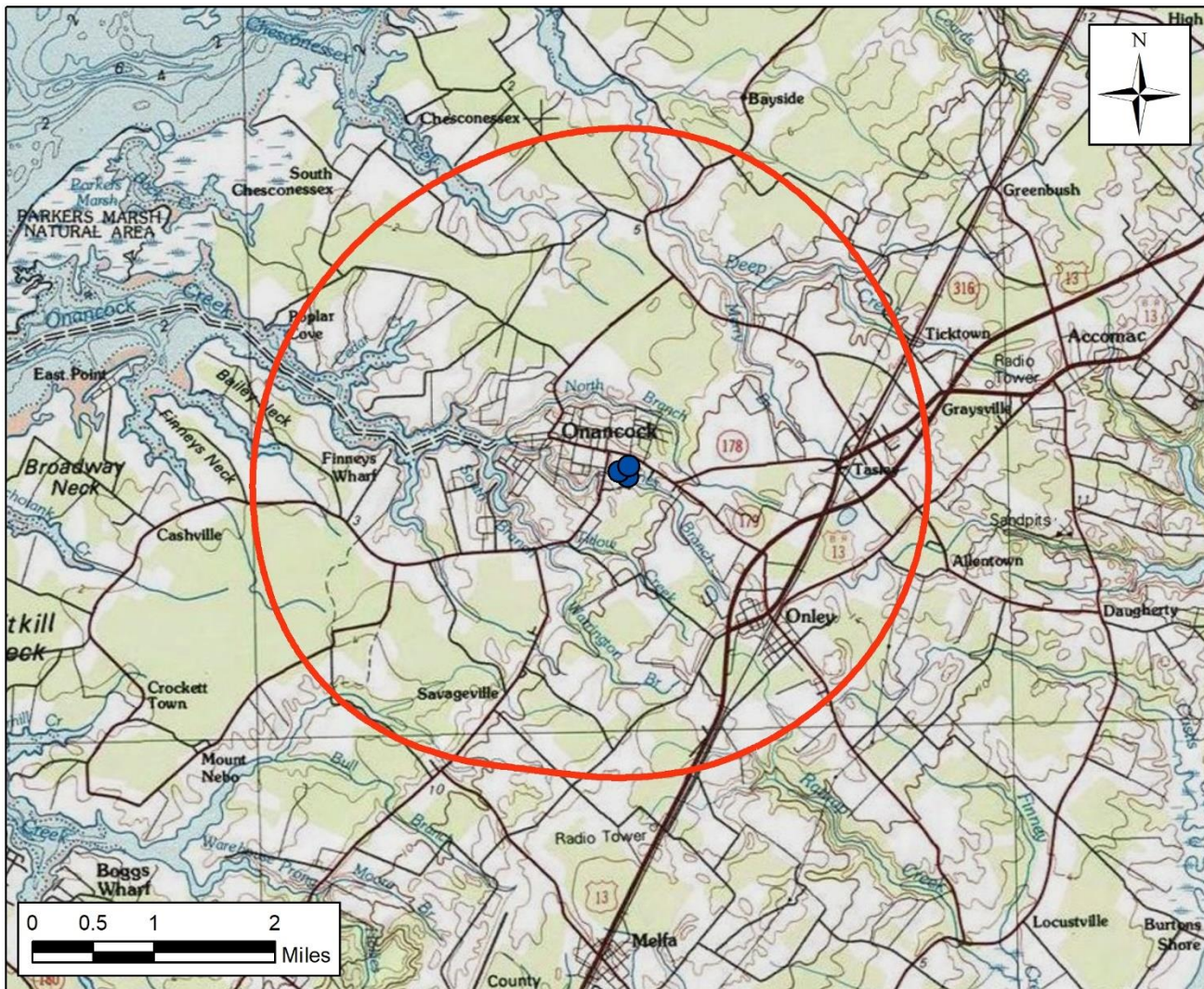
If it is determined by the committee or shown to the committee's satisfaction that a well operating under a mitigation plan similar to Town of Onancock/Town of Onancock Water System Plan other than those owned and operated by Town of Onancock has contributed to the claimed adverse impact, Town of Onancock's share of the costs associated with mitigation will be allocated in proportion to its share of the impact. Such a determination shall be made by the committee after notification of the third party well owner, giving the third party well owner opportunity to participate in the proceedings of the committee.

PLAN ADMINISTRATION

Nothing in the Plan shall be construed to prevent the Department of Environmental Quality Staff from providing information needed for resolution of claims by the committee.

Town of Onancock

Area of Impact - Upper Yorktown-Eastover Aquifer



- Town of Onancock Wells
- Upper Yorktown-Eastover Area of Impact

Simulated drawdown at or exceeding one foot in the Upper Yorktown-Eastover aquifer resulting from a 120,000,000 gallons per year (328,767 average gpd), 50 year withdrawal from the Middle Yorktown-Eastover aquifer using the VAHydroGW-ES.

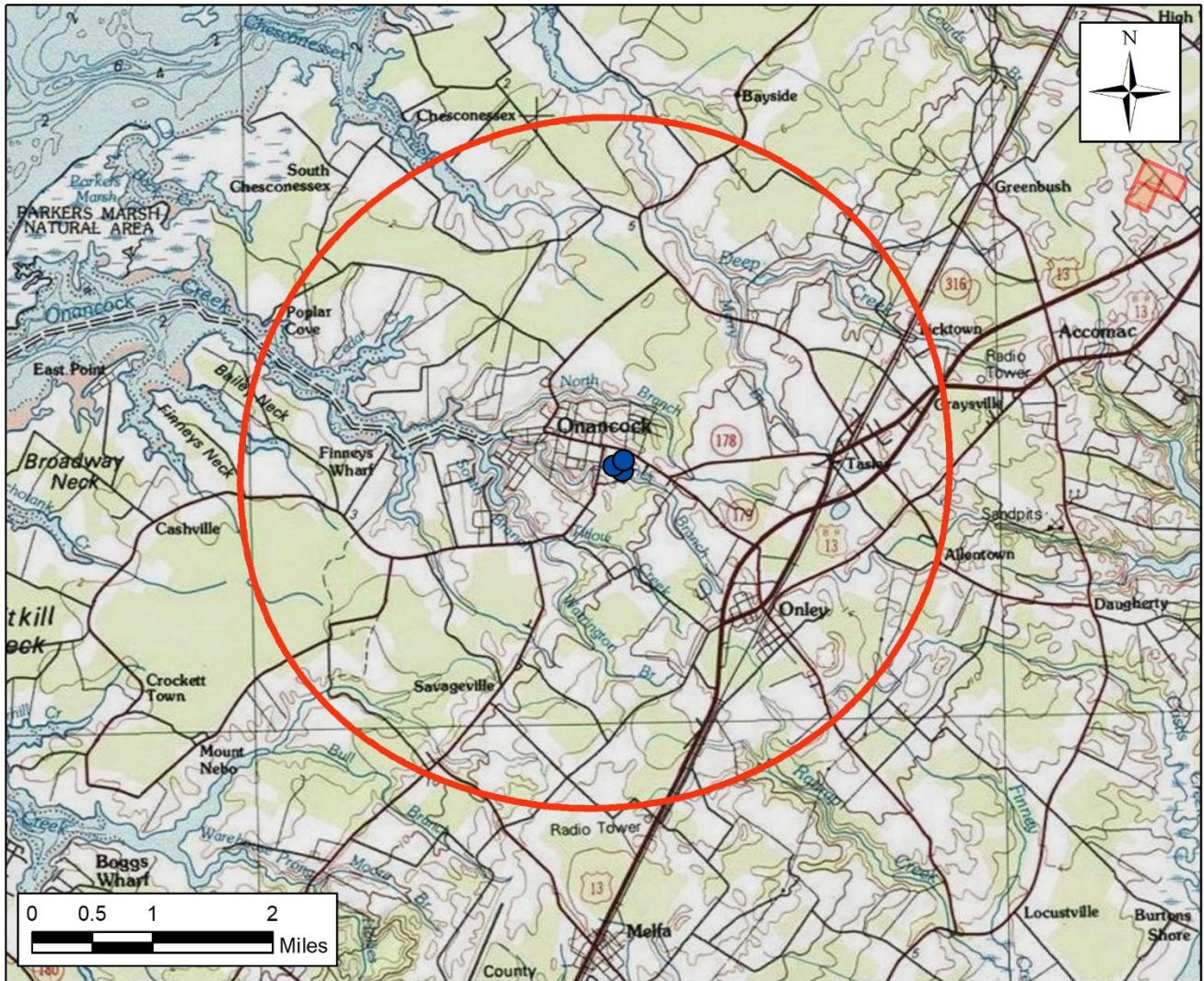
Maximum radius of one foot drawdown (Area of Impact) extends approximately 3.1 miles from the pumping center.

Technical evaluation performed by Aquaveo, LLC for the Virginia DEQ, Office of Water Supply
January 9, 2024



Town of Onancock

Area of Impact - Middle Yorktown-Eastover Aquifer



- Town of Onancock Wells
- Middle Yorktown-Eastover Area of Impact
- MYE Aquifer Critical Cells

Simulated drawdown at or exceeding one foot in the Middle Yorktown-Eastover aquifer resulting from a 120,000,000 gallons per year (328,767 average gpd), 50 year withdrawal from the Middle Yorktown-Eastover aquifer using the VAHydroGW-ES.

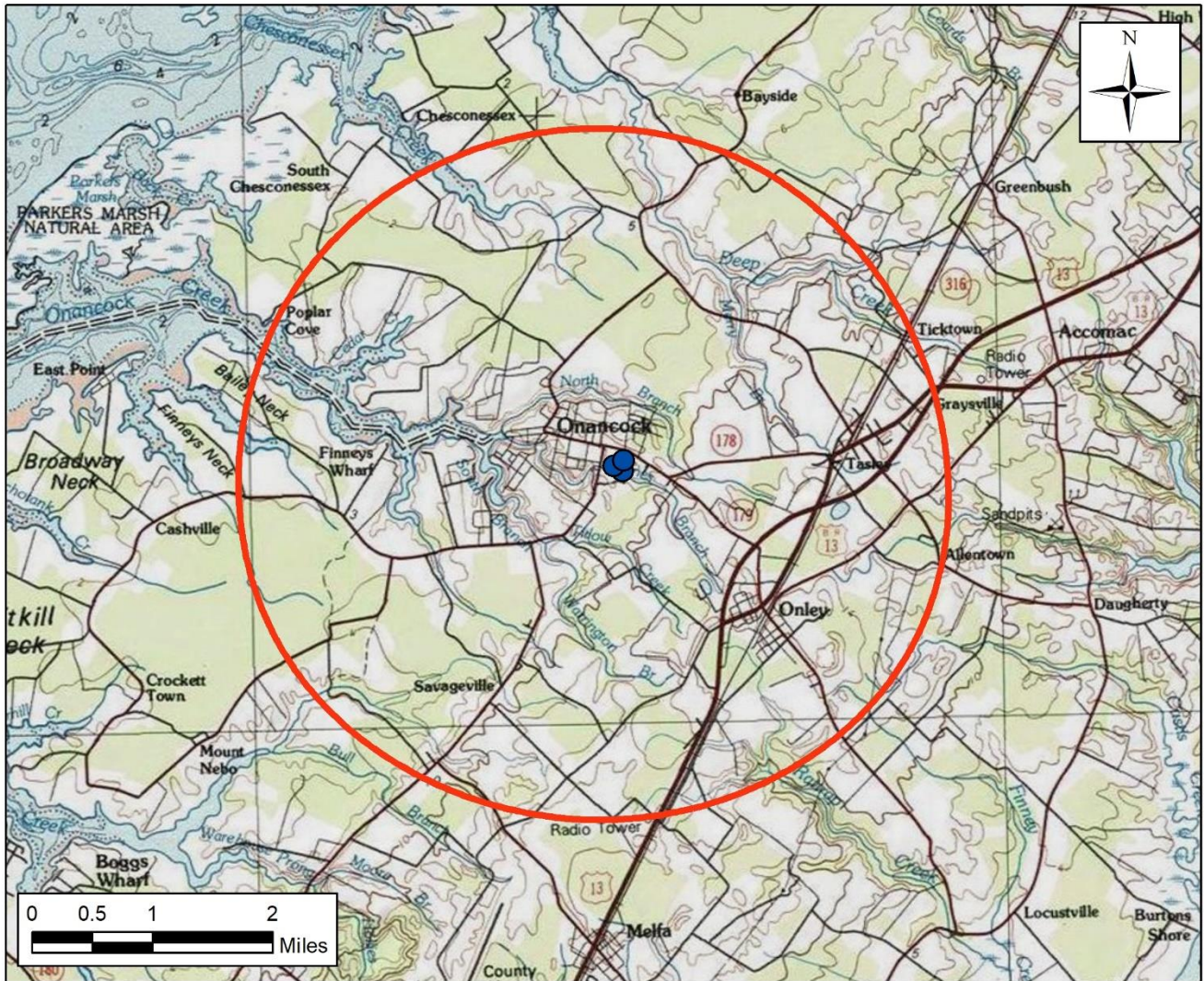
Maximum radius of one foot drawdown (Area of Impact) extends approximately 3.2 miles from the pumping center.

Technical evaluation performed by Aquaveo, LLC for the Virginia DEQ, Office of Water Supply
January 9, 2024



Town of Onancock

Area of Impact - Lower Yorktown-Eastover Aquifer



- Town of Onancock Wells
- Lower Yorktown-Eastover Area of Impact

Simulated drawdown at or exceeding one foot in the Lower Yorktown-Eastover aquifer resulting from a 120,000,000 gallons per year (328,767 average gpd), 50 year withdrawal from the Middle Yorktown-Eastover aquifer using the VAHydroGW-ES.

Maximum radius of one foot drawdown (Area of Impact) extends approximately 3.2 miles from the pumping center.

Technical evaluation performed by Aquaveo, LLC for the Virginia DEQ, Office of Water Supply
January 9, 2024



SUMMARY OF COMMENTS AND/OR REQUESTS FOR INFORMATION RECEIVED DURING THE PUBLIC COMMENT PERIOD
OWNERS NAME: Town of Onancock
PROJECT / FACILITY NAME: Town of Onancock Water System
GWP #: GWI00240

NAME OF COMMENTER/ORGANIZATION	DATE RECEIVED	RECEIVED BY	CONTACT INFORMATION			COMMENT PERIOD		SUPPORTS PERMIT (Y/N)	REQUEST FOR HEARING (Y/N)	REQUEST FOR DENIAL (Y/N)	SUMMARY OF COMMENTS	DATE DEQ RESPONDED	NOTES
			PHONE NUMBER	EMAIL	ADDRESS	DRAFT PERMIT (Y/N)	PUBLIC HEARING (Y/N)						
Dana Simson	3/13/2024	Caitlin Kelly	410-603-0531	dsimson2art@gmail.com	85 Market St., Onancock, VA 23417	Y	N	N	N	N	Concern about large development using limited GW resources.	5/2/2024	Informed about Technical Evaluation, Area of Impact, and Mitigation Plan
Priscilla Hart	3/21/2024	Caitlin Kelly	757-787-1249	priscillahart@msn.com	21 Market St., Onancock, VA 23417	Y	Y	N	Y	N	Impacts to GW quantity & quality from proposed withdrawal.	5/14/2024	See Public Hearing Recommendation Memo
Dana Simson	3/22/2024	Caitlin Kelly	410-603-0532	dsimson2art@gmail.com	86 Market St., Onancock, VA 23417	Y	N	N	N	N	Request study on impacts of large development requiring more water.	5/2/2024	Informed about Technical Evaluation, Area of Impact, and Mitigation Plan
Greg Felthousen	3/24/2024	Caitlin Kelly	Not Provided	gfelt304@gmail.com	Not Provided	Y	Y	N	Y	N	Reference 2024 Town of Onancock Source Water Protection Plan. Risks to potable water supplies.	5/14/2024	See Public Hearing Recommendation Memo
Patricia Felthousen	3/25/2024	Caitlin Kelly	Not Provided	pfelthousen@gmail.com	5 Ames St., Onancock, VA 23417	Y	Y	N	Y	N	Finite water resource, concern about saltwater intrusion and providing water to large development outside town limits.	5/14/2024	See Public Hearing Recommendation Memo
Priscilla Hart	4/2/2024	Caitlin Kelly	757-787-1250	priscillahart@msn.com	22 Market St., Onancock, VA 23417	Y	Y	N	Y	N	Reference 2024 Town of Onancock Source Water Protection Plan. Potential for adverse changes to water quality.	5/14/2024	See Public Hearing Recommendation Memo
Rosemary Paparo	4/2/2024	Caitlin Kelly	646-249-3815	row1950@aol.com	9 Holly St., Onancock, VA 23417	Y	Y	N	Y	N	Reference 2024 Town of Onancock Source Water Protection Plan. Salt water intrusion impacts on potable water supply.	5/14/2024	See Public Hearing Recommendation Memo
Jeffrey Albrechtson	4/6/2024	Caitlin Kelly	Not Provided	jaltbrechtson@att.net	6 Johnson St., Onancock, VA 23417	Y	Y	N	Y	N	Impacts to local environment from large development.	5/14/2024	See Public Hearing Recommendation Memo
James Forwalk	4/6/2024	Caitlin Kelly	Not Provided	jmfoomtour@att.net	PO Box 452, Onancock, VA 23417	Y	Y	N	Y	N	Increased withdrawals from limited water resource.	5/14/2024	See Public Hearing Recommendation Memo
Clark Williams	4/8/2024	Caitlin Kelly	757-710-0624	clarkwilliams@gmail.com	5 Johnson St., Onancock, VA 23417	Y	Y	N	Y	N	Long term impacts from developments including salt water intrusion.	5/14/2024	See Public Hearing Recommendation Memo
Norman Haggie	4/8/2024	Caitlin Kelly	804-732-8626	norman.haggie@gmail.com	Not Provided	Y	N	N	N	N	Concern about large development using limited GW resources and certain testing conditions not being met.	5/2/2024	Informed about Technical Evaluation, Area of Impact, Mitigation Plan. DEQ unaware of any testing conditions not met.
Kellen Singleton, Eastern Shore Ground Water Committee	4/8/2024	Caitlin Kelly	757-787-2936 ext. 114	ksingleton@esvplan.org	PO Box 417, 23372 Front St., Accomac, VA 23301	Y	N	Y	N	N	Request number units for Coastal Square development be updated in fact sheet. Saltwater intrusion monitoring on Eastern Shore.	5/2/2024	Do not recommend changing number of units, acknowledged request for saltwater intrusion monitoring on Eastern Shore.