

Nottoway Water Supply Plan

Final Report

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Executive Summary

Intent

The intent of this document is two-fold. Firstly, the intent is to provide the Nottoway Planning Council and its constituents with a plan document that can be used in conjunction with the Nottoway County Comprehensive Plan (NCCP) in charting a course for business, industrial, institutional, and residential development. Secondly, this plan is also intended to fulfill the requirements of the State Water Control Board's regulation 9 VAC 25-780 "Local and Regional Water Supply Planning" as administered by the Virginia Department of Environmental Quality.

Summary of Findings

The current water sources and production capacities were compared to the peak forecasted demand. It was determined that the current sources and facilities of the Towns are adequate to meet the forecasted demands within the planning period (2007 – 2050). It is imperative that these sources, particularly the dams and intake structures on Crystal Lake and the Fort Pickett Reservoir, are protected and maintained. They are critical to the success of the County's Water Supply Plan. There are cost effective alternatives available for meeting demands beyond 2050. However, these will remain dependent on the viability of Crystal Lake and the Fort Pickett Reservoir as water sources.

Rural growth, both agricultural and residential, will cause an increase in demand for surface water and groundwater in the County. It is concluded that water sources are sufficient to meet this delocalized demand. The current zoning ordinance and lot size restriction is an effective water management practice for rural areas. Continued implementation of watershed protection practices will preserve the quality and quantity of source supplies.

Review of Plan

The regulation establishes that the Water Supply Plan will be reviewed by the Department of Environmental Quality and a determination will be made by the State Water Control Board as to whether the plan complies with regulation 9 VAC 25-780. Once compliance is approved, the plan shall be reviewed by the Nottoway Planning Council within five years to assess adequacy. Any significant changes will require the submission of an amended plan and review by the Board.

All plans shall be reviewed, revised, and resubmitted to the Department of Environmental Quality every 10 years after the last approval.

Table of Abbreviations

MG	Million Gallons
MGD	Million Gallons per Day
GPD	Gallons per Day
GPM	Gallons per Minute
AST	Above Ground Storage Tank
UST	Underground Storage Tank
ERC	Equivalent Residential Connections
N/A	Not Applicable

Sections 70 & 80 – Existing Water Source & Use Information

Municipalities

The Nottoway Water Supply Plan covers the entire county including the three incorporated towns of Blackstone, Burkeville, and Crewe and the Fort Pickett Military Reservation. Each of the towns operates a community water system with Fort Pickett and Blackstone sharing a common water source and treatment plant owned and operated by the Town of Blackstone. None of the community water systems within Nottoway County operate a system of inter-connected reservoirs or utilize a stream-intake or purchase water from a source outside the planning area. The Sandy River Reservoir in Prince Edward County is proximate; however, no infrastructure is in place to bring water into Nottoway County. There are no large self-supplied users within the service area of the community water systems. Also, the planning region is not located in a Ground Water Management Area. Maps delineating the service areas for Blackstone/Fort Pickett, Burkeville, and Crewe can be found in the Appendix under the section entitled Plan Elements Maps.

Blackstone/Fort Pickett

Blackstone and Fort Pickett share a common water source and treatment plant. Fort Pickett Reservoir is impounded on the Nottoway River. The treatment plant is owned and operated by the Town of Blackstone. The water treatment plant has a design capacity of 5 MGD but the permitted withdrawal is limited to 3.5 MGD due to raw water pump capacity. VDH shared the results of a B&B Consultants study performed in 2005 that calculated the reservoir to have a safe yield of 9.0 MGD with zero flow by.

Current (2006) average water demand is 0.801 MGD combined for Blackstone and Fort Pickett serving 5,575 people. The maximum day withdrawal last year was 1.920 MGD. Approximately 20% of the current average demand is from Fort Pickett and 80% is from the Town. However, the Army does have a stipulation stating that the Town must always reserve for the Army an available capacity of 2.0 MGD for Fort Pickett in the event it is needed for a full mobilization at the fort. Disaggregated use data can be found in the Appendix 70 & 80 - Data Sheets on spreadsheet 3-F.

Burkeville

The Town of Burkeville operates a community water system that utilizes seven groundwater wells. The well system is capable of providing 100 GPM total. The design yield of the system is calculated by VDH as: $(100 \text{ gpm}) * (\text{ERC} / 0.5 \text{ gpm}) * (400 \text{ GPD} / \text{ERC}) = 80,000 \text{ GPD} (0.08 \text{ MGD})$. The system supplies water to a population of 489 as of the 2000 Census. A review of the 2006 well production logs revealed that Burkeville's wells produced 13.91 MG of water for the town. This is an average daily withdrawal of 38,100 GPD (0.0381 MGD). Well water meters are read once per month. Therefore, no data is available on peak day use. DEQ recommends assuming a 1.5 peak factor, which

results in an estimated peak day use of 57,150 gallons. Disaggregated use data is not available. All water use is assumed to be residential.

Recently there have been issues with elevated levels of synthetic organic chemicals (SOC) in two of the wells. However, steps are currently being taken to blend several of the wells together. This is expected to reduce the SOC concentrations below the acceptable limit. Further information and data can be found in Appendix Section 70 & 80 Data Sheets spreadsheet Section 2A.

Crewe

The Town of Crewe is permitted by the Virginia Department of Health (VDH) to withdraw up to 0.80 MGD from Crystal Lake, an impoundment on Lazareto Creek. Lazareto Creek is a tributary of the Nottoway River. An analysis performed by DEQ utilizing 1954 and 2002 drought information determined that Crystal Lake has a safe yield of 0.90 MGD with zero flow by.

The water treatment plant itself has a design capacity of 1.0 MGD. The VDH permitted withdrawal capacity is limited by the finished water pumps. Year 2006 peak day use on Crewe's system was 0.735 MGD and average daily demand was 0.494 MGD. Disaggregated use data can be found in the Appendix 70 & 80 - Data Sheets on spreadsheet 3-F.

Crewe's water system provides water not only to the Town of Crewe but also to the Nottoway County Correctional Center, the Piedmont Geriatric Hospital, the Nottoway County Courthouse complex, and to the Nottoway County Middle and High Schools. The total resident population served by the system in 2006 is 3,958 people. The Virginia Center for Behavioral Corrections, currently under construction, is planned for future expansion by 2010 to a 300 bed facility. This will add additional demand to the Crewe system in the near future.

Hickory Hill Retirement Community

The Hickory Hill Retirement Community (HHRC) was built in 1999 and currently houses 50 persons according to VDH data. The facility is classified as a community water system and is therefore included here. The facility's 2006 demand was estimated to be 6,650 GPD or about 4.6 GPM. HHRC is served by a groundwater well.

Summary Tables and Sources of Data

The sources and uses of water for the community water systems mentioned above are summarized in Tables 70-1 and 80-1 below. Please refer to the Appendix, Section 70 & 80 - Data Sheets and Section 70 & 80 - Raw Data & Sources, for complete raw data and data sources. For example, peak day usage by month can be found in the Appendix Section 70 & 80 - Data Sheets on spreadsheet 2-E.

**Table 70 – 1
Existing Community Water Sources**

COMMUNITY SYSTEM	SOURCE	SAFE YIELD or DESIGN YIELD	CURRENT PERMITTED SYSTEM CAPACITY
Blackstone / Fort Pickett	Nottoway Reservoir	9.0 MGD	3.5 MGD
Burkeville	7 Well System	0.08 MGD	0.08 MGD
Crewe	Crystal Lake	0.9 MGD	0.8 MGD
Hickory Hill	Individual Well	0.012 MGD	0.012 MGD

**Table 80 – 1
Existing Community Water Uses**

COMMUNITY SYSTEM	2006 AVG. DAILY WITHDRAWAL (GPD)	PEAK MONTH (GPD)	PEAK DAY (GPD)	AVG. ANNUAL WITHDRAWAL (MG)	2006 POPULATION SERVED
Blackstone / Fort Pickett	801,000	971,000	1,920,000	292	5,575
Burkeville	38,100	45,400	No Data	14	489
Crewe	494,200	540,400	735,000	180	3,958
Hickory Hill	4,795	No Data	No Data	1.75	50
TOTAL COMMUNITY USAGE	1,320,850	N/A	N/A	478.8	10,072

The data for year 2006 represents a typical, recent year for water use in the planning region. The 2006 data year is used as a starting point for making projections in accordance with Section 100 below.

Rural Residences and Businesses

The majority of people (9,183 of 15,725) in Nottoway County are served by individual wells or, in the case of a very few people, by spring water. The water use of these individual wells is not known but can be approximated using a value of 75 gallons per capita per day average for the State of Virginia (Source: McGraw-Hill Water Distribution Systems Handbook). 3,706 residences are served by individual wells in Nottoway County and two (2) residences have wells in Blackstone. The demand from these residences equates to a total daily demand of 688,725 gallons (0.689 MG). An estimated five (5) businesses are served by individual wells – one (1) in Nottoway, two (2) in Blackstone, and two (2) in Burkeville. No information is available at this time regarding the estimated water use of the residences and businesses located in the Blackstone and Burkeville service areas.

Agriculture, Manufacturing, and Other Users

Within the county there are two major (>300,000 gallons/month) users of groundwater. The first user is a chicken farm that uses an estimated 419,750 gallons/month. The other user (of 532,250 gallons/month) is Tyson Foods, Inc. There are twenty-six other dairy and chicken farms in the county that use less than 300,000 gallons/month from groundwater and/or surface water sources. There are also a number of other farms raising beef cattle in the county. The combined monthly water usage for these cattle and chicken farms is a substantial 9.68 MG per month (0.312 MGD). Additionally, the Nottoway River Country Club uses a substantial amount of surface water from two ponds located on its property. The average monthly withdrawal for 2006 was 155,629 gallons per month. Only April had a withdrawal (410,930 gallons) greater than the 300,000 gallon threshold. All of these users fall outside the community water system service areas. Please refer to the Appendix, Section 70 & 80 - Data Sheets and Section 70 & 80 - Raw Data & Sources, for complete raw data and data sources.

Source Water Assessment Plans / Wellhead Protection Programs

Three studies that address the issue of source water assessment and wellhead protection are included in the Appendix Section 70 & 80 - Raw Data & Sources. The attachments are numbered 2-J.1, 2-J.2, and 2-J.3. The studies show that a fair number of households served by individual wells in Nottoway County have either nuisance concerns or health-related concerns with their drinking water. Many households use one or more treatment devices to treat their water before consumption. For more details, please refer to the Appendix. Additionally, attachment 2J is a summary of the contamination susceptibility level for the community water systems in Nottoway County. All of the waterworks assessed were ranked as “high susceptibility.”

In March 2009, a Wellhead Protection Plan for Town of Burkeville, Nottoway County, VA was published. The plan outlined eleven recommended actions. 2009 groundwater protection grant funds were allocated from both VDH and DEQ to implement the recommendations in the plan. In April 2003, a Source Water Assessment Report was completed by VDH for Burkeville’s system. These documents are available from the Town of Burkeville and VDH, respectively. They will be submitted to DEQ in the final Water Supply Plan submission.

Section 90 – Existing Resource Information

Nottoway County is roughly bisected north to south by the hydrologic divide that marks the boundary between the Chowan River Sub-basin to the south and the James River Sub-basin to the north. The three towns in Nottoway County lie on Highway 460 which runs along this hydrologic divide. This creates a situation in which most of the precipitation in the county drains into creeks or rivers that flow away from the towns limiting the available surface water. Crystal Lake and the Fort Pickett Reservoir are water impoundments on Lazareto Creek and the Nottoway River respectively. These waters and their tributaries currently represent the two largest supply sources for the entire county. Therefore, it is critical that adequate measures remain in place for their protection.

The dam on Crystal Lake reportedly requires substantial regular maintenance. Fort Pickett Reservoir and its dam were constructed in 1942. It is important that any deficiencies observed during annual dam inspections be corrected promptly. These impoundments are critical to the long term success of the County's water supply program. Replacement costs of the reservoirs and/or replacement of the dams will far exceed even the most elaborate dam maintenance activities.

It is also vital that the water intake structures be maintained and preserved. The current safe yields for Crystal Lake and the Fort Pickett Reservoir are calculated with zero flow-by requirements. If a new intake structure was needed it would trigger a new Virginia Water Protection permit application and subsequent Minimum Instream Flow (MIF) investigations. These investigations could significantly reduce the safe yields and withdrawal limits for Crystal Lake and the Fort Pickett Reservoir.

The current agricultural best management practices used in the County include woodland erosion stabilization, grazing land protection, animal waste control facilities, loafing lot management systems, and composting facilities. Additionally, it will also be important to continue to maintain and restore the riparian buffer zones along the creeks and rivers within the County.

Groundwater serves as the source of drinking water for over half the population of the county. It will likely remain a major source into the future due to the remoteness of future service areas relative to existing surface water treatment and distribution systems. Precipitation is a major source of groundwater recharge in the county. Approximately 20 to 30% of the county's precipitation reaches the groundwater system. The groundwater is a valuable resource that will need to be protected from potential contamination.

The data collected pertaining to Section 90 is in the appendix of the same name. This information is relevant to Section 130 where alternatives are examined. The following paragraphs contain summaries of the various resource and environmental conditions that exist in the planning area. The paragraphs are summaries of further information contained in the Appendix. The Nottoway County Comprehensive Plan also contains information pertinent to this section of the regulations.

Geologic, Hydrologic, & Meteorological Conditions

Nottoway County lies within the Piedmont Plateau physiographic region of Virginia. The surface of the Piedmont Plateau rises in elevation from approximately 200 feet above sea level at its eastern margin (the Fall Line) to a general base level of 1000 feet above sea level in the west. The topography of the Piedmont physiographic province is characterized by gently rolling hills and well defined stream channels. The mineral resources in this portion include granite and granite rock which range in age from Mississippian to Proterozoic or Precambrian. There are also some igneous dikes of the Jurassic age.

Relief varies across the province, a fact which has led to the delineation of two subregions. The Outer Piedmont is characterized by low relief; the Inner Piedmont by high relief. Nottoway County lies within the Outer Piedmont sub-region. The Outer Piedmont is a gently rolling upland; erosion and deep weathering have long since obliterated surface indications of the folded bedrock beneath.

The Nottoway River Basin traverses across nine (9) counties in south eastern Virginia and one (1) county in North Carolina. The Nottoway River Basin is divided into seventeen (17) hydrologic units and is approximately 71% forestland, 19% cropland, 5% pasture, 5% other land, and less than 1% water. See attachment 4-A 2.1 for a complete list.

There are nine (9) gauging systems located in the vicinity of the Nottoway River Basin which collect precipitation and temperature data. The average annual precipitation in this area is 43.9 inches. The highest monthly average precipitation was 5.93 inches during July at the Fort Lee gauging station. The lowest monthly average precipitation was 2.45 inches during December at the Amelia gauging station. The average annual temperature for the basin is 58.3 degrees Fahrenheit. The average monthly temperature ranges from a low of 34.9 degrees in January at Camp Pickett to a high of 79 degrees in July at Hopewell. See attachments 4-A 3.1 through 4-A 3.3 for a map of the system and complete lists of temperatures and precipitations.

Threatened/Endangered species/Habitats of Concern

In the Nottoway River Basin there are two (2) species of amphibians and three (3) species of birds listed as threatened. Listed as endangered are two (2) species of fish and one (1) species of bird. There is also one (1) species of amphibian with a Habitat of Concern status. See appendix 4-B.1 and 4-B.2.

Anadromous, Trout, and other Significant Fisheries

The Nottoway River has a wide variety of fish ranging from bass and catfish to shad and herring. Panfishes found in this area include bluegill, redbreast, and redear sunfish,

Roanoke bass, yellow perch, and black crappie. The Roanoke bass is a species of special concern in Virginia but can be found in significant numbers in the Nottoway River.

River Segments with Recreational Significance

Forty three (43) miles of river running from Fort Pickett to the Nottoway Reservoir have been recognized to have recreational significance. The river sections spanning from Stony Creek to Careys Bridge at Route 653 in Sussex County as well as Route 609 to Route 630 in Greensville County have been classified as components of the Virginia Scenic River System. Also a portion of the Nottoway River has been placed on the National Park Service's "Nationwide Rivers Inventory List."

Sites of Historical/Archaeological Significance

The Virginia and National Registers of Historic Places recognized seven (7) historic buildings located in Nottoway County. Also a county wide survey documented over 100 historically significant dwellings and structures. See attachment 4-B.4 for a map of historical sites. Also, reference the Nottoway County Comprehensive Plan for a more detailed historical report.

Unusual Geologic Formations/Soil Types

Crystalline rocks, both igneous and metamorphic, located in the Piedmont region are approximated to be from as early as the Pre-Cambrian era. These rock formations extend from northeast to southwest in long narrow belts. The formations include granite, gneiss, schist, greenstone and some slate, soapstone and marble. Important bodies of coal and some natural coke are located in the Richmond Basin southwest of Richmond. See attachment 4-B 5.1.

The Coastal Plain consists of three (3) general soil types: black stiff loam, light sandy loam and clay and sand loam. The most fertile of these soils is the black stiff loam located in the tidal low grounds. The Virginia Piedmont lands are considered generally fertile. The soil type in this region consists of limestone and clay which is good for producing bluegrass, grains, and fruits. See attachment 4-B 5.3.

Wetlands

The Nottoway River Basin contains 10,000 acres of wetlands with high value and high priority for protection spread over seven (7) counties. Also, several detached wetlands of various sizes have been identified by the U.S. Fish and Wildlife Service as having high value and priority for protection.

Riparian Buffers

Riparian buffers are the forested areas around stream banks that filter nutrients, sediments and other pollutants before they can enter a waterway. Nottoway County's landscape has

experienced changes to its stream corridors since 1607, the settlement of Jamestown. Because of these alterations Nottoway's waterways require stream bank stabilization, in-stream structures and forest plantings as well as other restoration efforts. See attachments 4-B 7.1 and 4-B 7.2 for maps of riparian buffer types and restorations projects.

Land Use and Percent Impervious Cover

Land in Nottoway is divided into four (4) categories: agriculture and cropland, urban/built up land, mixed forest and deciduous forest. 2.5% of Nottoway's land base is urban/built up land. Most of Nottoway is comprised of farmland or forests (70% of Nottoway's land is forest). These forests are beneficial to the citizens of Nottoway, providing economic well being, water quality, habitat values and benefits, and recreational opportunities. See attachments 4-B 7.3 through 4-B 8.7.

Impaired Streams

Nottoway has ten (10) impaired water sources. Carys Creek, Little Nottoway River, and Nottoway River have a bacteria impairment type. Hurricane Branch, Lake Nottoway, Long Branch, Nottoway Pond, Tributary to Hurricane Branch, and Winticomack Creek have an aquatic life impairment. Also, Deep Creek has a bacteria and an aquatic life impairment. See attachment 4-B-9 for a map of impaired waters in Nottoway County.

Point Source Discharges

Nottoway County has four (4) municipal point source discharges which flow into Hurricane Branch, Deep Creek, Mallory's Creek and Little Nottoway River. There are four (4) industrial point source discharges which flow into Hurricane Branch, Tommeheton Creek and West Creek. See attachment of 4-B-10 for a map of the Nottoway County point source discharges.

Potential Threats to Water Quantity/Quality

The following sources pose potential threat to Nottoway County's water supply: ASTs, USTs, hog waste, poultry waste, fertilizers, auto junkyards, cattle accessing streams, power transfer station, illegal roadside dumps, and petroleum products. Further detailed information can be found in Appendix 90 and in Appendix 70 2J Attachments.

Section 100 – Projected Water Demand Information

Community Water Systems

Future water demands within Nottoway County were projected in accordance with the State Water Control Board’s regulation 9 VAC 25-780 Local and Regional Water Supply Planning. The regulation requires that demand projections be done both for community water systems and for self-supplied users.

In Nottoway County, which is also the planning area, there are four water systems classified as community water systems. These are the Town of Blackstone/Fort Pickett, the Town of Burkeville, the Town of Crewe, and the Hickory Hill Retirement Community (HHRC). The Town of Blackstone and Fort Pickett are served by a single system that is owned and operated by the town. Fort Pickett has a requirement that 2.0 MGD of capacity be reserved at the treatment plant for the Fort in the event of a mobilization of the army.

The Nottoway County Planning Commission prepared a comprehensive plan (NCCP) for the county that was used as a base to determine how water demands in the county are likely to change over the next few decades. The Planning Commission forecasted a decline in the population of each of the three towns (Blackstone, Burkeville, and Crewe) from 2000 to 2005 and forecasted a growth of 4.9% per decade in overall population of the county. Figures 100 – 1 and 100 – 2 show Census data, NCCP estimates, and projections for the county as a whole and for each of the towns.

Figure 100 – 1

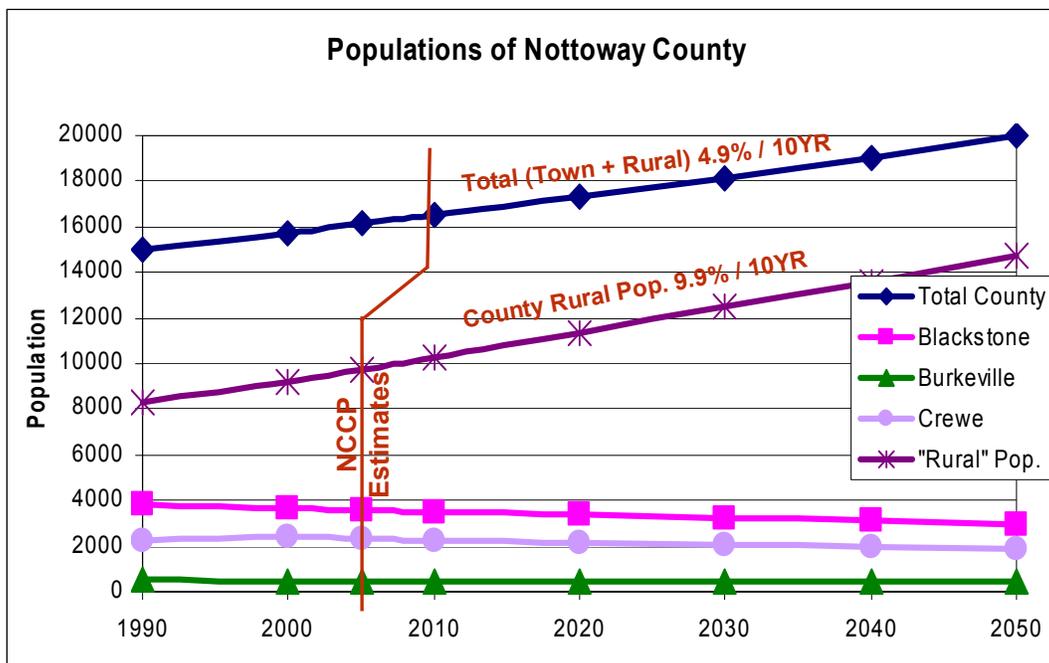
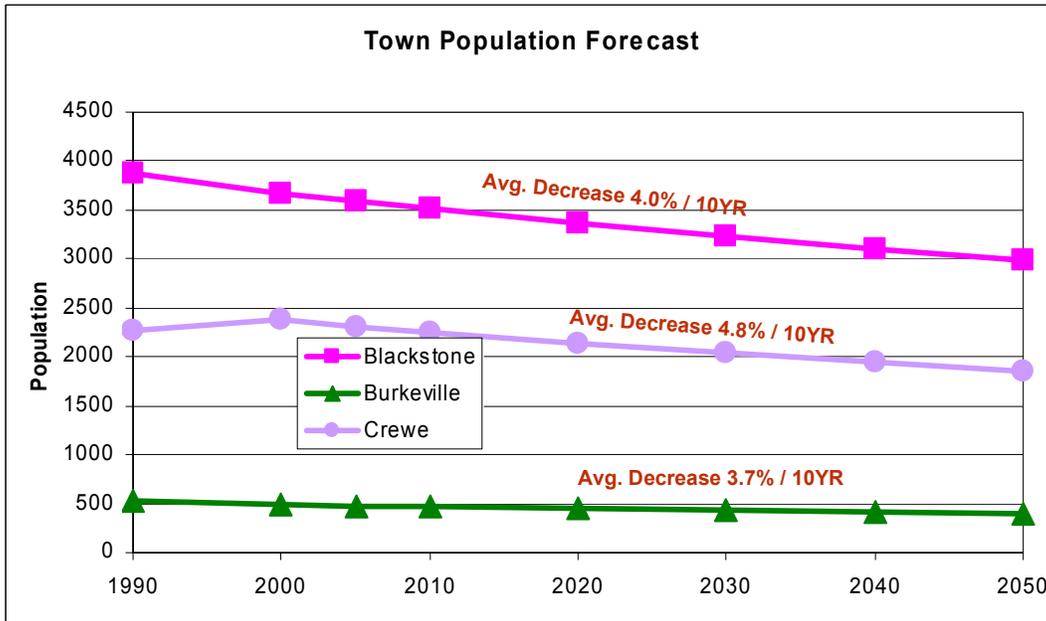


Figure 100 – 2



The towns are expected to keep losing population to the rural areas of the county but this will likely slow down over time. The population shift is due to more people moving from the towns out into the county and people moving into the county to find housing but commuting to work in other localities, notably Richmond and Petersburg. This trend is expected to continue into the foreseeable future.

Blackstone & Fort Pickett

Blackstone is forecasted to continue to decrease in population as occurred from 1990 to 2000. The population of Blackstone was 3,675 according to the 2000 US Census. Current disaggregated demand data for the Blackstone/Fort Pickett System was available and was used as a starting point for demand projections in conjunction with the population forecast. The future residential demand was calculated from the current demand times the ratio of future population to current population. The commercial, institutional, and light industrial (CIL) use and the heavy industrial use were projected to increase at a rate of 2.5% per decade. The water used in water production processes and in other uses was projected to increase with time. The military water use was projected to remain constant at the 2006 usage, however, it was kept in mind that the Fort reserves the right to 2.0 MGD of water supply capacity at all times.

The peak forecasted demand, including the mobilization demand of 2.0 MGD at Fort Pickett, is 2.62 MGD. The current treatment plant permitted capacity is 3.5 MGD due to limitations with the raw pumps. Therefore, the Blackstone/Fort Pickett system will not require additional sources in the future. The current source and treatment plant is sufficient to meet current and projected future demands.

Figure 100 – 3 shows the average and peak month demands for Blackstone/Fort Pickett forecasted during the planning period. Figure 100 – 4 shows the average month demands for Blackstone/Fort Pickett forecasted during the planning period for each disaggregated category of use. The numerical data, sources, and assumptions can be found in the Appendix in Section 100 – Demand Projection Data, Graphs, Sources, & Assumptions.

Figure 100 – 3

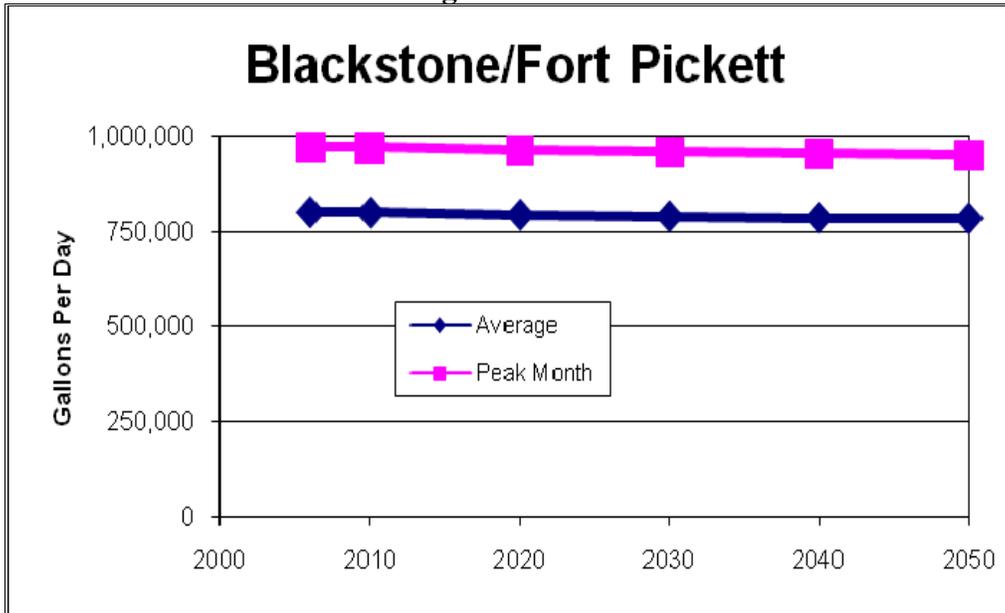
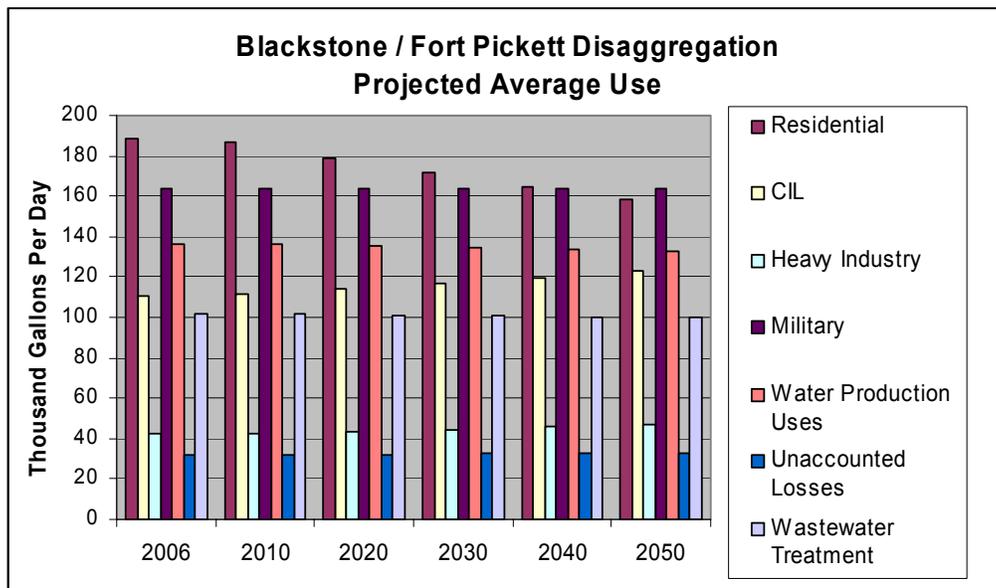


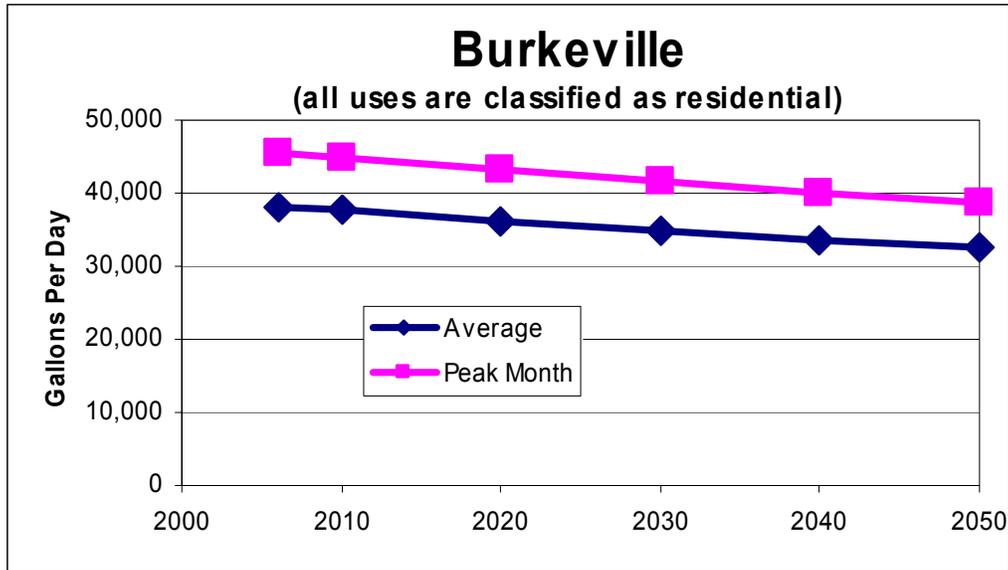
Figure 100 – 4



Burkeville

Burkeville is the smallest of the three towns with a population of 489 in 2000. Current water use data for the town was unearthed from the 2006 well production logs. The operator said that all demands in the town were residential and therefore all of the demands within the town are classified as such. The demand projection was made by calculating the 2006 population forecast and then multiplying the current demand by the forecasted population and dividing by the 2006 population forecast.

Figure 100 – 5



The forecasted peak month demand for Burkeville is 45,400 GPD. The permitted capacity of the town's seven wells is 100 gpm for a design yield of 80,000 GPD per VDH. Therefore, Burkeville has no need for future source development at this time.

Crewe

The Town of Crewe has experienced significant growth in the past in institutional facilities. The Nottoway Correctional Center opened in 1984, the Piedmont Geriatric Hospital was founded in 1967 and accredited in 1985, and the Virginia Center for Behavioral Rehabilitation is expected to open in late 2008. All three of these facilities are or will be served by the Town of Crewe's water system. Crewe did grow in population from 1990 to 2000 but is forecasted by the Nottoway Planning Commission to decline from 2000 to 2005 and onward. The 2000 Census population was 2,378. The population projections were used to forecast the residential demand.

The CIL usage is expected to increase significantly by 2010 due to the opening of the Virginia Center for Behavioral Rehabilitation and then continue to increase at a more moderate pace (2.5% per decade) through 2050. The Nottoway Correctional Center

currently runs at about maximum (1400 persons) capacity. There are no plans at this time to expand the facility. The Piedmont Geriatric Hospital also does not plan to expand.

The amount of water used in production processes, unaccounted water losses, and other uses are expected to increase slightly over time. However, based on water data obtained during this plan development unaccounted water losses are not excessive.

The forecasted peak month demand for Crewe is 596,900 GPD. The permitted capacity of the town's treatment plant is 0.8 MGD per VDH due to the limitations of its finished pumps. The town's source, Crystal Lake, has a safe yield of 0.9 MGD with zero flow by. The analysis that resulted in this safe yield incorporated both the 2002 and 1954 droughts. Therefore, Crewe has no need for future source development at this time. Figure 100 – 6 shows the average and peak month demands for Crewe forecasted during the planning period. The Virginia Center for Behavioral Rehabilitation (VCBR) opened in 2008.

Figure 100 – 6

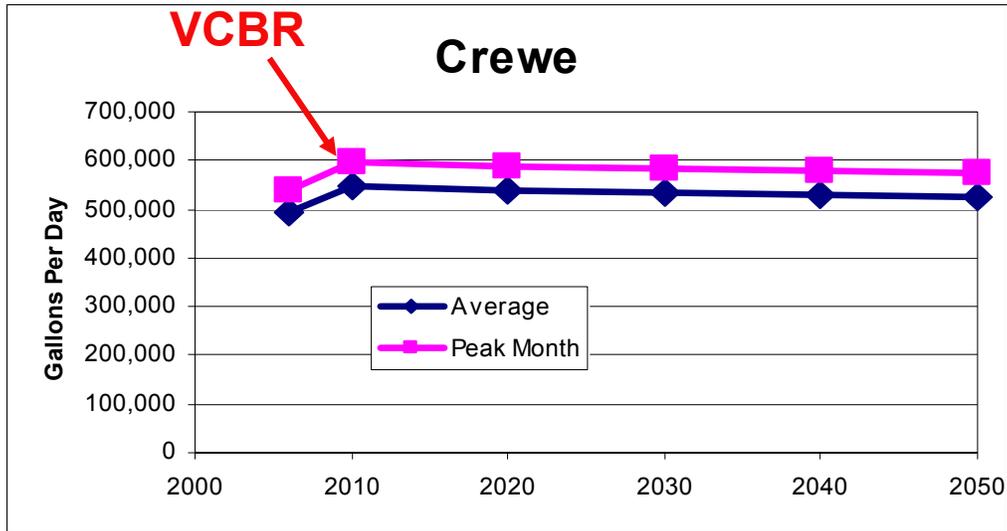
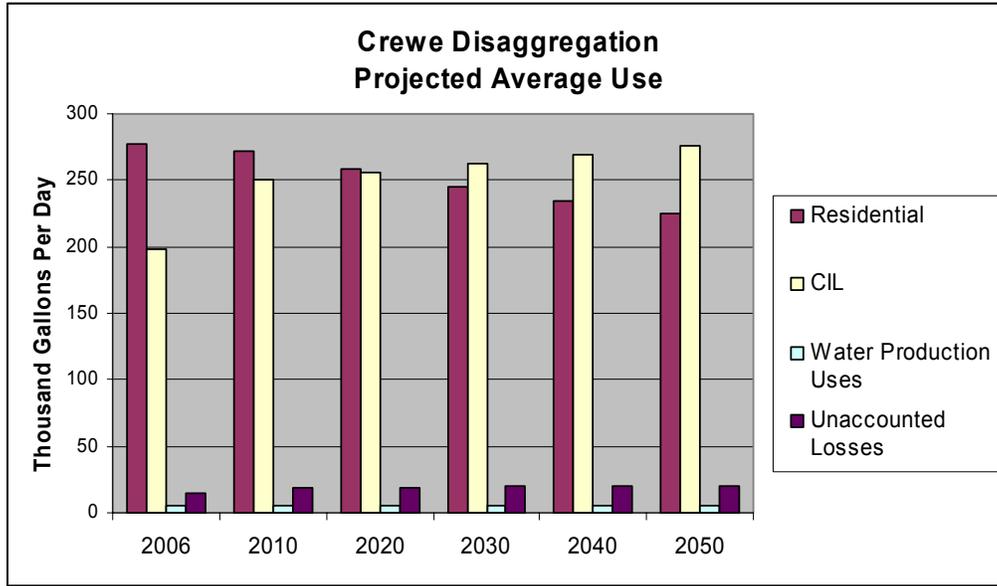


Figure 100 – 7 shows the average month demands for Crewe forecasted during the planning period for each disaggregated category of use. The numerical data, sources, and assumptions can be found in the Appendix in Section 100.

Figure 100 – 7



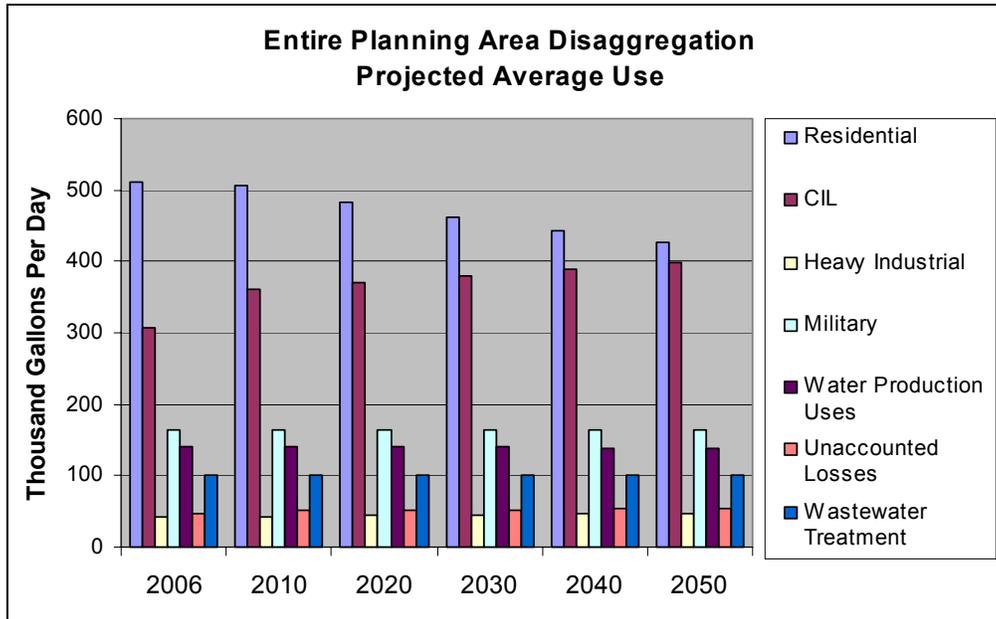
Hickory Hill Retirement Community

The Hickory Hill Retirement Community (HHRC) was built in 1999 and has a maximum capacity of 80 beds. Currently, the facility houses 50 persons according to VDH data. The facility is expected to reach maximum capacity within a few years and have a total future demand of 10,630 GPD or about 7.5 gallons per minute. HHRC is served by a groundwater well and will not need an additional source unless the facility undergoes a significant expansion in the future beyond 80 beds.

Summary of Community Water Systems

The figure below provides a totalizing summary for the four community water systems in Nottoway County. Projected average use in the various categories is shown at each decade from 2010 to 2050. Currently, there are no plans to extend the service areas of the community water systems. Details of demands and projections are available in Appendix Section 100 - Demand Projection Data, Graphs, Sources, & Assumptions.

Figure 100 – 8



Self-Supplied Users

The self-supplied users are a major component of the water users in Nottoway County. In 2000, 58.4% of the residents in Nottoway County were not being served from a community water system. This percentage is forecasted to increase in the next few decades with perhaps as much as 73% of the residents of Nottoway County living outside of the Towns by 2050. Their demand for water will presumably be met through individual wells. The County currently has a minimum lot size restriction of 5 acres in the rural parts of the county. This is to prevent sprawl and to improve the chances of each home being able to locate suitable groundwater on the property.

Currently the county has only one self-supplied non-agricultural users of more than 300,000 gallons per month. This user is Tyson Foods Inc which is categorized as a manufacturing facility per DEQ. Tyson Foods operates a hatchery and feed mill in the County. Tyson’s average use was calculated to be 532,250 gallons per month based on data obtained from Tyson’s Quarterly Operating Reports submitted to VDH.

The county only has one known self-supplied agricultural user of more 300,000 gallons per month. This user is a large chicken farm that used on average 427,800 gallons per month in 2006. Two other large chicken farms fell a little shy of the 300,000 gallons per month mark in 2006. Sixteen additional chicken farms were in operation in 2006 that used less than 300,000 gallons per month. These farms were grouped together to show their cumulative demand information.

Chicken farming has been growing at a rapid pace in the county and is forecasted to continue growing at about 4% per year or 20% per decade. This growth rate was used to forecast the water demand in the county for poultry farming and for Tyson Foods.

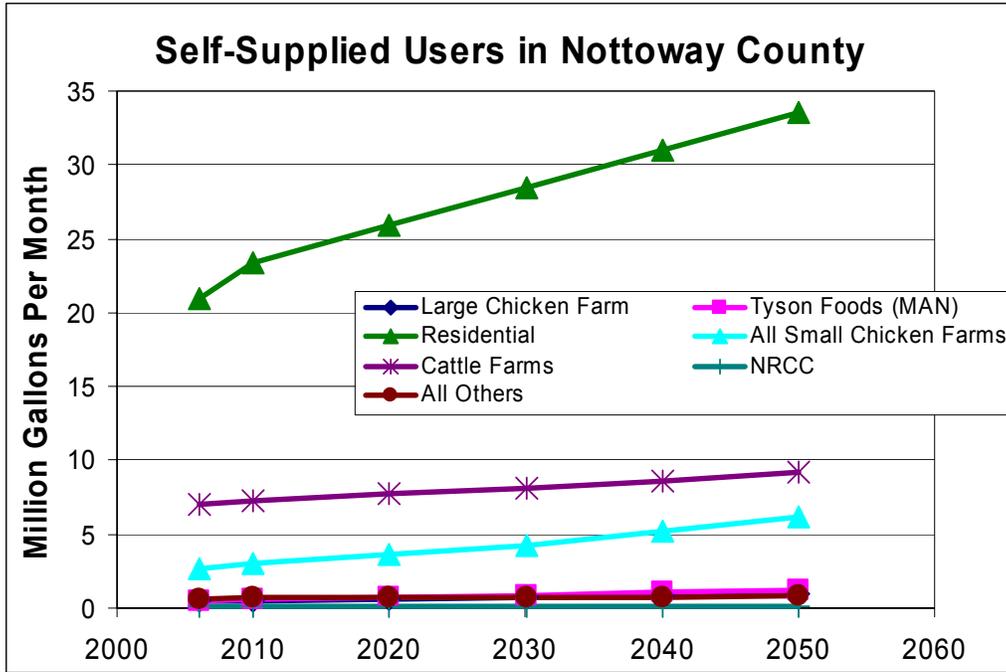
Cattle-farming has also been growing in Nottoway County in recent years though the rate of growth has been slowing down of late. The number of cattle in Nottoway County increased about 1.2% per year from 1997 to 2002. This growth rate was forecasted to continue through 2050. The current number of farms involved is actually unknown. However, an estimate was given based on the average number of dairy cattle per farm, which is known. The total number of beef and dairy cattle within the County is counted every five years during the Census of Agriculture. The last count was performed in 2002. Using data from 1987 through 2002, the number of animals (chicken and cattle) within Nottoway County was extrapolated for 2006 and future decade intervals.

The Nottoway River Country Club (NRCC) uses surface water from two ponds located on its property for irrigation. The NRCC used an average of 155,629 gallons per month during 2006, which is considered a typical year. The amount of water use varies with the weather but we assume that the average use will not change due to other factors. It is important to note that no irrigation is performed during December, January, and February. Therefore, the number of gallons used during the spring and summer months is considerably higher than the yearly average. Please refer to the Appendix, Section 100 – Demand Projection Data, Graphs, Sources, & Assumptions, for the numerical projections, data sources, and assumptions.

Other self-supplied users in the county include restaurants, hotels, businesses, schools, and other users. Their water demand was projected to grow at the same rate as the population. The assumption is that as the population increases businesses will increase to cater to the new population.

Figure 100 – 9 summarizes the type of use and the amount of water used in millions of gallons per day for all the self-supplied users in Nottoway County. The one large chicken farm that uses in excess of 300,000 gallons per month is shown by itself. The eighteen other small chicken farms are grouped and shown together.

Figure 100 – 9



Impacts to State Water Resources Plan

At this time, the State Water Resources Plan is not complete and therefore information regarding cumulative demand, use conflict, or instream flow information developed pursuant to 9VAC-780-140G cannot be incorporated in this regional plan. The majority of the planning area’s population is served by individual wells. Given economic development and growth projections, future growth and domestic water demands are not anticipated to significantly impact in-stream uses.

Section 110 – Water Demand Management Information

The Water Supply Planning Regulations require that the current conservation practices, techniques, and technologies in use be documented and recorded in the water supply plan. These practices, techniques, and technologies shall be considered in projecting water demand pursuant to 9 VAC 25-780-100 D. It is not the intent of the regulations to force localities to adopt new water conservation measures. However, new water conservation measures can be considered as an option for mitigating future demands.

Practices for More Efficient Use of Water

Nottoway County

Nottoway County adopted the Virginia Uniform Statewide Building Code in 1973; which includes measures that limit the maximum flow of water closets, urinals, and appliances. The code is enforced through the work of a Building Inspector or Code Official. The County does not own any waterline nor does it operate a water production facility. Neither the County nor the Towns currently have any water reclamation facilities and due to the adequacy of current clean water supplies it is unlikely water reuse practices will be implemented in the near future.

Water Conservation Measures

Blackstone/Fort Pickett

Water meters are read monthly and customers are billed according to usage. Major water meters are checked once per year for accurate flow measurement. Water rates are constant up to 40,000 gallons per month. Above 40,000 gallons per month, the rates decrease slightly per 1,000 gallons used. The water billing rate structure for Blackstone/Fort Pickett can be found in Section 110 - Water and Sewer Rates.

Burkeville

Water meters are read monthly and customers are billed according to usage. A minimum water bill is for 3,000 gallons and each additional 1,000 gallons are billed at \$3.00 per 1,000 gallons. The water billing rate structure for Burkeville can be found in Section 110 - Water and Sewer Rates.

Crewe

Water meters are read monthly and customers are billed according to usage. As of July 2006, a minimum water bill is for 3,000 gallons and each additional 1,000 gallons are billed at \$3.00 per 1,000 gallons. Water billing rate structure for Crewe can be found in Section 110 - Water and Sewer Rates.

A flyer is posted on ways people can conserve water at the town hall where people pay their water bill. The flyer has not been but could be included with the consumer confidence report to better spread the information to the public. Crewe has recommended the use of low flow fixtures to some of its residents and businesses.

The Town of Crewe supplies water to the Nottoway County Correctional Center. The Center recently installed electronic timers that limit the time and frequency of plumbing fixture use. This has greatly reduced the amount of water used by the Center.

Practices to Address Water Loss

Blackstone/Fort Pickett

Water meters are read monthly. Occasionally, the amount billed is compared to the amount produced at the water treatment plant. Taking into account known unaccounted for demands (i.e. filling of fire trucks, line flushing, dust control, etc.), system leakage quantities are periodically estimated. An accountability of at least 85% is desired. Accountability lower than this may warrant further investigation and repair of significant leaks.

Burkeville

Water meters are read monthly and a cross check is performed to determine how the amount billed compares to the amount pumped. However, fire departments in the area will sometimes fill a truck from a hydrant and this is rarely accounted for. As described for Blackstone, it will be important that unaccounted for uses and accountability goals are considered.

Crewe

Water meters are read monthly. Occasionally, when need is perceived, the amount produced is compared to the amount billed. However, several places in town are not metered, including the town's offices and municipal building. Meter readers use an electronic hand held device that displays the current meter reading and the previous reading for that location. If an unusual discrepancy occurs, it is reported and investigated.

Section 120 – Drought Response and Contingency Plans

Drought response and contingency plans shall be structured to address the unique characteristics of the water source that is being utilized and the beneficial uses of the water. Plans shall include references to local ordinances, if adopted, and procedures for the implementation and enforcement of drought response and contingency plans. The State Water Control Board mandates that the drought response and contingency plans shall contain, at a minimum, the following three graduated stages of responses to the onset of drought conditions: drought watch, drought warning, and drought emergency.

A draft of the Drought Response and Contingency Plan and the Drought Response Ordinance for the County of Nottoway is included in Appendix Section 120 - Drought Response Plan, Coordinating Committee, and Ordinance.

Nottoway County Regional Drought Coordinating Committee

In order to protect the public health, safety and welfare, and ensure the integrity of Nottoway County's water supply, the county and town officials or their designees are charged with implementing special measures of prudent management to prevent a critical water shortage during times of declared drought.

The Nottoway County Regional Drought Coordinating Committee shall be comprised, at a minimum, of the Town Managers from Blackstone, Burkeville, and Crewe, a representative from Nottoway County, and an invited guest. The purpose of the committee is to:

- (1) determine when drought conditions for drought triggers described in the Nottoway County Regional Drought Contingency and Response Plan are met; and
- (2) recommend that the Board of Supervisors of Nottoway and the Town Councils of Blackstone, Burkeville, and Crewe declare the appropriate drought stage.

The Nottoway County Regional Drought Coordinating Committee's recommendation to declare a drought stage shall be accompanied by a written report that shall set out the data utilized in making such determination including a narrative summary reporting the determination that the triggers have been met. The Regional Drought Coordinating Committee shall transmit a copy of each report to the Board of Supervisors and the Town Councils and each report shall be available for public inspection.

Drought Watch Stage

Drought Watch stage responses are intended to increase public and private sector awareness that climatic conditions are favorable for an oncoming significant drought event. Public outreach activities shall be identified and targeted to prepare citizens for the onset of a drought event, to inform the population served by community water

systems of the potential for drought conditions, and prepare the public for any potential water conservation activities that may be utilized. In rural areas public outreach to individual well owners during early drought conditions may be critical, especially if such users institute conservation measures that may reduce the likelihood of well failures during significant drought conditions (warning or emergency stages).

Table 120 – 1 Drought Watch Stage Indicators

Locality	Water Source	Drought Watch Indicator
Blackstone, Town of	Ft. Pickett Reservoir Normal Pool = 246 feet msl	Reservoir level drops between 244.18 to 243.54 feet msl; Reservoir contains between 90 – 120 days of usable storage
Burkeville, Town of	Seven Ground Water Wells	Trigger point determined based on observations of well level, nearby stream flow, and discussions with proximate farmers
Crewe, Town of	Crystal Lake Normal Pool = 303 feet msl	Lake level drops between 302.79 to 302.32 feet msl (equivalent to 2 ½ - 8 inches below normal); Reservoir contains between 90 – 120 days of usable storage
Nottoway County	Individual Wells	If any of the other localities go into drought watch stage, county will enter drought watch stage.

When any of the individual locality drought watch stage indicators are triggered, the Nottoway Regional County Drought Coordinating Committee will notify the local governments and recommend a drought watch declaration for the region.

The drought watch stage response will include a public outreach campaign to notify all citizens in the region that a significant drought is likely given the current climatic conditions. The public will be notified via billing inserts, newspaper, televisions, and/or radio announcements.

Additionally, the affected service areas may ask each customer to initiate voluntary water restrictions.

Drought Warning Stage

Drought Warning stage responses are required when the onset of a significant drought is imminent, the water supply in the planning area is threatened by these drought conditions, and restrictions are necessary to preserve an available supply of water.

During the drought warning stage, voluntary water conservation activities are enacted with the goal of reducing water use by 5 – 10%, as such conservation measures may result in delayed progression towards a drought emergency stage.

Table 120 – 1 Drought Warning Stage Indicators

Locality	Water Source	Drought Warning Indicator
Blackstone, Town of	Ft. Pickett Reservoir Normal Pool = 246 feet msl	Reservoir level drops between 243.54 to 242.90 feet msl; Reservoir contains between 60 – 90 days of usable storage
Burkeville, Town of	Seven Ground Water Wells	Trigger point determined based on observations of well level, nearby stream flow, and discussions with proximate farmers
Crewe, Town of	Crystal Lake Normal Pool = 303 feet msl	Lake level drops between 302.32 to 301.84 feet msl (equivalent to 8 - 14 inches below normal); Reservoir contains between 60 – 90 days of usable storage
Nottoway County	Individual Wells	If any of the other localities go into drought warning stage, county will enter or maintain drought watch stage

When any of the individual locality drought warning stage indicators are triggered, the Nottoway County Drought Coordinating Committee will notify the local governments and recommend a drought warning declaration for the respective locality(ies). Proximate localities in the regional planning area whose indicators have not reached the warning level will be recommended to declare a drought watch stage and initiate or maintain public outreach measures. In the event of a drought warning, the public will be notified via billing inserts, newspaper, television, and/or radio announcements.

During a Drought Warning declaration, the following restrictions will apply:

1. The washing of automobiles, trucks, trailers or any other type of mobile equipment except in licensed commercial vehicle wash facilities.
2. The washing of streets, driveways, parking lots, service station aprons, office buildings, exteriors of homes or apartments or other outdoor surfaces except where mandated by state or local ordinance or when performed by a licensed commercial power-washing company.
3. The use of outside, automatic irrigation systems, including in-ground systems, hoses, and oscillating sprinklers, is prohibited for all established lawns, trees, plants, shrubs, and home gardens. This limitation shall not apply to athletic fields and courts which may be watered only between the hours of 8:00 p.m. and 10:00 a.m., and only as necessary to

preserve plant life. The watering of outside established trees, plants, shrubs, and home gardens may be conducted manually, using a non-leaking hose with an automatic shut-off nozzle, and only as necessary to preserve plant life. Newly seeded lawns and plantings installed by a licensed contractor shall have a 45-day establishment period from the date of installation. Sodded lawns installed by a licensed contractor shall have a 20-day establishment period and shall use no more than ½ inch of water over the sodded area daily. The customer shall provide a written estimate of the amount of water to be used before the beginning of work. The customer shall provide to the Nottoway County Drought Coordinating Committee or a dated receipt noting the date of installation. The use of outside automatic irrigation systems may be used during the establishment period, but only between the hours of 8:00 p.m. and 10:00 a.m., and only after written notification is received by the Nottoway County Drought Coordinating Committee. Failure to provide dated receipts or written notification will be deemed a violation. Testing and servicing of outside, automatic irrigation systems may be completed during a Drought Warning, only if the contract to install the system is dated prior to the declaration of the Drought Watch, and a copy is provided to the Nottoway County Drought Coordinating Committee.

4. The operation of any ornamental fountain or other structure with a similar use of water.
5. Unrestricted irrigation of golf courses is prohibited.
6. The filling of swimming or wading pools requiring more than five gallons of water, or the refilling of swimming or wading pools which were drained after the effective date of this ordinance, except that pools may be filled to a level of two feet below normal, or water may be added to bring the level to two feet below normal, or as necessary to protect the structure from hydrostatic damage, as to pools constructed or contracted for on or before the effective date of this ordinance.
7. The service of drinking water in restaurants except upon request.
8. The use of water from fire hydrants for any purposes other than fire suppression unless otherwise specifically approved by the Town Councils.
9. The operation of any water-cooled comfort air-conditioning, which does not have water conserving equipment in operation.

Drought Emergency Stage

Drought Emergency Stage responses are required during the height of a significant drought event, when the water supply in its planning area is threatened by emergency drought conditions and where more water use restrictions than previously enacted are necessary to preserve an available supply of water. During this period, it is likely that some water supplies will not be able to provide the amount of water needed by all users and therefore, non-essential uses of water should be eliminated to reduce unnecessary water demands on the systems. During the drought emergency stage, mandatory water conservation activities are enacted with the goal of reducing water use by 10 – 15%.

Table 120 – 1 Drought Emergency Stage Indicators

Locality	Water Source	Drought Emergency Indicator
Blackstone, Town of	Ft. Pickett Reservoir Normal Pool = 246 feet msl	Reservoir level drops below 242.90 feet msl; Reservoir contains 60 days or less of usable storage
Burkeville, Town of	Seven Ground Water Wells	Trigger point determined based on observations of well level, nearby stream flow, and discussions with proximate farmers
Crewe, Town of	Crystal Lake Normal Pool = 303 feet msl	Lake level drops below 301.84 feet msl (equivalent to 14 inches or more below normal); Reservoir contains between 60 days or less of usable storage
Nottoway County	Individual Wells	If any of the other localities go into drought emergency stage, county will enter drought emergency stage

When the Nottoway County Regional Drought Coordinating Committee determines that a Drought Emergency exists based on the local drought indicators for one or more of the localities in the regional planning area, the committee will be notify the local governments and recommend a drought emergency declaration. For those proximate localities within the planning area that have not reached the emergency level, the committee will recommend that these local governments declare or maintain the drought watch or warning status. In the event of a drought emergency, the public will be notified via billing inserts, newspaper, television, and/or radio announcements.

During a Drought Emergency declaration, the following restrictions will apply:

1. All water leaks on customers’ piping shall be repaired within three (3) business days after notification by the Town Councils.
2. Watering of athletic fields, courts, etc. is prohibited.
3. All businesses, institutions and governmental entities shall develop and implement a written plan that will reduce the business’s or entities current use of water by twenty percent (20%). Usage shall be based on the customer’s average monthly use for the twelve (12) month period prior to declaration of the Drought Emergency Stage. The Nottoway County Drought Coordinating Committee shall establish a monthly usage benchmark for all businesses without a twelve (12) month billing history. This plan shall be submitted to Nottoway County Drought Coordinating Committee within fourteen (14) calendar days of notification of the Drought Emergency Stage.
4. All businesses, institutions and governmental entities shall prominently display, at their entrance and in each restroom and shower, signs indicating the current water emergency.

5. All commercial lodging establishments shall adopt a policy which limits the daily changing of washable linens and towels, and communicate that policy to their employees and guests.
6. The use of showers in health, fitness, athletic and social clubs is prohibited, except showers and faucets fitted with low flow or flow-reducing devices.
7. Emergency water rates designed to drive down water use may be enacted.
8. All exemptions previously granted under Drought Warning Stage restrictions are cancelled. Customers previously granted exemptions may reapply for exemption..

Other Actions

Additional actions may be implemented if the above mandatory measures prove insufficient to preserve sufficient supplies of water for the citizens of Nottoway County and its towns. Such additional conservation measures may also restrict or discontinue the supply of water to any industrial or commercial activity which uses water beyond sanitary and drinking needs of its employees and invitees, and declare a moratorium on new water connections to buildings issued a building permit after the date of declaration of emergency, and restrict water use to basic human needs only.

Section 130 – Statement of Need

Future Demands and Present Production Capacities

Based on information presented in prior sections, Blackstone/Fort Pickett, Burkeville, and Crewe all have sufficient water sources and treatment capacity to meet the projected future demands of their respective water systems within the planning period from 2007 to 2050. This conclusion agrees with the findings of a 1992 study by Randolph et al (Attachment 2-J.3 in the Appendix).

Table 130-1 contains data for each locality showing peak annual average demand and future peak month demand for the planning period. The table reveals that each locality currently has sufficient production capacity to meet future peak month daily demands. The lowest percent reserve capacity (15%) would be encountered by the Blackstone/Fort Pickett system in the event of a future mobilization of the army and subsequent demand of 2.0 MGD by the Fort. It is important to note that these reserves are based on normal demand practices without consideration of the reduction in demand during the implementation of existing emergency drought response plans.

**Table 130 – 1
Future Demands and Present Production Capacities**

	Blackstone/FP	Blackstone/FP with mobilization	Burkeville	Crewe
	(GPD/%)	(GPD/%)	(GPD/%)	(GPD/%)
Annual Avg. Demand (2006-2050)	801,000	2,623,700	38,100	545,900
Reserve Capacity	2,699,000	876,300	41,900	254,200
Current Production Capacity	3,500,000	3,500,000	80,000	800,000
% Reserve Capacity	77	25	52	32
Peak Month Avg. Demand (2006-2050)	971,000	2,971,000	45,400	596,900
Reserve Capacity	2,529,000	529,000	34,600	203,100
% Reserve Capacity	72	15	43	25

The data contained in Table 130 – 1 is shown graphically in Figure 130 – 1 and Figure 130 – 2 on the following page. It is important to note that per Section 100 of this report, the peak demand year from 2006 – 2050 for Blackstone/Fort Pickett and Burkeville is 2006. The peak demand year for Crewe is 2010. See Figures 100-3 through 100-5. Complete data is shown in Appendix Sections 100 & 130.

The water supply plan projects for substantial residential demand growth and continued agricultural demand growth to occur in the rural areas, outside of the service area of existing community water systems of Nottoway County. It is anticipated that increased agricultural demand will continue to be met either through individual groundwater wells or non-potable surface water withdrawals. The increased demand for potable water will likely be met through individual wells into the foreseeable future. The county currently

has a lot size restriction of five acres or greater in the rural parts of the county. This restriction is aimed at preventing sprawl and at increasing the chances of locating a suitable well on the property. Until this lot size restriction is repealed or changed, it is likely that individual wells will remain the method of choice for providing potable water to residential demand in the rural areas.

Figure 130 – 1

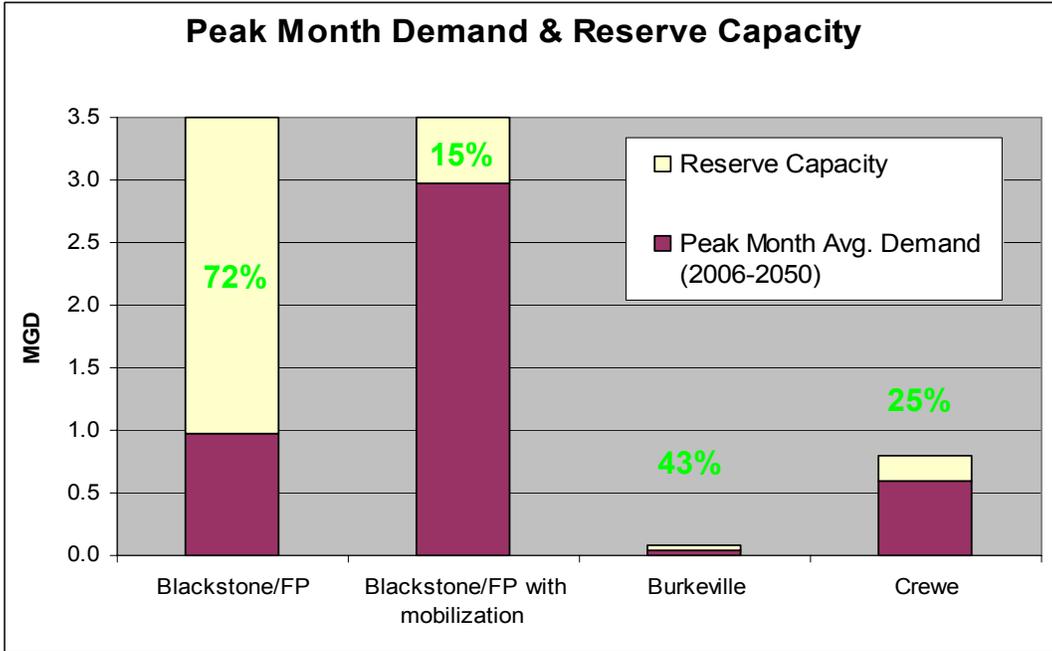
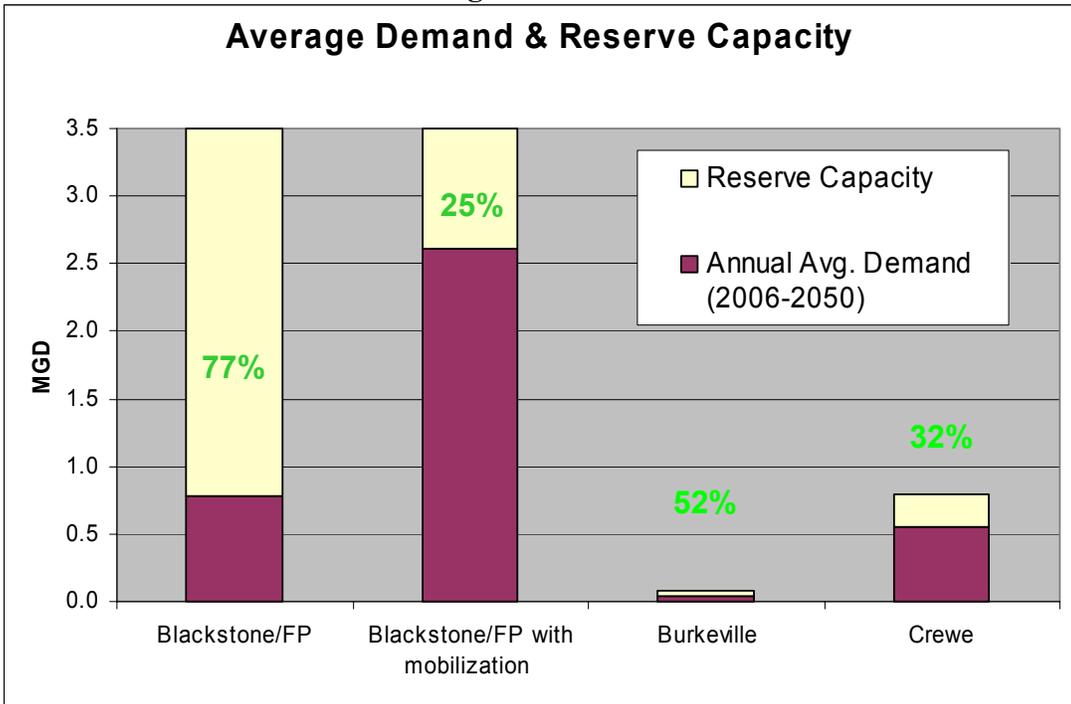


Figure 130 – 2



Considerations for Planning Period Beyond Year 2050

Towns

If during the development of the Statement of Need a deficiency in supply or production capacity is identified, strategies must be developed to address these deficiencies. These strategies typically will include additional water conservation measures, development of additional surface or groundwater sources and/or construction of new water production facilities. The goal of these strategies is to cost effectively eliminate the demand deficiency while minimizing negative impacts to natural resources.

Since the Statement of Need does not identify a deficiency for the planning period through year 2050, development of strategies as described above is not a requirement of this Water Supply Plan. However, based on information compiled from earlier water supply studies and information learned during the development of this plan, provided below is information and strategies that can be expanded upon in subsequent plan updates to address future deficiencies. Since towns are served by public water supply systems and rural areas are generally self supplied, discussion for these two general areas is as follows.

Conservation

Based on current water accountability information presented in this plan there currently does not appear to be a significant amount of unaccounted for water for the town systems. Recent conservation measures are in place at the prison that has been successful in limiting water demand. Other conservation measures such as water reuse for agricultural purposes, golf courses, nurseries etc is becoming increasingly popular in Virginia and may be considered as an alternative to constructing larger source and/or water production facilities.

Water Resources Sharing

Sharing of water resources between towns offers the most cost effective means by which to deal with deficiencies. Opportunities exist to utilize an existing interconnection between Crew and Burkeville. This interconnection is rarely used at present but could be used to transfer water between the two towns in the event of a need.

A Blackstone to Crewe waterline interconnection feasibility study was performed by Dewberry & Davis in 1994. This interconnection was never built but the option still remains to connect the two towns. The interconnection could benefit both towns and allow development along the 460 corridor between Blackstone and Crewe.

Treatment Plant Expansion Options

Both the Crewe system and the Blackstone/Fort Pickett systems could increase their permitted production capacities by upgrading pumps and piping at the treatment plants.

Crewe’s finished water pumps are currently capable of 0.8 MGD with the largest pump out of service. It may be possible to increase this number to the 0.9 MGD safe yield of Crystal Lake by adding an additional pump and piping.

The Blackstone/Fort Pickett system is limited by the raw pump capacity and transmission line to 3.5 MGD. By adding a pump or replacing the pumps and repairing or replacing the raw water transmission line, the plant’s permitted capacity could be raised to match the finished pump capacity of 4.32 MGD, providing an additional 820,000 GPD to the Blackstone/Fort Pickett system.

The Nottoway Reservoir has a safe yield of 9 MGD. The Blackstone/Fort Pickett water treatment plant, raw pumps transmission mains, and finished pumps could all be upgraded and expanded to withdraw, treat, and distribute a greater amount of water.

New Surface Water Impoundment

A fifth and expensive option would be to create a new impoundment on the Little Nottoway River adjacent to Crystal Lake. The new impoundment could be hydraulically connected to Crystal Lake by a gravity fed pipe. This would increase the safe yield of Crystal Lake and provide additional water to Crewe’s system. However, it would also require an upgrade of the pumping and treatment capacity to take advantage of the additional available yield. Please see the figure “Proposed Little Nottoway Reservoir” in the appendix for a schematic of this potential impoundment.

These options and the additional water made available by these options are summarized in Table 130 – 2 below.

**Table 130 – 2
Planning Beyond 2050 – Town Alternatives**

TOWNS	ALTERNATIVES	SUPPLY INCREASE (MGD)
Burkeville	Drill Additional Wells	0.01 – 0.02 per well
Burkeville	Buy Water from Crewe	0.1 – 0.2
Blackstone / Fort Pickett	Upgrade Raw Pumps	0.82
Blackstone / Fort Pickett	Expand WTP, Pumps, & Piping to Use Entire Safe Yield of Reservoir	5.50
Crewe	Upgrade Finished Pumps	0.10
Crewe	Interconnect to Blackstone	0.3 – 0.5
Crewe	Impound Little Nottoway & Expand Crewe WTP	2.90

Rural Areas

The demand projections show an increasing need for water in the rural areas of the county both from increasing residential growth and from increasing agricultural growth. For the near future, it is expected that the new demand will continue to be met through existing wells or new wells will be constructed. However, if current and forecasted conditions in the county change in such a way that water is needed from other sources, there are other options available.

Community wells or a system of community wells could provide water to residential, commercial, institutional, or agricultural developments in the county. Louisa County to the north is currently building similar community well systems to provide moderate amounts of water for housing developments in rural parts of the county. These housing developments are presumably for people commuting to Richmond for work. It is predicted that Nottoway County will have similar housing growth of “bedroom communities” at some time in the future. However, due to the history of limited safe yields of wells in Burkeville and the type of geology that exists throughout Nottoway County it is anticipated that wells will not likely be a viable alternative for larger water users like heavy commercial establishments or industry.

To meet greater demands than can be met with community well systems or when demands are reasonably close to the 460 corridor waterlines could be extended from the corridor to meet the growing demand in the county.

Lastly and only at great expense and impact to existing water resources, additional impoundments could be constructed in areas evaluated in an earlier Dewberry study. Areas of possible impoundments that are identified in this earlier study are summarized in the figure “Major Tributaries of Nottoway County” found in the appendix. Due the time and high cost of implementing such an option as this, only locations with drainage areas equal to or greater than that of Crystal Lake (28.5 square miles) should be considered for location of a new impoundment and treatment facility.

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