



COMMONWEALTH of VIRGINIA

Department of Health
OFFICE OF DRINKING WATER
Culpeper Field Office

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Culpeper, VA 22701
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Karen Shelton, MD, FACOG
State Health Commissioner

VIRGINIA DEPARTMENT OF HEALTH SOURCE WATER ASSESSMENT REPORT

SUBJECT: Orange County
Waterworks: Wilderness WTP
PWSID No.: 6137999

September 6, 2024

Timothy L. Clemons
Rapidan Service Authority
11235 Spotswood Trail
P. O. Box 148
Ruckersville, Virginia 22968

Dear Waterworks Owner:

The Virginia Department of Health, Office of Drinking Water has completed an updated Source Water Assessment for your waterworks. Attached you will find a copy of the assessment. Please note that the susceptibility class assigned is relative and not intended to be a definitive determination.

The Virginia Department of Health is providing this information to you as an informational resource, so that you are aware of any potential sources of contamination that may have the potential to impact your source water. No action is required of you in response to this source water assessment.

Because your waterworks is classified as a community waterworks, information regarding the availability of the Source Water Assessment must be included in the Consumer Confidence Report issued by the waterworks with a brief summary of the susceptibility to contamination of each drinking water source.

Sincerely,

Jeremy D. Hull, P.E.
Engineering Field Director

MNS

Enclosure: Source Water Assessment Report

Date: September 6, 2024
 Waterworks Name: Wilderness WTP
 Waterworks Owner: Rapidan Service Authority

For each source serving the subject waterworks this report includes, maps showing the source water assessment area (divided into Zones 1 and 2 with Zone 1 having greater influence on the source), an inventory of potential sources of contamination, and a rudimentary determination of the source’s relative susceptibility to contamination. Information in this report is provided to aid in efforts toward Source Water Protection.

The Source Water Assessment of the subject waterworks has yielded the following results:

Source Name	Relative Susceptibility to Contamination	Explanation
Rapidan River Intake	High	Surface water source exposed to an inconsistent array of contaminants at varying concentrations due to changing hydrologic, hydraulic and atmospheric conditions with potential sources of contamination of concern in the Zone 1 assessment area

The susceptibility determination(s) for this waterworks’ source(s) were determined using the information detailed on the following table:

Source Name	Source Water Type	Source Sensitivity Determination	Number of Potential Sources of Contamination in Zone 1	Number of Potential Sources of Contamination in Zone 2
Rapidan River Intake	Surface Water	Not Applicable	2	16

The number of Potential Sources of Contamination (PSC) in Zones 1 and 2 are determined from information contained in the VDH-ODW GIS system. This information was predominantly obtained from the relevant regulating agencies and may not have been recently field verified. If your field inspections do not agree with the supplied Potential Sources of Contamination maps, please contact Aaron Moses, PE, at (804)864-7492 to provide updated information and to request an updated Source Water Assessment Report.

The criteria utilized for delineation of the Source Water Assessment Area is explained in Attachment A, Source Water Assessment Area Delineation. The criteria utilized for placement into a particular susceptibility class is explained on Attachment B, Source Water Susceptibility Determination. The susceptibility class is not intended to be a definitive determination. A list of definitions of key terms used in this report is included on Attachment C.

The following attachments are part of this report:

- Attachment A – Source Water Assessment Area Delineation
 - Zone 1 Potential Sources of Contamination Map (one for each source)
 - Zone 2 Potential Sources of Contamination Map (one for each source)
 - Potential Sources of Contamination Summary (one for each source)

- Potential Sources of Contamination Inventory (one for each source)
- Zone 2 Land Use Map (one for each source)
- Typical Contaminants Compendium
- Data Bibliography
- Attachment B – Source Water Susceptibility Determination
- Attachment C – Definitions

Note that GIS shape files and digital copies of the attached maps are available from the Culpeper Field Office.

Attachment A

Source Water Assessment Area Delineation

VDH uses three categories of drinking water sources to delineate an assessment area: Groundwater, Groundwater Under the Influence of Surface Water (GUDI), and Surface Water. All assessment areas are segregated into Zone 1 and Zone 2 assessment areas.

The Zone 1 assessment area is a priority zone for managing potential sources of contamination where contamination is believed to pose the greatest risk. The Zone 2 assessment area is a secondary zone for managing potential sources of contamination where the time of travel for contaminants to reach the source is expected to be greater than in Zone 1.

Source Water Assessment Areas are determined as follows:

Ground Water Assessment Area

- Zone 1 = 1000-foot fixed radius surrounding source
- Zone 2 = 1-mile fixed radius surrounding source and outside of Zone 1

Surface Water Assessment Area

- Zone 1 = Watershed area within a 5-mile fixed radius of the raw water intake
- Zone 2 = Total watershed area outside of Zone 1

Ground water Under the Direct Influence of Surface Water

With no identified flowing surface source

- Zone 1 = 1000-foot fixed radius surrounding source
- Zone 2 = 1-mile fixed radius surrounding the source and outside of Zone 1

With identified flowing surface source

- Zone 1 = 1000-foot fixed radius surrounding source
- Zone 2 = Total watershed area upgradient of the source and outside of Zone 1

Please see maps in this attachment for information specific to you source(s).

Attachment B
Source Water Susceptibility Determination

The following figure details the process for determining a sources susceptibility to contamination.

<u>Source Water Type</u>	<u>Sensitive Source¹</u>	<u>PSC Present in Assessment Area</u>		<u>Susceptibility</u>
		For Ground Water sources does a PSC exist in the Zone 1 assessment area or does a PSC exist in Zone 2?	For Surface Water sources does a PSC exist in the Zone 1 assessment area?	
Groundwater →	NO →	NO →		Very Low
		YES →		Low
	YES →	NO →		Moderate
		YES →		High
Surface Water →	YES →		NO →	Moderate
			YES →	High

¹ All surface water sources are considered sensitive sources

² Only a Class II B (or better) well that is constructed in accordance with the Virginia *Waterworks Regulations* and has a completed Uniform Water Well Completion Report (GW-2) that shows evidence in the driller's log that the well withdraws water from a confined aquifer is deemed to be non-sensitive.

Attachment C

Definitions

Aquifer:	A water bearing geological unit that will yield water to wells or springs.
Aquitard:	An underground confining bed of earthen material that retards, but does not prevent, the flow of water between adjacent aquifers.
Confined or Non-sensitive Aquifer:	An aquifer bounded above and below by impermeable beds or by beds of distinctly lower permeability than that of the aquifer itself; an aquifer containing confined groundwater
Delineation:	The process of defining or mapping a boundary that approximates the areas that contribute water to a particular water source used as a public water supply. For surface waters, the land area usually consists of the watershed for a reservoir or stream. For ground water sources, the boundary typically approximates the surface area that contributes water to the aquifer.
Ground Water:	All water obtained from sources not classified as surface water (or surface water sources), or groundwater under the direct influence of surface water.
Ground Water Under the Direct Influence of Surface Water (GUDI):	Any water beneath the surface of the ground with (i) significant occurrence of insects or other macroorganisms, algae, or large-diameter pathogens such as <i>Giardia lamblia</i> , or <i>Cryptosporidium</i> . It also means (ii) significant and relatively rapid shifts in water characteristics such as turbidity, temperature, conductivity, or pH that closely correlate to climatological or surface water conditions.
Identified Flowing Surface Source:	A surface water stream that enters the ground water by flowing into a sinkhole, Leaking through the bottom of a stream bed, or by other means and which has been verified through tracer or other studies to reemerge from the ground as a spring or through a well; or which flows beneath broken rubble (which is strewn down the side of a mountain) with openings to the atmosphere and which is collected at a 'springbox'.
Potential Sources of Contamination:	Facilities, sites, and activities that have the potential to affect the underlying ground water aquifers or nearby surface waters supplying a waterworks.
Raw Water Intake:	The suction intake that draws water from a surface water source for use as a public water supply.
Sensitivity:	The relative ease, with which a contaminant applied near the land surface, or to the subsurface, can migrate to the delineated source water area.
Source Water Assessment:	An assessment to provide information on the potential contaminant threats to the water source(s) of a waterworks and the susceptibility of those sources to contamination.
Surface Water:	All water open to the atmosphere and subject to surface runoff.
Susceptibility to Contamination:	The determined classification (or rating) of the susceptibility of a source to contamination based on its sensitivity and the presence of land use activities of concern, potential sources of contamination, or potential conduits to ground water (for ground water sources only) within the assessment area. This classification is not intended to be definitive.
Watershed:	A topographical area that is within a line drawn connecting the highest points uphill of a drinking water intake or otherwise known area of recharge from which overland flow drains to a water supply intake.