



§ 401 WATER QUALITY CERTIFICATION

Aquatic Resource Alteration Permit NRS20.177

Pursuant to the Tennessee Water Quality Control Act of 1977 (T.C.A. §§ 69-3-101 et seq.) and supporting regulations, a permit is required to alter the properties of waters of the state. Also, pursuant to section 401 of the Clean Water Act (33 U.S.C. § 1341), an applicant for a federal license or permit which may result in a discharge into the waters of the U.S., shall provide the federal licensing or permitting agency a certification from the State in which the discharge will originate. Accordingly, the Division of Water Resources requires reasonable assurance that the activity will not violate provisions of the Tennessee Water Quality Control Act of 1977 (T.C.A. §§ 69-3-101 et seq.) or provisions of sections 301, 302, 303, 306 or 307 of the Clean Water Act.

Subject to conformance with accepted plans, specifications, and other information submitted in support of the application, the state of Tennessee hereby certifies pursuant to 33 U.S.C. § 1341, and permits pursuant to T.C.A. § 69-3-108(b), the activity described below:

PERMITTEE: Marshall County Board of Public Utilities
624 West Commerce Street
Lewisburg, Tennessee 37091

AUTHORIZED WORK: The authorized work includes construction of a mid-river, passive screen water intake in the Duck River and to withdraw drinking water at the instantaneous rate of up to 2,100 gallons per minute. ~~A minimum flow of 175 cubic feet per second at the USGS gage 03599240 Duck River Above Milltown, must be maintained to preserve critical habitat.~~

LOCATION: The activity is located in the Duck River in Marshall County upstream of the dam at Lillard's Mill. Precise location data is confidential under Tennessee law.

EFFECTIVE DATE: ~~August 6, 2021~~

EXPIRATION DATE: ~~August 5, 2026~~

for Jennifer Dodd Director
Division of Water Resources

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PART I

Authorized Alterations

The authorized work includes construction of a mid-river, passive screen water intake in the Duck River and the withdrawal of drinking water at the instantaneous rate of up to 2,100 gallons per minute. ~~A minimum flow of 175 cubic feet per second at the USGS gage 03599240 Duck River Above Milltown, must be maintained to preserve critical habitat.~~ The activity is located in the Duck River in Marshall County upstream of the dam at Lillard’s Mill. Precise location data is confidential under Tennessee law.

The river intake and associated water treatment facilities and piping will provide public water supply to existing and future customers in northern Marshall County. The design capacities for the Authorized facilities are as follows:

1. Six million gallons per-day (mgd) submerged, mid-river, passive screen intake in the Duck River.
2. Three mgd raw water pumping station based on largest pump out-of-service (expandable to 6 mgd with largest pump out-of-service).
3. Twenty-inch raw water pipeline from raw water intake/pumping station to water treatment plant (roughly 2,700 feet).
4. Three mgd water treatment plant (expandable to 6 mgd).
5. 1,500,000-gallon capacity clearwell/ground level treated water storage.
6. Three mgd treated water pumping station with largest pump out-of-service (expandable to 6 mgd with largest pump out-of-service).

7. Twenty-inch treated water pipeline (roughly 300 feet) connecting the treated water pumping station to the existing (8-inch) and future treated water pipelines.

The raw water pumping station and water treatment plant are sized to withdraw and treat water from the Duck River at the instantaneous rate of up to 2,100 gpm. MCBPU is projected to need approximately 1 million gallons per day (mgd) in 2024 (anticipated date of water treatment plant startup) and will typically operate for a single 8-hour shift each day. A treated water storage tank (ground level) will allow MCBPU to continue pumping into the distribution system when the water treatment plant is off-line. Operation of the raw water pumping station and water treatment plant would increase from an average of 8 hours per day in 2024 up to 14 hours per day to achieve an average day withdrawal of 1.8 mgd (2045 projected average water withdrawal need), while maintaining the 2,100 gpm maximum instantaneous withdrawal rate. The projected maximum day withdrawal in 2045 is 3 mgd.

The intake screen will be located between the center of the river and the north embankment (approximately 35 feet from the north embankment). To maintain the integrity of the northern bank of the river and minimize excavation in and adjacent to the river, a microtunnel will be drilled from the bottom of the vertical shaft at the raw water pumping station building (wetwell) to the screen location in the river.

A concrete pad for the pipe supporting the intake screen will be constructed on top of the bedrock in the river. Soil and rock overlying the bedrock is authorized to be removed to install the concrete pad. The permittee estimates the material on top of the bedrock that will be dredged to be about one foot deep and estimated to be less than 50 CY.

The Duck River at the location of the authorized MCBPU water supply intake screen is approximately 150 feet wide and has a maximum depth of 18 feet. The intake screen would be about 12 inches above the bottom of the river. The intake screen will be approximately 100 feet from the wetwell in the intake building and approximately 35 feet from the north embankment of the Duck River. No clearing is authorized on the north embankment along the top of the escarpment above the river.

Special Conditions

1. The withdrawal rate shall not exceed 2,100 gallons per minute.
2. Raw water withdrawal volumes shall be monitored and recorded daily.
3. Withdrawal data shall be reported to the division on the corresponding comprehensive monthly operations reports for the Public Water Supply ID that this withdrawal supports.
4. Withdrawal shall cease when flow in the Duck River as gaged at the Milltown USGS Gage (03599240) reaches a low of 175 cfs.
5. The permittee shall comply with the provisions of the Duck River Regional Drought Management Plan developed by the Duck River Agency (DRA), April 20, 2013. The provisions include, but are not limited to the following components:
 - a. drought triggers;
 - b. water use restrictions for drought stages, and
 - c. levels of enforcement for drought management stages.

6. The permittee shall develop descriptions of restricted and prohibited activities and enforcement mechanisms for drought management specific to the MCBPU.
 - a. This report shall be submitted to the Division for review and approval within 180 days of the date of this permit.
 - b. The report shall be used to update the DRA's Duck River Regional Drought Management Plan.
 - c. The report shall be used for compliance with item # 5. above.
7. The permittee shall develop reasonable goals for leakage reduction to consist of lowering leakage approximately one percent per year with the goal of reduction to 15 percent volumetric treated water loss.
 - a. A report that details the process and timelines by which the MCBPU would achieve this reduction shall be submitted to the Division for review and approval.
 - b. This report is due within 180 days of the date of this permit.
8. The permittee shall submit a post construction inspection report that reflect the "as-constructed" condition of all constructed features authorized by this permit:
 - a. The post construction inspection report shall include such information as needed to demonstrate conformance with the approved plans, specifications, and special conditions of this permit.
 - b. The post construction inspection report shall be submitted within the valid duration of the permit.
 - c. The post construction inspection report shall include photographic documentation.
 - d. The report shall include adequate identifying information such as permit number and permittee name and shall be submitted via email to water.permits@tn.gov or to the following mailing address:

Division of Water Resources
Natural Resources Unit
William R. Snodgrass - Tennessee Tower
312 Rosa L. Parks Avenue, 11th Floor
Nashville, Tennessee 37243-1102
9. Where ground disturbance results from activities directly associated with this permitted activity, temporary or permanent soil stabilization shall be accomplished within 15 days after final grading or other earth work.
 - a. Permanent stabilization with perennial vegetation shall replace any temporary measures as soon as practicable.
 - b. Vegetative species must be on approved native species planting list, (Landscaping with Natives; http://www.tneppc.org/pages/landscaping#native_plants).

- c. Temporary cover of annual winter wheat or rye can be sown to establish and maintain cover until native grasses can establish themselves.

General Conditions

1. It is the responsibility of the permittee to convey all terms and conditions of this permit to all contractors. A copy of this permit, approved plans and any other documentation pertinent to the activities authorized by this permit shall be maintained on site at all times during periods of construction activity.
2. The permittee is responsible for obtaining the federal § 404 permit from the U. S. Army Corps of Engineers and § 26a permit from the Tennessee Valley Authority where necessary. these permits.
3. The permittee is responsible for obtaining coverage under the National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges from Construction Activities where clearing, grading or excavation results in an area of disturbance of one or more acres, or activities that result in the disturbance of less than one acre if it is part of a larger common plan of development or sale.
4. All work shall be carried out in such a manner as will prevent violations of water quality criteria as stated in Rule 0400-40-03-.03 of the Rules of the Tennessee Department of Environment and Conservation. This includes, but is not limited to, the prevention of any discharge that causes a condition in which visible solids, bottom deposits, or turbidity impairs the usefulness of waters of the state for any of the uses designated by Rule 0400-40-04. These uses include fish and aquatic life (including trout streams and naturally reproducing trout streams), livestock watering and wildlife, recreation, irrigation, industrial water supply, domestic water supply, and navigation.
5. Impacts to waters of the state other than those specifically addressed in the plans and this permit are not authorized by this permit. All streams, springs, and wetlands shall be fully protected prior to, during, and after construction until the area is stabilized. Any questions, problems or concerns that arise regarding any stream, spring, or wetland either before or during construction, shall be addressed to the Division of Water Resource's Columbia Environmental Field Office - 1421 Hampshire Pike, Columbia, TN 38401 931-380-3371 or the permit coordinator in the Division's Natural Resources Unit – 615-532-0710.
6. Adverse impact to formally listed state or federal threatened or endangered species or their critical habitat is prohibited.
7. This permit does not authorize adverse impacts to cultural, historical or archeological features or sites.
8. Clearing, grubbing, and other disturbance to riparian vegetation shall be kept at the minimum necessary for slope construction and equipment operations. Unnecessary native riparian vegetation removal, including tree removal, is prohibited. Native riparian vegetation must be reestablished in all areas of disturbance outside of any permanent authorized structures after work is completed. Coverage under this permit does not serve to waive any local riparian buffer protection requirement, and permittees are responsible for obtaining any necessary local approval(s).

9. To minimize wildlife entanglement and plastic debris pollution, temporary erosion and sediment control products that either do not contain netting, or that contain netting manufactured from 100 percent biodegradable non-plastic materials such as jute, sisal, or coir fiber, shall be specified. Netting used in these products should have a loose-weave wildlife-safe design with movable joints between the horizontal and vertical twines, allowing the twines to move independently. Degradable, photodegradable, UVdegradable, oxo-degradable, or oxo-biodegradable plastic netting (including polypropylene, nylon, polyethylene, and polyester) are not acceptable alternatives.
10. Appropriate steps shall be taken to ensure that petroleum products or other chemical pollutants are prevented from entering waters of the state. Any equipment proposed to be used in-stream shall be free of noticeable leaks of fluids; e.g., hydraulic, transmission, crankcase, and engine coolant fluids and oils. All spills must be reported to the appropriate emergency management agency, and measures shall be taken immediately to prevent the pollution of waters of the state, including groundwater, should a spill occur.
11. The authorized activity may not result in a disruption or barrier to the movement of fish or other aquatic life. The completed activities may not disrupt or impound stream flow.
12. The activity may not result in the discharge of waste or other substances that may be harmful to humans or wildlife.
13. This permit does not authorize access to public or private property. Arrangements concerning the use of public or private property shall be made with the landowner. The permittee is responsible for obtaining any additional permitting or maintenance agreements with other government or public agencies or lands.
14. All activities must be carried out in such a manner as will prevent violations of water quality criteria as stated in TDEC Rule Chapter 0400-40-03, or impairment of the uses of streams and wetlands as designated by Rule Chapter 0400-40-04.

PART II

Mitigation Requirements and Monitoring Procedures

Required Mitigation Activities

There are no mitigation requirements.

Monitoring Requirements and Procedures

Withdrawal data shall be reported to the division on the corresponding comprehensive monthly operations reports for the Public Water Supply ID that this withdrawal supports.

Submission of Monitoring Results

Withdrawal data shall be reported to the Division on the corresponding comprehensive monthly operations reports for the Public Water Supply ID that this withdrawal supports.

The post construction inspection report shall be submitted to the Division of Water Resources, Natural Resources Unit, William R. Snodgrass Tennessee Tower 11th Floor, 312 Rosa L. Parks

Avenue, Nashville, Tennessee 37243, via email at water.permits@tn.gov Please be sure to indicate the ARAP permit number on your submittal.

Records Retention

All records and information resulting from the monitoring activities required by this permit including all records of analyses performed and calibration and maintenance of instrumentation shall be retained for a minimum of five years, or longer, if requested by the Division of Water Resources.

Falsifying Results and/or Reports

Knowingly making any false statement on any report required by this permit or falsifying any result may result in the imposition of criminal penalties as provided for in Section 309 of the Federal Water Pollution Control Act, as amended, and in Section 69-3-115 of the Tennessee Water Quality Control Act.

PART III

Duty to Reapply

The permittee is not authorized to discharge or conduct an activity that alters the properties of waters of the state, including withdrawal of water, after the expiration date of this permit. In order to receive authorization to discharge or to conduct an activity that alters the properties of waters of the state after the expiration date, the permittee shall submit a timely and complete application including such information and forms as are required to the director of the Division of Water Resources. Such applications must be properly signed and certified.

Property Rights

The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state, or local laws or regulations.

Water Rights

The waters of Tennessee are the property of the state and are held in public trust for the use of the people of the state. This permit does not grant or convey any prescriptive rights, appropriation, or allocation of water, nor does it authorize any injury to the riparian rights of others.

Other Permits

This permit does not preclude requirements of other federal, state or local laws. This permit also serves as a state of Tennessee aquatic resource alteration permit (ARAP) pursuant to the Tennessee Water Quality Control Act of 1977 (T.C.A. § 69-3-101 et seq.).

Other Information

If the permittee becomes aware that it failed to submit any relevant facts in a permit application or submitted incorrect information in a permit application or in any report to the director, then it shall promptly submit such facts or information.

Changes Affecting the Permit Transfer/Change of Ownership

This permit may be transferred to another party, provided there are no activity or project modifications, no pending enforcement actions, or any other changes which might affect the permit conditions contained in the permit, by the permittee if:

1. The permittee notifies the Director of the proposed transfer at least 30 days in advance of the proposed transfer date;
2. The notice includes a written agreement between the existing and new permittees containing a specified date for transfer of permit responsibility, coverage, and contractual liability between them; and
3. The Director does not notify the current permittee and the new permittee, within 30 days, of his or her intent to modify, revoke, reissue, or terminate the permit, or require that a new application be filed rather than agreeing to the transfer of the permit.
4. The permittee must provide the following information to the division in their formal notice of intent to transfer ownership:
 - a. the permit number of the subject permit;
 - b. the effective date of the proposed transfer;
 - c. the name and address of the transferor;
 - d. the name and address of the transferee;
 - e. the names of the responsible parties for both the transferor and transferee;
 - f. a statement that the transferee assumes responsibility for the subject permit;
 - g. a statement that the transferor relinquishes responsibility for the subject permit;
 - h. the signatures of the responsible parties for both the transferor and transferee, and;
 - i. a statement regarding any proposed modifications to the permitted activities or project, its operations, or any other changes which might affect the permit conditions contained in the permit.

Change of Mailing Address

The permittee shall promptly provide to the director written notice of any change of mailing address. In the absence of such notice the original address of the permittee will be assumed to be correct.

Noncompliance

Effect of Noncompliance

All discharges shall be consistent with the terms and conditions of this permit. Any permit noncompliance constitutes a violation of applicable state and federal laws and is grounds for enforcement action, permit termination, permit modification, or denial of permit reissuance.

Reporting of Noncompliance

24-Hour Reporting

1. In the case of any noncompliance which could cause a threat to public drinking supplies, or any other discharge which could constitute a threat to human health or the environment, the required notice of non-compliance shall be provided to the Division of Water Resources in the appropriate Environmental Field Office within 24-hours from the time the permittee becomes aware of the circumstances. (The Environmental Field Office should be contacted for names and phone numbers of environmental response personnel).
2. A written submission must be provided within five (5) days of the time the permittee becomes aware of the circumstances unless this requirement is waived by the director on a case-by-case basis. The permittee shall provide the director with the following information:
 - a. A description of the discharge and cause of noncompliance;
 - b. The period of noncompliance, including exact dates and times or, if not corrected, the anticipated time the noncompliance is expected to continue; and
 - c. The steps being taken to reduce, eliminate, and prevent recurrence of the non-complying discharge.

Scheduled Reporting

For instances of noncompliance which are not reported under subparagraph a. above, the permittee shall report the noncompliance by contacting the permit coordinator, and provide all information concerning the steps taken or planned to reduce, eliminate, and prevent recurrence of the violation and the anticipated time the violation is expected to continue.

Adverse Impact

The permittee shall take all reasonable steps to minimize any adverse impact to the waters of Tennessee resulting from noncompliance with this permit, including but not limited to, accelerated or additional monitoring as necessary to determine the nature and impact of the noncompliance. It shall not be a defense for the permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

Liabilities

Civil and Criminal Liability

Nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance. Notwithstanding this permit, the permittee shall remain liable for any damages sustained by the state of Tennessee, including but not limited to fish kills and losses of aquatic life and/or wildlife, as a result of the discharge of pollutants to any surface or subsurface waters. Additionally, notwithstanding this Permit, it shall be the responsibility of the permittee to

conduct its discharge activities in a manner such that public or private nuisances or health hazards will not be created.

Liability under State Law

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable state law or the Federal Water Pollution Control Act, as amended.

Reopener Clause

This permit may be modified, suspended, or revoked for cause, including:

1. Violation of any of the terms or conditions of this permit or of T.C.A § 69-3-101 et. seq.;
2. Obtaining the permit by misrepresentation or failing to disclose fully all relevant facts;
3. A change in any condition that requires either a temporary or permanent change in the conditions of this permit.

Appeal

An appeal of this action may be made as provided in T.C.A. § 69-3-105(i) and Rule 0400-40-07-.04(9) by submitting a petition for appeal:

1. The petition must be filed within 30 days after public notice of the issuance of the permit.
2. The petition must specify the basis for the appeal and state a claim for relief based on an alleged violation of the Tennessee Water Quality Control Act or the rules promulgated thereunder. Third parties shall specify facts sufficient to establish that they have satisfied the statutory and regulatory preconditions and otherwise have standing to appeal.
3. The petition should be addressed to the technical secretary of the Tennessee Board of Water Quality, Oil and Gas at the following address: Jennifer Dodd, Director, Division of Water Resources, William R. Snodgrass - Tennessee Tower, 312 Rosa L. Parks Avenue, Nashville, Tennessee 37243-1102, or you may submit such petition electronically to TDEC.Appeals@tn.gov. Any hearing would be in accordance with T.C.A. §§ 69-3-110 and 4-5-301 et seq.

Design Drawings

RAW WATER INTAKE SCREENS

- 1) The following summarizes the preliminary intake screen sizing for planning purposes. Planning considerations and assumptions include the following:
 1. Standard Stainless Steel construction
 2. 0.125" (1/8" or 3.175 mm) intake slot opening
 3. 65% open area of screen (Figure 8-C-1)
 4. Maximum velocity through slots less than 0.5 fps to minimize entrainment and impingement of aquatic life
 5. Passive screen (non-moving parts) to minimize impacts to aquatic life
 6. Use 27-inch diameter Tee-Screen for planning purposes
 7. 27-inch passive Tee-Screen with flow capacity of approximately 4,200 gpm (6 mgd) as shown in Figure 8-C-2)
 8. 48-inch outlet pipe from intake screen in river to the intake structure wetwell
 9. Outlet pipe velocity will be 0.4 feet/second at 2,100 gpm (3 mgd) and 0.8 feet/second at 4,200 gpm (6 mgd)
 10. Equip screen with an air burst system (2-inch line) to remove debris from screen surface (Figure 8-C-3)
11. The proposed MCBPU intake is located in approximately 18 feet of water and the top of the intake would be approximately 14.75 feet below the water surface
- 2)
- 3) Due to the difficult construction and permit requirements associated with work in the Duck River, MCBPU is proposing to install a single screen (27 inches) with a preliminary capacity of 4,200 gpm (6 mgd) along with a spare port (blind flange) for bolting on a second intake at some point in the future (if needed). The proposed outlet pipe from the screen to the wetwell will be 48 inches in diameter.

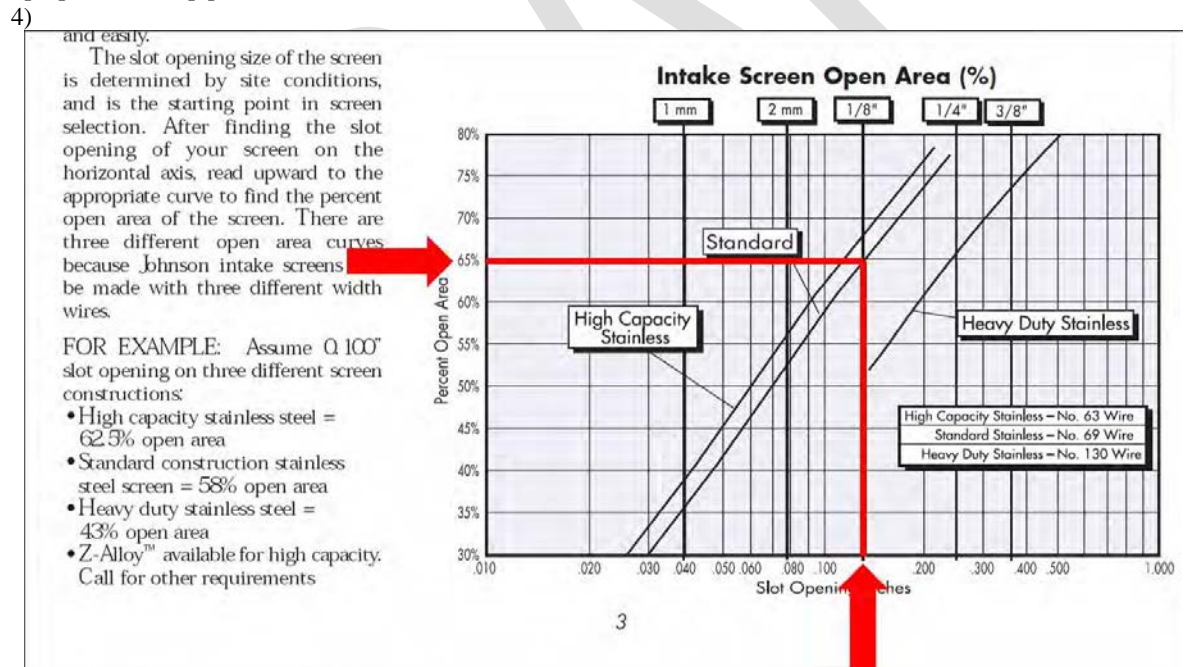


Figure 8-C-1: Intake screen open area (%)

1)

8-C-1

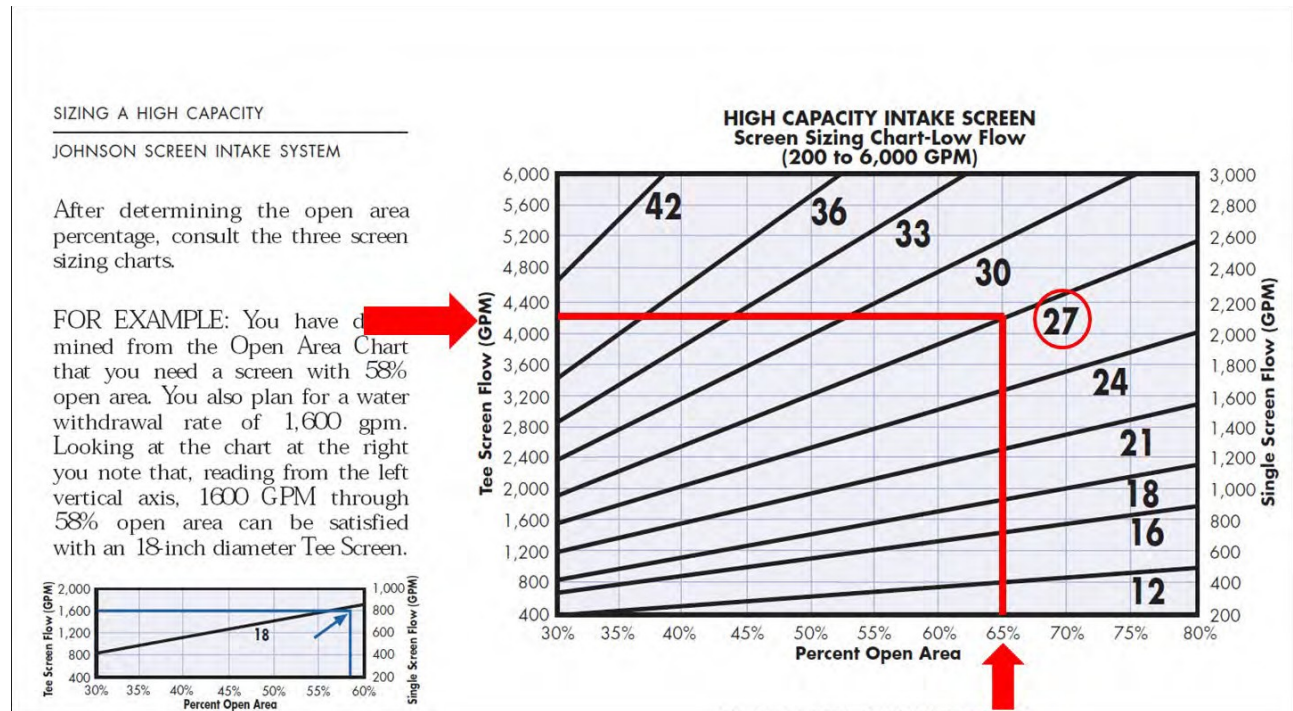


Figure 8-C-2: Diameter of screen based on percent open area and flow (gpm)

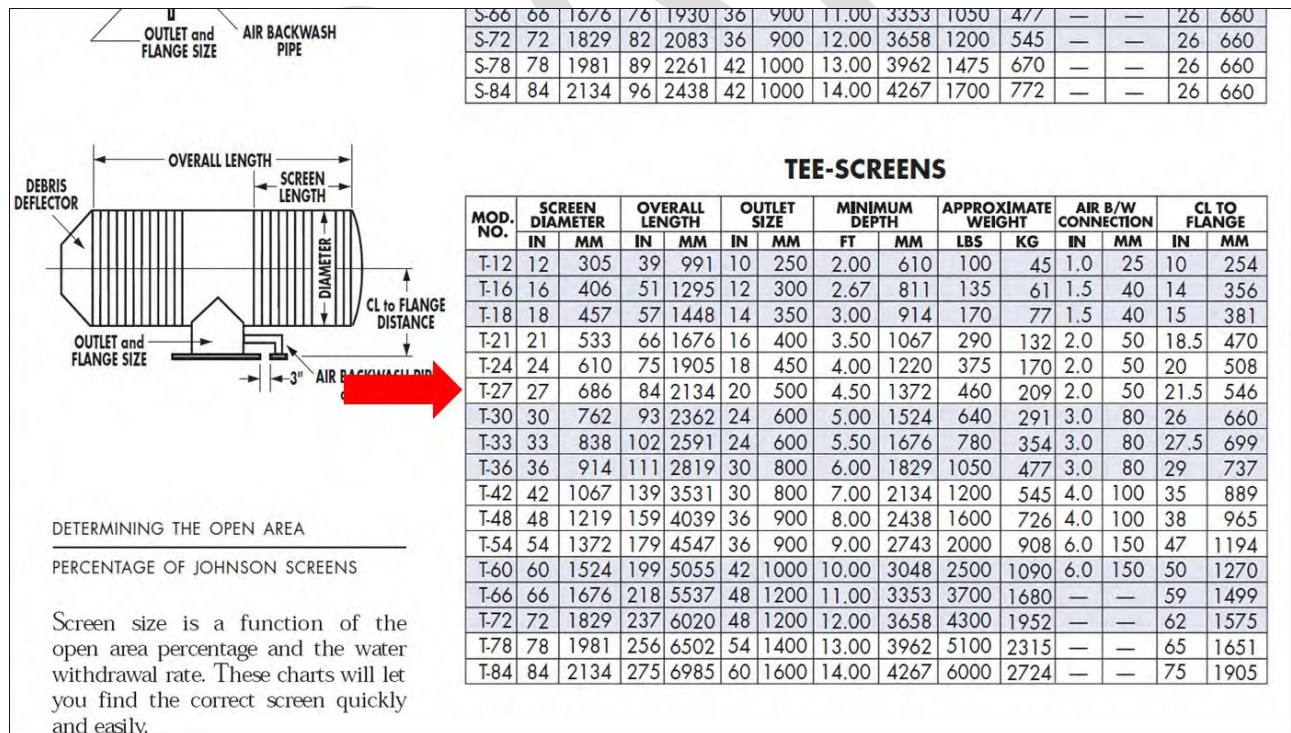
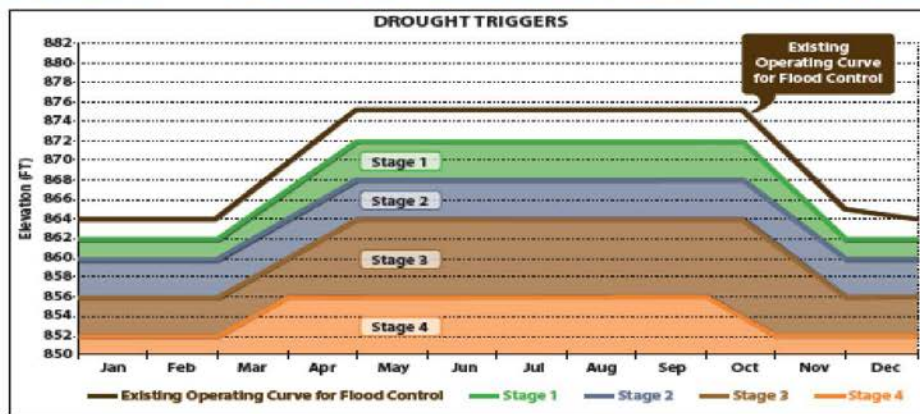


Figure 8-C-3: Intake screen characteristics

DROUGHT TRIGGERS

for Normandy Reservoir and the Duck River



STAGE 1	STAGE 2	STAGE 3	STAGE 4
Drought Monitoring	Drought Alert	Drought Warning	Drought Emergency
<ul style="list-style-type: none"> Initiate Drought Monitoring 	<ul style="list-style-type: none"> Alert Drought Committee Initiate Public Awareness 	<ul style="list-style-type: none"> 10 cfs / week reduction of Shelbyville target (down to 120 cfs) 10% reduction of public water use 	<ul style="list-style-type: none"> 10 cfs / week reduction of Shelbyville target (down to 80 cfs) 20% reduction of public water use

- Impose 28 day waiting period between stages
- Move out of stage if above trigger for at least 7 days



Figure 5. Drought triggers

APPENDIX

Permit Rationale

NRS20.177

Marshall County Board of Public Utilities
624 West Commerce Street
Lewisburg, Tennessee 37091

~~August 6, 2021~~

Permit Writer: Robert Baker

Summary

Permittee:	Marshall County Board of Public Utilities 624 West Commerce Street Lewisburg, Tennessee 37091
Contact:	Jessie T. Whaley Superintendent
Activity Location:	The activity is located in the Duck River in Marshall County. Precise location data is confidential under Tennessee law.
Authorized Activity:	The authorized work includes construction of a mid-river, passive screen water intake in the Duck River and to withdraw drinking water at the instantaneous rate of 2,100 gallons per minute.
Waterbody Name / ID:	Duck River /

Permit Status

Permit Type:	ARAP
Classification:	Major
Effective Date:	August 6, 2021
Expiration Date:	August 5, 2026

Status of Affected Waters

Duck River. Ecoregion Inner Nashville Basin 71I, Marshall County

Designated Use	Use Support	Causes	Sources
livestock watering & wildlife	fully supporting		
irrigation	fully supporting		

recreation	fully supporting		
fish and aquatic life	fully supporting		
industrial water supply	fully supporting		
domestic water supply	fully supporting		

Assessment Date: April 3, 2017

The affected waters have been determined to have available habitat parameters and water withdrawal parameters.

The affected waters are designated as Exceptional Tennessee Waters. The basis for inclusion is U. S. Fish and Wildlife Service designated Critical Habitat for Cumberlandian Combshell and Purple Bean. Populations of federal endangered Tan Riffleshell, Birdwing Pearlymussel, and Cumberland Monkeyface, state threatened Striated Darter, Ashy Darter, and Saddled Madtom.

Authorized Alterations

The raw water pumping station and water treatment plant are sized to withdraw and treat water from the Duck River at the instantaneous rate of 2,100 gallons per minute (GPM). MCBPU projects to need approximately 1 million gallons per day (mgd) in 2024 (anticipated date of water treatment plant startup) and will typically operate for a single 8-hour shift each day. A treated water storage tank (ground level) will allow MCBPU to continue pumping into the distribution system when the water treatment plant is off-line. Operation of the raw water pumping station and water treatment plant would increase from an average of 8 hours per day in 2024 up to 14 hours per day to achieve an average day withdrawal of 1.8 mgd (2045 projected average water withdrawal need), while maintaining the 2,100 gpm maximum instantaneous withdrawal rate. The authorized maximum day withdrawal in 2045 is projected to be 3 mgd.

The intake screen will be located between the center of the river and the north embankment (approximately 35 feet from the north embankment). To maintain the integrity of the northern bank of the river and minimize excavation in and adjacent to the river, a microtunnel would be drilled from the bottom of the vertical shaft at the raw water pumping station building (wetwell) to the screen location in the river.

A concrete pad for the pipe supporting the intake screen would be constructed on top of the bedrock in the river. Soil and rock overlying the bedrock is authorized to be removed to install the concrete pad. The permittee estimates the material on top of the bedrock that would be dredged to be about one foot deep and estimated to be less than 50 CY.

The Duck River at the location of the authorized MCBPU water supply intake screen is approximately 150 feet wide and has a maximum depth of 18 feet. The intake screen would be about 12 inches above the bottom of the river. The intake screen will be approximately 100 feet from the wetwell in the intake

building and approximately 35 feet from the north embankment of the Duck River. No clearing is authorized on the north embankment along the top of the escarpment above the river.

Alternatives Analysis and Selection of Least Impactful Practicable Alternative

The stated purpose of the authorized alterations to water resources is to provide drinking water to northern Marshall County. MCBPU currently purchases all its water for the northern portion of Marshall County from two utilities and can currently obtain up to roughly 0.9 mgd from Lewisburg Water and Wastewater and up to 0.22 mgd from Consolidated Utility District (CUD)/City of Murfreesboro (Murfreesboro). This maximum amount of available supply (1.12 mgd) will approximate MCBPU's peak day water needs (i.e., MCBPU's customers plus supplemental water sales to Chapel Hill) in northern Marshall County within the next few years.

MCBPU plans to replace the LWW and CUD/Murfreesboro supplies to northern Marshall County with its own water supply in 2024 to meet current and future water needs, improve reliability and enhance treated water quality. Based on projections, the estimated maximum daily water withdrawal from the Duck River by MCBPU for northern Marshall County (including Chapel Hill) will reach approximately 3 million gallons in 2045. MCBPU reviewed many alternatives over the past two decades and determined that constructing a water treatment plant (WTP) on the north side of the Duck River was the most cost-effective and environmentally responsible option to meet future water needs in this region. Consequently, the purpose of MCBPU's water supply and treatment project is to provide 2,100 gpm (3 mgd) of additional municipal drinking water to meet customer needs in the northern portion of Marshall County through 2045. The permittee has submitted an analysis of potentially practicable alternatives to the authorized activity and provided the following discussion of those alternatives:

1. Expand LWW's Duck River intake and water treatment plant (WTP). This alternative is not preferred by the permittee because it requires pumping raw water south to Lewisburg for treatment and return of treated water to northern Marshall County; it is the most expensive option and does not recognize capacity limitations at LWW's existing intake and WTP.
2. Expand LWW's Duck River Intake and Construct New WTP along Duck River (This alternative was preferred by all three water systems in 2018. After several meetings and correspondence with LWW regarding the improvements and estimated costs associated with upgrade and expansion of LWW's existing raw water intake and pumping station and after learning that LWW did not have 6 mgd of permitted withdrawal capacity, MCBPU determined that constructing a new raw water intake would be a more cost-effective and sustainable long-term solution for the region).
3. Purchase of wholesale water from Columbia Power & Water Systems (CPWS). This is considered not feasible by the permittee because of infrastructure improvements that would be needed along Bear Creek Pike and lack of contract arrangements for the sale of treated water to MCBPU.
4. The permittee states that other alternatives such as water conservation, water loss reduction, water reuse or recycling, regionalization, and water pricing structures that encourage a reduction in consumption, are alternatives that are or will be a component in MCBPU's water supply program but satisfy only a portion of the projected water need.

Based on growth projections for the service area, capacity limitations at LWW's existing intake and WTP, inadequate existing infrastructure to purchase wholesale water from CPWS, efficiency and resiliency components of added local treatment capacity balanced with the *de minimis* impact of the withdrawal and construction of the intake, the Division has determined that the authorized activities represent the least impactful practicable alternative to accomplish the project's purpose and goals.

Existing Conditions/Loss of Resource Values

The Duck River is fully supporting of its classified uses. The Department's rules state a single water withdrawal will be considered *de minimis* if it removes less than five percent of the minimum 7-day average streamflow with a 10-year recurrence interval (7Q10) flow of the stream. If more than one withdrawal has been authorized or proposed in a segment and the total of the authorized and proposed withdrawals uses no more than 10% of the assimilative capacity, or 7Q10 low flow, they are presumed to be *de minimis*.

The calculated 7Q10 using the USGS SW Toolbox 1.0.4 for the period of record from April 1, 2004 – March 31, 2021 at the Milltown USGS Gage (03599240) in this river segment is 146.69 cfs.

An existing water withdrawal, the Lewisburg Water and Wastewater (LWW) drinking water intake is located in the same river segment and has a capacity of 6.19 cfs (4 mgd). The LWW proposes to increase their withdrawal to five mgd or 7.75 cfs.

The withdrawal authorized by this permit is 2,100 gpm or 4.64 cfs. The MCBPU withdrawal is 3.2% of 146.69 cfs (7Q10 flow). The combined authorized and proposed withdrawals for LWW and MCBPU is 12.39 cfs, which is 8.45% of the 7Q10.

The Division has determined that the activity will not result in an appreciable permanent loss of resource values.

Antidegradation

The authorized and proposed withdrawals in this segment of the Duck River are no more than 10% of the 7Q10 low flow of 146.69 cfs, and this withdrawal individually is 3.2% of the 7Q10 flow which meets the definition of *de minimis*. In accordance with the Tennessee Antidegradation Statement (Rule 0400-40-03-.06), the Division has determined that the authorized activities will result in no more than *de minimis* degradation of water quality parameters.

For more information, please reference Tennessee's Antidegradation Statement which is found in Chapter 0400-40-03 of the Rules of the Tennessee Department of Environment and Conservation.