

## DESIGN AND CONSTRUCTION STANDARDS

### SECTION 1 – RAW WATER SYSTEMS

#### 1.1 Groundwater Wells (Reserved)

#### 1.2 Rivers, Lakes, & Reservoirs

##### **A. General Requirements**

Rivers, Lakes, and Reservoirs are for the purpose of supplying raw water to the water treatment plants for production of drinking water, fire protection and irrigation. All land disturbance activities within the drainage area or adjacent to the reservoirs must comply with all applicable federal, state, and local regulations and standards. These standards include, but are not limited to:

City of Norfolk, *Code of Ordinances*, Chapter 46.1 Water Supply

- Article IV, Pollution of Water Supply Generally; Protection of Watershed
- Article V, Regulations Applicable to City-Owned Lakes and Adjoining Land
- Article VII, Structures on Reservoirs

And can be found at:

[https://library.municode.com/va/norfolk/codes/code\\_of\\_ordinances?nodeId=COCI\\_CH46.1WASU](https://library.municode.com/va/norfolk/codes/code_of_ordinances?nodeId=COCI_CH46.1WASU)

##### **B. Ownership**

The City of Norfolk owns certain surface water resources and adjacent real estate in fee simple title.

- In the City of Norfolk
  - Lake Whitehurst, 25 feet from the spillway elevation of 6.0 feet (NAVD88)
  - Lake Wright, fixed property boundaries
- In the City of Virginia Beach
  - Little Creek Reservoir 25 feet from the spillway elevation of 6.0 feet (NAVD88)
  - Lake Smith 10 feet from the spillway elevation of 7.16 feet (NAVD88)
  - Lake Lawson, fixed property boundaries
- In the City of Suffolk and the County of Isle of Wight
  - Lake Burnt Mills, fixed property boundaries
  - Lake Prince, fixed property boundaries
  - Western Branch Reservoir, fixed property boundaries
  - Blackwater River
- In the County of Southampton
  - Nottoway River

The City of Norfolk owns the water within the reservoirs and unauthorized use or removal of the water is prohibited.

### **C. Development Process**

If an owner of property adjacent to Lake Whitehurst or Lake Wright, or a contractor proposes an improvement, then an application for a building permit must be submitted to the Department of City Planning. The application will be distributed to a group of reviewers. If the proposed improvement is exterior to the building, or a land disturbing activity within the drainage area of Lake Whitehurst or Lake Wright, the Department of Utilities, Water Production Division, Water Resources Group will review the proposal to ensure that the City of Norfolk's property and raw water quality are not impacted.

The development process is similar in other municipalities. Proposed improvements in proximity to the City of Norfolk's resources must be reviewed and approved by the City of Norfolk Department of Utilities, Water Production Division, Water Resources Group.

### **D. Encroachments**

#### **1. General**

Review and approval of encroachment applications for proposed improvements within the City of Norfolk are facilitated by the Right of Way Management Division of the City of Norfolk Department of Public Works. Encroachment applications for proposed improvements outside of the City of Norfolk and in proximity to the City of Norfolk's resources must be submitted to the City of Norfolk Department of Utilities, Water Production Division, Water Resources Group for review and approval.

#### **2. Temporary structures**

Application for an encroachment permit for temporary structures including, but not limited to, piers, fences, and similar structures must be submitted to the Department of Utilities, Water Production Division, Water Resources Group for review and approval.

#### **3. Permanent structures**

Application for an encroachment permit for permanent structures including, but not limited to, attachments to the existing building structure must be submitted to the Department of Utilities Water Production Division, Water Resources Group for review, coordinated with the City Attorney's Office, and requires City Council approval.

### **E. Construction**

The contractor shall notify the Department of Utilities Water Production Division, Water Resources Group, at least three business days prior to commencement of any work within 100 feet of the reservoirs.

- 1.3 **Dams (Reserved)**
- 1.4 **Pump Stations (Reserved)**
- 1.5 **Transmission Mains**

**A. General Requirements**

Raw water transmission mains are for the purpose of conveying raw water to the water treatment plants for production of drinking water, fire protection and irrigation. All land disturbance activities within the City of Norfolk's fee simple properties or easements for raw water transmission mains must comply with all applicable federal, state, and local regulations and standards.

The guidance set forth below shall be followed whenever any excavation, earthwork or improvements are being proposed within or passing through a raw water main easement, property, and right-of-way owned by the City of Norfolk. In addition to the following guidance, the designer shall also coordinate the project with the Department of Utilities, Streets and Bridges, and Stormwater sections within the Department of Public Works; if located within the City of Norfolk. For improvements located outside the City of Norfolk, coordination with applicable local government is required.

For improvements located within the City of Norfolk, the designer shall also refer to the City Right of Way Excavation and Restoration Manual and design accordingly. Additionally, all designs shall include an Erosion and Sediment Control plan. All applicable federal, state, and local permits and approvals must be obtained prior to plan approval. These regulations and standards include, but may not be limited to:

Virginia Department of Health (VDH), Office of Drinking Water, *Waterworks Regulations*  
[http://www.vdh.virginia.gov/content/uploads/sites/14/2016/04/12VAC5-590\\_10-10-14.pdf](http://www.vdh.virginia.gov/content/uploads/sites/14/2016/04/12VAC5-590_10-10-14.pdf)

American Water Works Association (AWWA)  
<http://www.awwa.org/>

Hampton Roads Planning District Commission (HRPDC), *Regional Construction Standards*, 6<sup>th</sup> edition, Section 801  
<https://www.hrrcs.com/rcs/category/6/current-standards>

American Society of Civil Engineers (ASCE) Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data CI/ASCE 38-02  
<http://www.dot.ga.gov/PartnerSmart/utilities/Documents/ASCE%2038-02.pdf>

## **B. Requirements for Working Within Raw Water Main Easement/Property**

1. Design Considerations
  - a. Refer to Section 8; Legal Relations.
2. Protection of Raw Water Main
  - a. Designer shall perform an ASCE 38-02 Quality Level A exploratory excavation to confirm the horizontal and vertical location of the raw water main.
  - b. Protective ground cover shall be provided over the existing raw water main whenever there is heavy equipment operating on city easement, property, or right-of-way.
  - c. There shall be a minimum of 24" of separation between the top of the existing raw water main and the pavement sub grade or undercut excavation.
  - d. Design of any proposed improvements shall include a temporary construction crossing plan. This plan shall include timber matting or suitable bridging material at one specific crossing area marked by visible temporary fencing to direct equipment to the designated crossing location. This plan must also include the avoidance of stockpiling materials within a minimum of 10 feet of the exterior edge of the raw water main.
  - e. If the existing raw water main is subjected to traffic loading, a protective reinforced concrete bridging structure shall be designed and provided to transfer the load to adjacent soil. No additional loading shall be transferred to the raw water main as a result of the new construction.
  - f. Protect and maintain all aspects of the cathodic protection system including bonded joints, test stations, anode beds, rectifiers, and all associated wiring and components of the system.
  - g. Casing pipe shall be installed utilizing trenchless technology for all perpendicular utility crossings below the raw water main. A minimum of 18" clearance between the exterior edge of the existing raw water main and exterior edge of the casing pipe shall be maintained

## **C. Contractor Requirements for Connecting to Raw Water Main**

Requirements to be included in Contract Documents:

1. The proposed utility contractor shall submit for approval by the Department of Utilities details of the company's experience, resumes of proposed pipe layers, list of equipment to be used for the work and a complete plan indicating the procedure which will be utilized for the connection.
2. Contractor shall perform exploratory excavation at the site of the connection prior to ordering materials to coordinate required machining of sleeves or the ordering of special connection fittings.

3. There shall be a pre tie-in meeting at least two (2) weeks prior to the actual connection to review the work plan, inventory material, equipment and personnel to verify all aspects of the work plan are in place for completion of the connection.
4. The city shall be notified at least five (5) business days prior to commencement of the work to verify the work may proceed
5. All pipe and fittings which can be assembled above grade shall be completed prior to cutting into the pipe.
6. The contractor shall have spare equipment, personnel, and material on standby in the event of an unforeseen condition which may occur during the connection.
7. The contractor shall complete all construction activities in accordance with the approved work plan. Any changes to the approved work plan require written approval from the City.
8. A standard repair clamp shall be available on site to be used in the event the shutdown cannot be made or the raw water main cannot be dewatered. Cutting into the raw water main by any method other than traditional saw cutting is strictly prohibited.
9. Air injection into the main to facilitate dewatering is prohibited.
10. Appropriate traffic control and safety measures shall be provided in accordance with VDOT work area protection manual and VOSHA.
11. Connections to raw water mains shall commence early in the week to make sure they can be completed before weekends and holidays.
12. If restraint of existing joints is required in conjunction with a proposed connection and the work can be completed without shut down of the main, this work shall be performed prior to commencement of the work.

#### **D. Design and Construction**

If a property owner, developer, or contractor proposes a temporary or permanent crossing of an existing raw water transmission main and co-location, encroachment, or occupation of an existing easement or real estate property owned by the City of Norfolk, then an application and site plan documents must be submitted to the Department of Utilities for review and approval. The application and site plan documents must include:

- Horizontal and vertical location information for the existing raw water main(s)
- Horizontal and vertical information for the separation of the existing raw water main(s) and the proposed improvements
- A metes and bounds description of the proposed crossing or occupation area
- Calculations and narrative of the proposed method of protecting the existing raw water main(s)

No construction work shall commence without advanced approval.

The following notes are required as communication from the property owner or developer to the contractor and shall be included on the site plan drawings.

1. The amount of construction activity and construction traffic over the top of the existing raw water main(s) shall be limited.
2. Extreme care shall be taken while demolishing existing street pavement around the existing raw water main(s).
3. Construction equipment shall cross the existing raw water main(s) at only one location.
4. The existing raw water main(s) at the crossing location shall be protected by the approved method.
5. Hand digging is required at the crossing location with the existing raw water main(s).
6. No materials shall be stored within 15 feet of the existing raw water main(s).
7. At least three business days prior to excavation over the existing raw water main(s), contact the Department of Utilities' Chief of Construction Operations at (757) 823-1012 to schedule inspection and contact the Department of Utilities, Water Production Division, Water Resources Group at (757) 441-5774.
8. Wire and cable shall not be installed within 5 feet of the existing raw water main(s).
9. There shall be at least 24 inches of vertical separation maintained between the top of the existing raw water main(s) and the pavement sub grade or undercut excavation during construction.