

Section 02990

DECHLORINATION ACTIVITIES

PART 1 GENERAL

1.01 SUMMARY

This Section includes furnishing and performing of all operations in connection with dechlorination of waters released from water lines, water receiving facilities, and groundwater treatment plants.

1.02 MEASUREMENT AND PAYMENT

- A. No separate payment for work performed under this Section. Include cost of same in Contract price bid for work of which this is a component part.
- B. Refer to Section 01270 – “Measurement and Payment” for unit price procedures.

1.03 REFERENCES

This specification references the following publications in their current editions. The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

- A. AWWA C651: Standard for Disinfecting Water Mains
- B. AWWA C655: Standard for Field Dechlorination
- C. National Sanitation Foundation International (NSF)
- D. NSF/ANSI 61: Standards for Drinking Water Systems Components
- E. Texas Commission on Environmental Quality (TCEQ)
  - 1. 30 TAC 290 Subchapter D: Rules and Regulations for Public Water Systems
  - 2. 30 TAC Chapter 290 Subchapter F: Drinking Water Standards Governing Drinking Water Quality and Reporting Requirements for Public Water Systems

1.04 SUBMITTALS

Submit the following under the provisions of Section 01330 – “Submittal Procedures:”

- A. Dechlorination Plan:

Contractor shall submit a plan detailing the methods and equipment to be used in the addition of dechlorination chemicals to points where discharge of chlorinated water occurs, when needed based on chlorine residuals. This plan shall contain the

following information:

1. Methods of adding dechlorination chemicals at points where discharge of chlorinated water occurs. These locations shall be identified in the dechlorination plan. The methodology listed in the plan will include the following:
  - a. Expected water flow at each discharge location where application of dechlorination chemicals is anticipated.
  - b. Expected quantity, form and type of chemicals needed at each location
  - c. Equipment necessary for application of chemicals at each location
2. Methods of testing for free chlorine residual at each of the locations (See paragraph 3.01.E) and meeting the requirements of AWWA 651, AWWA 655, and TCEQ guidelines (30 TAC 290 Subchapter D and 30 TAC Chapter 290 Subchapter F).
3. Frequency of sampling activities to ensure proper dechlorination and precautions to prevent overuse of chemicals
4. Technical data for equipment to be used during the addition of dechlorination chemicals

#### 1.05 RELATED REQUIREMENTS

- A. Section 01330 – “Submittal Procedures”
- B. Section 01270 – “Measurement and Payment”
- C. Section 02514 – “Disinfection of Water Lines”
- D. Section 02515 – “Hydrostatic Testing of Water Lines”
- E. Section 02516 – “Cleaning and Flushing of Water Lines”

#### 1.06 QUALITY ASSURANCE

- A. Singular Responsibility:
  1. The Contractor is responsible for developing the approach, designing the dechlorination systems, selecting equipment, implementing the approach, monitoring the activity, and all other services and equipment necessary to perform the work and accomplish the stated goals.
  2. The Contractor is responsible for dechlorinating the water released during cleaning and flushing, disinfection, hydrostatic testing, and start-up operations.

1.07 – 1.13 NOT USED

PART 2 PRODUCTS

2.01 MANUFACTURER(S) (NOT USED)

2.02 MATERIALS

Materials and equipment used in the dechlorination activities shall comply with the requirements of NSF/ANSI 61, AWWA 651, AWWA 655, and all other county, state and federal regulations for potable water systems, as applicable. If the material does not meet the chemical, physical, safety, or security requirements of these standards, the Contractor will be notified promptly after observing the noncompliance, and all activities will cease until compliance is achieved.

2.03 METHODS FOR TESTING FOR CHLORINE RESIDUAL

- A. Methods used for field testing of free chlorine residual shall meet the minimum requirements of AWWA C651 and C655. The following methods meet these standards and are acceptable to the Owner:
  - 1. Test Strips with a resolution sufficient to determine residual concentration at the specified limit:
  - 2. Orthotolidine Indicator Kit
  - 3. Field Colorimetric Test Kits
  - 4. DPD Titration Method
- B. The initial chlorine residual test will be taken at a location before the water is discharged from the piping and before the point where dechlorination chemicals are added.
- C. The second chlorine residual test taken to verify the dechlorination effort will be taken at a distance away from the injection point that accounts for a detention time of 20 seconds for the given flow and pipe/swale size.

2.04 DECHLORINATION METHODS/EQUIPMENT

- A. Dechlorination will occur at all locations where water is being released and discharged into the storm water drainage systems.
- B. While dechlorination chemicals are present at a location, the Contractor will have someone on-site to guarantee security of the equipment and chemicals.
- C. Equipment chosen by the Contractor must be adequate to meet the varying conditions experienced during the start-up and commissioning, due the variances in flow, chlorine residuals, methods of application, and locations where equipment is to be used.

- D. The four general methods of dechlorination approved by AWWA C655 are:
1. Vacuum-induced (chemicals are drawn directly into the flow by means of a vacuum). These devices must be provided with a means to monitor and control the amount of dechlorination solution entering the main flow of discharge water.
  2. Passive devices that require the flow of water to make direct contact with the dechlorination chemical. This type of device normally uses some type of dry or tablet dechlorination chemical.
  3. Devices that drip dechlorination chemicals into the discharge water flow. These devices must be provided with a means to monitor and control the amount of dechlorination solution entering the main flow of discharge water.
  4. Injection pumps used to add dechlorination chemicals into the main flow of discharge water. Contractor is responsible for supplying the source of power for operating the pumps.

E. Manufactured Equipment

When using manufactured equipment, the Contractor must use the dechlorination tables provided by the manufacturer of the equipment to determine what chemicals should be used and the required amount of dechlorination chemical.

F. User-Built Equipment

If the Contractor is using equipment they have developed or produced, the Contractor shall provide certification that this equipment meets the requirements of this Section and all applicable standards. In lieu of certification, the equipment can be field tested before actual use.

### PART 3 EXECUTION

#### 3.01 DECHLORINATION DURING DISINFECTION, FLUSHING, START-UP OPERATIONS AND REPAIRS

- A. Prior to work beginning, a preliminary meeting will be held with the Project Manager to discuss various items relating to dechlorination activity.
- B. The Contractor shall discharge highly chlorinated water and fill with water having a chlorine residual that is less than 4.0 mg/l.
- C. Locations where water is discharged:
  1. Along with the identification of where the water will be released, the Contractor shall log and provide the following information for each location:

- a. Discharge flow rate (gpm)
  - b. Quantity of water released (gallons)
  - c. Duration of release (hours)
  - d. Discharge pressure (psi)
- D. The Owner may choose to phase the work and sequentially discharge water from one or more locations over a longer period of time.
- E. Flushing and dechlorination activities may occur for 16 hours per day when directed by the Owner.
- F. To meet the dechlorination needs for these activities, the Contractor will be responsible for the following at each discharge location:
1. Mobilizing dechlorination equipment sized to handle the anticipated flows and residuals,
  2. Providing sufficient quantities of dechlorination chemicals to dechlorinate waters released to the storm water system,
  3. Providing sufficient manpower to operate all dechlorination equipment and perform chlorine residual testing of waters released from the system, and
  4. Testing the free chlorine residuals of all water flushed using the methods covered in paragraph 2.03 of this Section.
    - a. Testing will occur, at a minimum, every one-half hour while waters are being released. The Contractor shall increase sampling times as necessary to ensure that all water is dechlorinated sufficiently.
    - b. Testing will occur at the point of release and at the point where a twenty (20) second detention time has occurred).
- G. Dechlorination of flushed water will meet the following requirements.
1. All water discharging with a residual greater than 0.5 mg/L must be dechlorinated by the Contractor until the maximum chlorine residual concentration is reduced to less than 0.5 mg/L but greater than 0.1 mg/L. Dechlorination of water discharged from the WDSS must be continued until the flow is stopped or chlorine levels in the discharged water drop below 0.5 mg/L and above 0.1 mg/L.
  2. When directed by the Owner, Contractor will be responsible for removing all dechlorination equipment and chemicals from the site.

3.02 – 3.10 NOT USED

END OF SECTION