HISTORIC
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TENNESSEE

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MEMORANDUM

October 25, 2013

TO: Board of Mayor and Aldermen

FROM: Mark Hilty, Water Management Director
David Parker, City Engineer/CIP Executive
Eric Stuckey, City Administrator

SUBJECT: Consideration of Ultraviolet (UV) Disinfection Options for the City of Franklin Water Treatment Facility

Purpose

The purpose of this memorandum is to provide the Board of Mayor and Aldermen (BOMA) with information regarding the Long Term 2 Surface Water Treatment Rule (LT2 Rule) compliance and the need concerning the installation of an interim ultraviolent (UV) disinfection improvement at the City of Franklin Water Treatment Plant.

Background

In 1996, the Safe Drinking Water Act (SDWA) was amended requiring the Environmental Protection Agency (EPA) to develop rules to balance the risks between microbial pathogens and disinfection byproducts (DBPs). The Stage 1 Disinfectants and Disinfection Byproducts Rule and Interim Enhanced Surface Water Treatment Rule, promulgated in December 1998, were part of the first phase of rules as part of the 1996 Amendments to the SDWA. The LT2 rule was published in the Federal Register on January 5, 2006 and applies to all public water systems that use surface water (such as Franklin). The LT2 Rule builds upon earlier rules required by Congress to strengthen protection against microbial contaminants, and at the same time, reduce potential health risks of disinfection by-products (DBPs).

Under this rule, the City of Franklin Water Treatment Plant (WTP) is required to implement a treatment strategy to achieve the intent of the LT2 Rule by September 30, 2014. This strategy has been planned for during previous water treatment studies including the Integrated Water Resources Plan (IWRP) and included in the Scope of Work for the design and construction of the WTP Upgrade. However, based on the design and construction schedule for the WTP upgrades that includes the ultimate solution (UV disinfection) to meet the LT2 Rule, it has become necessary to advance an interim UV disinfection treatment upgrade ahead of the rest of the construction in order to achieve the LT2 Rule compliance schedule. Staff through our design consultant requested an extension of the LT2 Rule compliance deadline to better coincide with the WTP Upgrade project, but this extension request was denied by the Tennessee Department of Environment and Conservation (TDEC).

Staff and the City's consultant have evaluated two feasible options for this interim UV disinfection treatment:

- **OPTION 1**: 12" UV Reactor for Disinfection – the 12" reactor would be installed in the existing 12" transfer pump line in the pipe gallery of the WTP. Final plant upgrades are being

designed with a new treatment (process) train that includes UV disinfection, so once the plant upgrades are complete, this reactor would no longer be of value for the plant operations, nor usable anywhere else in the City's system.

- **OPTION 2**: 24" UV Reactor (Upgradeable to advanced oxidation) for Disinfection – the 24" reactor would be installed where the existing 12" line is in the pipe gallery on the transfer pump line. The piping would also have to be increased to a 24" line size. It would be necessary to relocate this 24" UV reactor to its permanent location as part of the plant upgrade for the UV advanced oxidation process (AOP) system.

Financial Impact

The initial equipment costs for Option 1 is $60,000 with a total equipment cost of approximately $230,000 upon completion of the Water Treatment Plant improvements. The initial equipment costs for Option 2 is $160,000, with a total equipment cost of $190,000 upon completion of the Water Treatment Plant improvements for upgrade of the system to advanced oxidation.

Action Taken

In order to ensure that the design and construction of an interim UV disinfection solution to meet the LT2 Rule compliance schedule can be accomplished, staff has moved forward with Option 2 due to the $40,000 savings on total equipment costs. Our consultant (Smith Seckman Reid) is completing the necessary design for the implementation of this Option 2 and the necessary equipment has been advertised for bid. There will also be an advertisement for bid for the installation of the equipment. This process of bidding the equipment for City purchase with a second bid for construction (installation) has been undertaken in order to lessen the time frame for equipment manufacture and purchase. Procurement for both the equipment and installation of same is being conducted in accordance with the City's approved procurement processes and will require approval by the BOMA.