ARLINGTON COUNTY, VIRGINIA

County Board Agenda Item
Meeting of July 10, 2010

DATE: June 10, 2010

SUBJECT: Amend Agreement No. 428-02 to include funding for the design of the Gravity Filter Building (GFB) retrofit project at DES Water Pollution Plant (WPCP).

C. M. RECOMMENDATION:

1. Approve an amendment to Agreement No. 428-02 held with Malcolm Pirnie, Inc. to include the design of the Gravity Filter retrofit project at the WPCP for the additional not-to-exceed amount of $3,000,000.

2. Authorize the Purchasing Agent, subject to legal review by the County Attorney, to sign the above amendment.

ISSUE: County Board approval is needed to increase the contract amount under Contract No. 428-02 for the additional efforts needed for this design.

SUMMARY: Arlington has taken the lead in protecting the environment, despite continuously changing and increasingly more stringent environmental regulations, as was evidenced by the Board's approval of the Master Plan 2001 Update project (MP01) in 2003. Adding the Gravity Filter retrofit project is another safeguard component that will proactively improve the performance of the WPCP by reducing external bypasses beyond the MP01 design and improving the reliability of the facility in meeting the most stringent permit limits to date, including total nitrogen of 3 mg/l. The retrofit project consists of modifications to an existing facility that will remove intermittent high solids from the feed to the newly constructed denitrification facility. This design work was originally included in Agreement No. 428-02 but was deleted because insufficient process data was available at the time.

BACKGROUND: From June 2001 to August 2002, a master plan (MP01) was developed and reviewed extensively before it was finalized by a team of outside experts and WPCP staff.

Consideration was given to utilizing the existing Gravity Filter Building to perform denitrification by replacing the existing dual media with mono-media. The advantages of mono-media filters include a higher population of denitrifiers (biomass or "bugs"), an increased solids capture capacity, and reduced potential for surface blinding during high solids loading events.

County Manager: MBmna

County Attorney: JM Sm

Staff: Lawrence Slattery, Bureau Chief, DES Water Pollution Control Bureau

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The MP01 report recommended converting and retrofitting both the existing 8 gravity filters and 8 carbon filters.

In January 2003, the County Board endorsed the concept for the WPCP MP01, an upgrade and expansion project at the DES Water Pollution Control Plant, that would enable the County to meet current and future capacity demands in the most environmentally appropriate manner.

During the preliminary study in early 2003, the design engineer, Malcolm Pirnie (MP), evaluated both conventional down flow filters and continuous backwash filters, performed a structural evaluation of the Carbon Filter Building (CFB) structure, and pilot tested the Parkson Dynasand and Tetra Denite filters. It was determined that the existing CFB foundation did not have adequate capacity to meet recently implemented seismic criteria (International Building Code, IBC) and it was more economical to replace the existing CFB with the new Bio Filtration and Disinfection facilities (FADF). Consideration was given to retrofitting the existing GFB to process high solids process flows during upsets to protect the new FADF, but insufficient process data was available at the time to justify and pursue this aspect with fiscal due diligence. It was believed that the additional three (3) new secondary clarifiers would provide higher solids removal rates and the new FADF could handle the higher solids rates during short periods of high flow.

Over the last year, field data and information verified the need for the GFB facility renovation because process upsets expose the FADF to solids concentrations substantially higher than previously anticipated resulting in external bypasses and permit excursions.

This prompted the Plant to evaluate available high solids removal technologies. A filter pilot test was performed in late 2009 and the GFB was found to be the optimal location to remove the high solids before the flow enters the FADF. The filter tested was proven to be able to handle the high solids influent, had the shortest startup time (less than 5 minutes), and the lowest Capital and Operational & Maintenance costs.

Renovation of the GFB will improve performance and further reduce external bypasses, beyond MP01, and permit excursions due to wet weather, power failure, equipment, maintenance, and process challenges, thus enhancing the County's leadership and commitment to proactively protecting the environment and the achievement of the Arlington Vision sustainability goals and objectives.

DISCUSSION: The current total rough estimate of the GFB retrofit project cost, including design, program management/construction management, construction phase services and construction is $30,000,000. The current estimated costs will be revised and updated as the design is completed.

The first task will be to address the seismic (lateral structural concerns) to minimize the overall cost of the project.

The total requested MP design fee will be reduced if the GFB can handle the seismic forces and the Amendment to Agreement No. 428-02 will define the final total services fees based on the structural study.

Malcolm Pirnie, Inc was selected to perform specific engineering and construction services related to MP 01 under RFP 428-02 and Agreement No. 428-02.

FISCAL IMPACT: The FY 2011-FY 2016 Utilities Fund CIP includes design of the Gravity Filter retrofit project at the WPCP. The funding sources for this work are $2,617,000 in General Obligation Bonds and $383,000 in contributions by the Interjurisdictional Partners. Debt service for the General Obligation bonds will be funded by the Water/Sewer rate.