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VIA ELECTRONIC CORRESPONDENCE

February 8, 2016

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File No: 8.DC.20.19

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U.S. Department of Justice
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RE: DOJ No. 90-5-1-1-4022/1
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RE: Consent Decree (Case: No. 1:12-cv-24400-FAM)
Reference DOJ Case No. 90-5-1-1-4022/1
Section VI – Specific Capital Improvement Projects, Paragraph 19(i)
Section XX – Modification
Request for Non-Material Change – CD Project 1.06 Gravity Sludge Thickeners

Dear Sir/Madam:

Pursuant to our discussions during our December 4, 2015 teleconference, Miami-Dade County (County) respectfully requests to modify the scope of work for Appendix D-2, CD Project 1.06 – Gravity Sludge Thickeners. Attached for your review and approval is a technical memorandum outlining the requested non-material change to Project 1.06. This technical memorandum summarizes the presentation made by Water and Sewer Department (WASD) to the United States Environmental Protection Agency (EPA) and Florida Department of Environmental Protection (FDEP) at that meeting.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering such information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Should you have any questions regarding this matter, please call me at (786) 552-8120.

Sincerely,



Bertha Goldenberg, P.E., LEED® Green Associate
Assistant Director, Regulatory Compliance and Planning

Attachments: CD Project 1.06 – Gravity Sludge Thickeners Technical Memorandum

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To	Manuel Moncholi
CC	Pedro Hernandez, PE, Maricela J. Fuentes, PE, Brian Stitt
Subject	CD PROJECT # 1.06 Gravity Sludge Thickeners PCTS: 13194 and CD PROJECT 1.08 Dewatering Facility PCTS: 13204
From	John Ososkie, PE / Consent Decree PMCM Team
Date	January 22, 2016
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Technical Memorandum

1. INTRODUCTION

The South District Wastewater Treatment Plant (SDWWTP) serves the southern and southwest portions of Miami-Dade County. The plant is permitted to treat an annual average daily wastewater flow of 112.5 million gallons per day (mgd) with secondary treatment processes, followed by high-level disinfection and filtration, prior to deep well injection. The facility is designed to treat a peak hourly flow of up to 285 mgd to high level disinfection standards. A total of 17 deep injection wells are installed for the disposal of treated effluent from the SDWWTP. The sludge that is generated in the wastewater treatment process is removed from the liquid stream for further processing onsite. The activated sludge wasted from the secondary clarifiers is concentrated using gravity thickeners. From the gravity thickeners, the thickened sludge is stabilized through anaerobic digestion and then dewatered using centrifuges. Biosolids are beneficially reused via land application and composting or disposed of via landfill.

2. EXISTING CONDITIONS AND PROJECT OVERVIEW

The SDWWTP thickening and dewatering systems are operated with outdated, inefficient equipment, reducing the effectiveness of the thickening process. Furthermore, the current performance of these units results in a need for additional capacity in the anaerobic digestion system to meet the required 15 day SRT at the SDWWTP. The excess water in the thickened sludge occupies a significant portion of the available digester volume, reducing attainable volatile suspended solids (VSS) destruction, gas production and overall residual reduction. Most modern digestion systems are designed for concentrations two to four times higher than what is currently obtained with the existing gravity thickeners. Each Consent Decree project is further defined below.

2.1. CD 1.06 Gravity Sludge Thickeners

Solids wasting are currently accomplished via a tap off of the returned activated sludge (RAS) force main in each of the three RAS pump stations. A modulating valve and flow meter are used to control the waste activated sludge (WAS) flow rate and wasting duration. The WAS is conveyed to the thickening facility consisting of four circular conventional gravity thickeners. Polymer is injected into the WAS piping upstream of the gravity thickeners to enhance settleability of the WAS in the thickeners.

Each gravity thickener has an inside diameter of 55-feet and a side water depth of 13-feet. The settled solids, known as thickened WAS (TWAS), are collected with a rotating collection mechanism. The TWAS at 1.5 to 2.0 percent solids is withdrawn from the gravity thickener underflow and pumped to the existing 2-stage anaerobic

digesters for stabilization and production of Class B solids. The gravity thickener supernatant is returned to the head of the plant for retreatment. Each thickener is covered for odor containment and foul air withdrawal.

The Consent Decree project (CD 1.06) includes replacement of thickened sludge pumps, and electrical systems in the concentrator pump station as well as rehabilitation of concentrator collector mechanisms and structural rehabilitation and coating of concentrators.

2.2. CD 1.08 Dewatering Facility

The temporary dewatering facility is housed in a two-story structure located west of Final Clarifier No. 7. The dewatering system is composed of dewatering centrifuges, a polymer system, sludge transfer pumps, and sludge grinders. Digested sludge from the secondary tanks of the anaerobic digesters is pumped to four existing centrifuges. The solids concentration of this digested sludge ranges between 1 and 2 percent dry solids. Before entering the centrifuges, sludge grinders are used to shred rags, plastics, and other inorganic material to protect equipment, improve cake solids, and/or enhance the quality of the dewatered cake product. Polymer is mixed with sludge upstream of the centrifuge to condition the digested sludge and enhance the dewatering performance of the centrifuges, which ranges between 18 and 22 percent solids. The biosolids are discharged onto a covered screw conveyor. From the screw conveyor, the biosolids are discharged into a truck and transported to the drying beds for further dewatering via evaporation before landfill disposal or composting. The centrate from the centrifuges is returned to the discharge of the headworks (upstream of the biological process) for further treatment.

The polymer system for the dewatering process is a dry polymer type, which includes polymer storage tanks, polymer mixing/make-up tanks, mixers, polymer transfer pumps, polymer feed pumps, and blenders. Presently, 1,500 pound dry polymer bags are emptied in a hopper that transports the dry polymer to a wetting chamber for creating the polymer solution. The solution is then activated within the mixing/make-up tanks, and then transferred to the polymer storage tanks. The polymer solution is then pumped to the point of injection upstream of the centrifuges.

The Consent Decree project (CD 1.08) includes replacement of the existing temporary dewatering building with a new permanent dewatering facility, to include centrifuges, controls, polymer systems, structural, mechanical and electrical systems.

3. BASIS OF DESIGN REPORT

There have been two Basis of Design Reports (BODR) related to the overall treatment plant condition and biosolids system improvements at SDWWTP. The first BODR, titled "South District Wastewater Treatment Plant Anaerobic Digesters and Control Buildings Modifications Project", was prepared by CH2M Hill under Consent Decree project 1.07 Digesters and Control Buildings and was submitted to FDEP on October 26, 2015. This BODR recommended that the existing sludge concentrators at SDWWTP be abandoned and a mechanical thickening (i.e., centrifuge) system be utilized. The centrifuges would produce a higher total solids (TS) concentration (estimated at 5.5 percent TS (%TS)), which results in a reduced volumetric flow to the anaerobic digesters. This in turn would reduce the number of digesters required to provide the necessary solids retention time (SRT) for the digestion process. In addition to the recommendations to the thickening systems, this report mentioned utilizing centrifuges for the dewatering systems to provide an end product of approximately 17%TS.

The second BODR, titled "Consent Decree Project 1.06 & 1.08 South District Wastewater Treatment Plant Sludge Thickening and Dewatering Building Basis of Design Report", was prepared by MWH and will be submitted to FDEP in February, 2016. Thickening and dewatering technologies were evaluated under this BODR and further confirmed the recommendation concluded in the first BODR. Based on the thickening technology evaluation, mechanical thickening (i.e., centrifuge) was recommended due to higher performance,

the number of applications within the industry for large wastewater facilities, WASD familiarity with the technology, and the capability of being used for both thickening and dewatering.

Based on the dewatering technology evaluation, the centrifuge was recommended due to lower life cycle cost, higher percentage of dry solids (DS) for the produced biosolids quoted by the equipment manufacturers and the wider industry acceptance, and the capability of sharing spare parts with the thickening units.

Furthermore, the second BODR indicated the new Thickening and Dewatering Building shall be designed for a minimum 20% DS as the benchmark quality for a future biosolids management facility to treat the dewatered product produced to meet Class A/AA biosolids requirements. Both the thickening and dewatering system components will be housed in a common building to facilitate efficient maintenance and operation of the process.

4. CONCLUSIONS

Due to the existing condition of the equipment, the limitations of the existing conventional gravity thickeners and the temporary nature of the structures housing the dewatering equipment, the SDWWTP requires a new combined thickening and dewatering building to house new thickening and dewatering systems both utilizing centrifuge technology. The project will provide a new Thickening and Dewatering Building with a design life of 20 years for major electrical and mechanical equipment, with the exception of Variable Frequency Drives (VFDs) that shall have a design life of 15 years, and 50 years for the Thickening and Dewatering Building.

5. RECOMMENDATION

The PMCM Team affirms the CD description for Project 1.08, i.e. “Replace existing interim dewatering building with a new permanent dewatering facility, to include centrifuges, controls, polymer system, structural, mechanical, and electrical systems”, remains the same.

However, the CD PMCM Team recommends changing Project 1.06 description to:

- CD 1.06 SDWWTP Sludge Thickening – Install a new mechanical sludge thickening and dewatering systems including mechanical, structural, electrical, and all other ancillary items.