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December 4, 2019

Ms. Kimberley A. Campbell, Chief Clerk
North Carolina Utilities Commission
430 N. Salisbury Street
Raleigh, NC 27603

RE: ***Application for Certificate of Public Convenience and Necessity and Registration Statement for ONSWC Chatham North, LLC in Chatham County***
NCUC Docket No. W-1300 Sub 55
Application for Transfer of Public Utility Franchise and for Approval of Rates from Old North State Water Company to ONSWC- Chatham North, LLC
NCUC Docket No. W-1320 Sub 0
Application for Transfer of Public Utility Franchise of Finch Creactions dba Fearrington Utilities to ONSWC - Chatham North, LLC in Chatham Co. (Amended Purchaser NCUC Docket No. W-1320 Sub 2
Application for Transfer of Public Utility Franchise of Finch Creactions dba Fearrington Utilities to ONSWC in Chatham Co. Waste Water Only
NCUC Docket No. W-661 Sub 9

Dear Ms. Campbell:

On behalf of ONSWC - Chatham North, LLC, we herewith submit the Direct Testimony and Exhibits of Robert G. Burgin, Jr., in the above-referenced dockets.

Pursuant to Commission Rule R1-28(e), the Company plans to deliver 16 copies of its testimony and exhibits on December 5, 2019.

Should you have any questions concerning this testimony or exhibits attached thereto, please do not hesitate to contact me.

Sincerely,

/s/ Karen M. Kemerait
skb
CC: All Parties of Record
Enclosures

BEFORE THE

NORTH CAROLINA UTILITIES COMMISSION

DOCKET NO. W-1320, Sub 0
DOCKET NO. W-1300, Sub 55
DOCKET NO. W-1320, Sub 2
DOCKET NO. W-661, Sub 9

DIRECT TESTIMONY

OF

ROBERT G. BURGIN, JR., P.E.

DECEMBER 4, 2019

I. INTRODUCTION AND QUALIFICATIONS

Q. PLEASE STATE YOUR NAME, TITLE, AND BUSINESS ADDRESS.

A. My name is Robert G. Burgin, Jr., and I am the President and Owner of Burgin Engineering, Inc. ("Burgin Engineering"), a civil engineering firm. My business address is Post Office Box 1804, South Carolina 28063.

Q. PLEASE STATE YOUR EDUCATIONAL BACKGROUND AND PROFESSIONAL EXPERIENCE.

A. I graduated from North Carolina State University with a Bachelor of Science Degree in Civil Engineering in 1975. I have been a consulting engineer since graduating from North Carolina State University. I became a Professional Engineer in 1979, and am a registered Professional Engineer in North Carolina along with several other states.

As a business owner and manager, I have designed hundreds of water and wastewater treatment plants, including membrane bioreactor ("MBR") wastewater treatment facilities. In addition, I have designed various water treatment, storage, and distribution systems, as well as wastewater effluent disposal systems by direct discharge, spray irrigation, drip irrigation, infiltration basins, and subsurface irrigation.

Q. ON WHOSE BEHALF ARE YOU TESTIFYING IN THIS MATTER?

A. I am testifying on behalf of ONSWC – Chatham North, LLC ("ONSWC – Chatham North").

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE NORTH CAROLINA UTILITIES COMMISSION?

A. Yes.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of my testimony is to describe the existing 250,000 gallons per day ("gpd") Briar Chapel extended aeration wastewater treatment facility, along with the upgraded Briar Chapel 1.0 MGD MBR wastewater treatment facility that will replace the current facility. The purpose of my testimony is also to demonstrate the numerous benefits to the Briar Chapel and Fearrington Village customers when ONSWC – Chatham North converts the existing Briar Chapel extended aeration wastewater treatment plant into the MBR wastewater treatment plant to serve as a regional wastewater treatment plant to treat the wastewater for the future buildout of Briar Chapel and Fearrington Village, and other nearby developments.

Q. ARE YOU SPONSORING ANY EXHIBITS WITH YOUR TESTIMONY?

A. Yes. I am sponsoring the *Engineering Report by Robert G. Burgin, Jr., P.E.* dated December 4, 2019 and attached hereto as Exhibit A.

II. SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

Q. HAVE YOU PREPARED AN ANALYSIS AND REPORT OF THE PROPOSED MBR WASTEWATER TREATMENT PLANT THAT ONSWC – CHATHAM NORTH PLANS TO CONSTRUCT?

A. Yes. I performed an analysis of the proposed MBR wastewater treatment plant that ONSWC – Chatham North is planning to construct. My analysis and

conclusions are contained in my report, *Engineering Report by Robert G. Burgin, Jr., P.E.,* that is attached as Exhibit A.

Q. PLEASE SUMMARIZE YOUR ANALYSIS.

A. A. Existing Briar Chapel Wastewater Treatment Facility.

The current Briar Chapel wastewater treatment facility is a conventional biological nutrient removal plant with tertiary filtration and ultraviolet disinfection. The facility consists of a 250,000 gpd wastewater treatment plant, a 3.5 million gallon five day upset pond, a 21.3 million gallon clay-lined effluent storage pond, and a 31.2 million gallon clay-lined effluent storage pond. Reuse spray irrigation is utilized for disposal of the reclaimed water. The facility is located off Boulder Point Drive within the Briar Chapel Subdivision.

B. Proposed MBR Wastewater Treatment Facility in Briar Chapel Subdivision.

ONSWC – Chatham North plants to convert the existing 250,000 gpd Briar Chapel conventional biological nutrient removal wastewater treatment plant into a 1.0 MGD MBR wastewater treatment plant to serve as a regional wastewater treatment plant for Briar Chapel, Fearrington Village, and other nearby developments. Portions of the high-quality MBR-treated reclaimed water will continue to be sprayed at the DWR-approved spray irrigation and reuse sites at Briar Chapel, and portions of the MBR-treated reclaimed water

will be discharged pursuant to the NPDES 500,000 gpd permit into an unnamed tributary of Bush Creek, a tributary of Jordan Lake.

1. Footprint of the MBR Facility

When the existing Briar Chapel wastewater treatment plant is modernized and upgraded to a MBR wastewater treatment facility, the current footprint of the Briar Chapel wastewater treatment plant will not be enlarged. The wastewater treatment capacity will be expanded by the use of membrane technology that will allow the treatment of greater daily flows within the existing fenced area of the wastewater treatment plant.

2. High-quality MBR-treated effluent

The effluent treated in the MBR wastewater treatment facility will be high-quality reclaimed water, and it will meet the Jordan Lake nutrient requirements. The upgraded MBR plant will thus be a benefit to the environment.

3. Improved odor control mechanisms

Odor control measures in the MBR facility will be enhanced and improved from the measures in the current Briar Chapel wastewater treatment plant. As background to odor from wastewater treatment plants, wastewater that contains dissolved organic materials and particles, nitrogenous compounds (including ammonia), and phosphorous may directly or indirectly cause odors due to the biological process of fermentation which occurs in oxygen-deprived media. The main source of odors from a wastewater treatment plant is from the

water that enters the initial screening device and then enters the equalization basin.

With the upgrade of the existing Briar Chapel wastewater treatment plant to the MBR wastewater treatment facility, modernized odor control measures will be implemented to eliminate odors. In particular, the initial screen will be enclosed, the equalization basin will be covered, and air will be pulled through each unit and passed to an air scrubber. The odor-emitting particles will be retained on the media or broken down biologically to inert compounds that do not have odors associated with them.

4. Improved sound control mechanisms

Sound control measures in the new MBR wastewater treatment facility will be enhanced and improved from the measures in the current Briar Chapel wastewater treatment plant. All new equipment that creates sound will be housed in a prefabricated metal enclosure that will be specially constructed to minimize sound. The blowers will contain sound attenuation measures, as they will be enclosed in sound attenuation covers. The blowers with their sound attenuation covers will be further placed inside metal enclosures.

5. Construction traffic

Construction of the MBR wastewater treatment facility is expected to occur over a nine-month period. Efforts will be made to minimize any inconvenience to the Briar Chapel Subdivision residents during the period of construction, as

construction trucks are expected to be present only between the hours of 8:00 a.m. and 5:00 p.m.

Q. WILL THE UPGRADED MBR WASTEWATER TREATMENT FACILITY PROVIDE BENEFITS TO THE BRIAR CHAPEL AND FEARRINGTON VILLAGE CUSTOMERS?

A. Yes. The current and future Briar Chapel and Fearrington Village customers will benefit from the upgraded MBR wastewater treatment facility in a number of significant ways. As mentioned previously, the high-quality MBR-treated reclaimed water will meet the Jordan Lake nutrient requirements, and odor and noise control measures in the MBR facility will be enhanced and improved from the measures in the current Briar Chapel wastewater treatment plant.

Q. PLEASE SUMMARIZE YOUR RECOMMENDATION.

A. I recommend that the Commission approve the transfer applications as the proposed MBR wastewater treatment facility will result in important benefits to the Briar Chapel and Fearrington Village customers and to the environment.

Q. DOES THIS COMPLETE YOUR TESTIMONY?

A. Yes.

Exhibit A

Engineering Review by Robert G. Burgin, Jr. P.E.

Proposed Chatham North Wastewater Treatment Plant located in Chatham County
Proposed Construction Topics Including Construction-Related Traffic and Scheduling, Odor and Sound, and General Operational Matters

Prepared for
ONSWC – Chatham North, LLC
Dated
December 4, 2019

Abstract

This report's purpose is to summarize the professional engineering evaluation by Robert G. Burgin, Jr. P.E. of issues related to sound and odor level abatement during and after construction of the proposed wastewater treatment plant expansion of the existing Briar Chapel/Chatham North facility along with rendering opinion of construction truck vehicular traffic volumes and schedules during construction.

Active\10573 12/4/19

Burgin Engineering, Inc.
PO Box 1804
Irmo, SC 29063

Author's Experience:

I, Robert G. Burgin, Jr., graduated from North Carolina State University with a Bachelor Degree in Civil Engineering in 1975. I have been a consulting civil engineer since graduation. I became a Professional Engineer in 1979. I am a registered Professional Engineer in North Carolina as well as several other states. My specialty is water and wastewater engineering. I have designed hundreds of water and wastewater treatment plants including membrane biological treatment facilities. Exhibit "A" to this report provides a brief resume of my qualifications.

Existing Wastewater Treatment Facility:

The existing Briar Chapel wastewater treatment facility is a conventional biological nutrient removal plant with tertiary filtration and ultraviolet disinfection.

The existing facility is located off Boulder Point Drive within the Briar Chapel subdivision as located below.

Existing WWTP

The existing plant is further shown in Exhibit "B" of the report.

Proposed Wastewater Treatment Facility:

The author of this report has been retained to design a comprehensive upgrade and expansion of the current Briar Chapel wastewater treatment facility.

Chatham North plans to construct a pump station to pump the Fearrington Village wastewater to the Briar Chapel WWTP for treatment rather than replace the aged Fearrington Village WWTP. Chatham North plans to convert the existing 250,000 gpd Briar Chapel extended aeration WWTP into a 1.0 MGD membrane bioreactor (MBR) WWTP to serve as a regional WWTP to treat the wastewater for the future buildout of Briar Chapel and Fearrington Village, and other nearby future developments. The high quality MBR-treated effluent will be of the quality to meet the Jordan Lake nutrient requirements. Portions of the MBR-treated effluent will continue to be sprayed at the DWR-approved spray irrigation and reuse sites at Briar Chapel, and portions of the MBR-treated effluent will be discharged pursuant to the NPDES 500,000 gpd permit into an unnamed tributary of Bush Creek, a tributary of Jordan Lake.

Foot Print:

As shown in Exhibit "B", the current footprint of the facility will not be expanded with the proposed additions to the Briar Chapel wastewater treatment plant. The current proposed method of disposal will be spray at the DWR-approved spray irrigation and reuse sites at Briar Chapel, and portions of the MBR-treated effluent will be discharged pursuant to the NPDES 500,000 gpd permit of Fearrington Village. The wastewater treatment capacity will be expanded by the use of membrane technology that allows the treatment of larger daily flows within the existing fenced area of the wastewater treatment

plant. Therefore, the footprint of the tankage will not change. Additional equipment will be housed in a prefabricated metal enclosure.

Odor:

The collection and processing of wastewater can be a source of odors requiring effective odor control. This water contains dissolved organic material and particles, nitrogenous compounds (including ammonia), and phosphorous, whose purification by-products (sludge and grease) may directly or indirectly cause odors due to the biological process of fermentation which occurs in oxygen-deprived media.

The main source of odors from a wastewater treatment plant is with the water coming into the initial screening device and falling into the equalization basin. With the upgrade and modernization of the Briar Chapel wastewater treatment plant, upgraded odor control measures will be implemented to eliminate odors. Specifically, the initial screen will be enclosed, the equalization basin will be covered, and air will be pulled through each unit and passed to an air scrubber to eliminate odors. Scrubbing is accomplished by drawing the air through a media that has been chosen for its ability to remove odors found to be present in the air surrounding the influent water in the screen and equalization area. The odor-emitting particles are retained on the media or broken down biologically to inert compounds that do not have odor associated with them. Odors will be studied during the final phase of design and the equipment and media will be specified before submittal of the wastewater treatment system to the County and to the State.

With the modernization and upgrade of the wastewater treatment plant, an activated carbon scrubber is currently proposed to treat odor at the fine screen and equalization basin. Carbon scrubbers typically deal with odor levels of H2S of 5 ppm, NH3 of 5 ppm, and Sulfureted compounds of 1 ppm. Activated carbon scrubbers are used on small airflows between 150 and 6,000 cfm, mainly on pre-treatment processes and standalone storage tanks. They are ideal solutions for:

– Easy installation
– No need for water, chemicals, low power consumption
– Compact installation
– No maintenance
– Offers a good efficiency on the odorous compounds
– Very low sound levels

Sound:

All new equipment that creates noise will be housed in the prefabricated metal enclosure that will be specially constructed to minimize sound. The blowers will contain additional sound attenuation measures as they will be enclosed in sound attenuation covers. Rotary tri-lobe blowers will be used to minimize pulsation effects that create noise

Traffic

All construction trucks will follow the route shown in yellow below.

Construction traffic is expected to arrive each day of construction between the hours of 8 am and 5 pm. Construction is expected to occur over a 9-month period. There should be approximately twelve delivery trucks per week providing construction materials during the first four months of construction. After the first four months of construction, there will be few, if any, delivery trucks.

Permits

A permit is required for the treatment plant from the Division of Water Resources.

Conclusions:

In conclusion, the upgrade and modernization of the Briar Chapel wastewater treatment facility for the Chatham North system will not adversely affect the safety, health morals, or welfare of the community or the surrounding neighbors and will not constitute a nuisance or hazard due to odor, noise, or construction activities. The project is being designed and will be constructed within the existing footprint and it will have state-of-the-art sound and odor control mechanization that will be implemented with this modernization. Finally, every effort will be made to minimize any inconvenience to the Briar Chapel residents during the construction period.

Exhibit "A"

EXPERIENCE

Professional Engineer, Consultant, President and Owner — 1992-Present
Burgin Engineering, Inc. (Civil Engineering) — Irmo, SC

Professional Engineer and Principal in the Firm — 1979-1992
Engineer in Training — 1976-1979
Johnson, Knowles, Burgin, and Bouknight — Irmo, SC

Engineer in Training — 1975-1976
G.E. Smithson and Associates — Hickory, NC

PROFESSIONAL ENGINEERING LICENSES

- South Carolina
- North Carolina
- Texas
- Others

EDUCATIONAL BACKGROUND

North Carolina State University — BS Civil Engineering, 1975
P.E. Received 1979

SAMPLE WATER AND WASTEWATER PROJECTS

Monteray Shores WWTP
Corolla, NC — Cost of Work: $9,300,000
2009

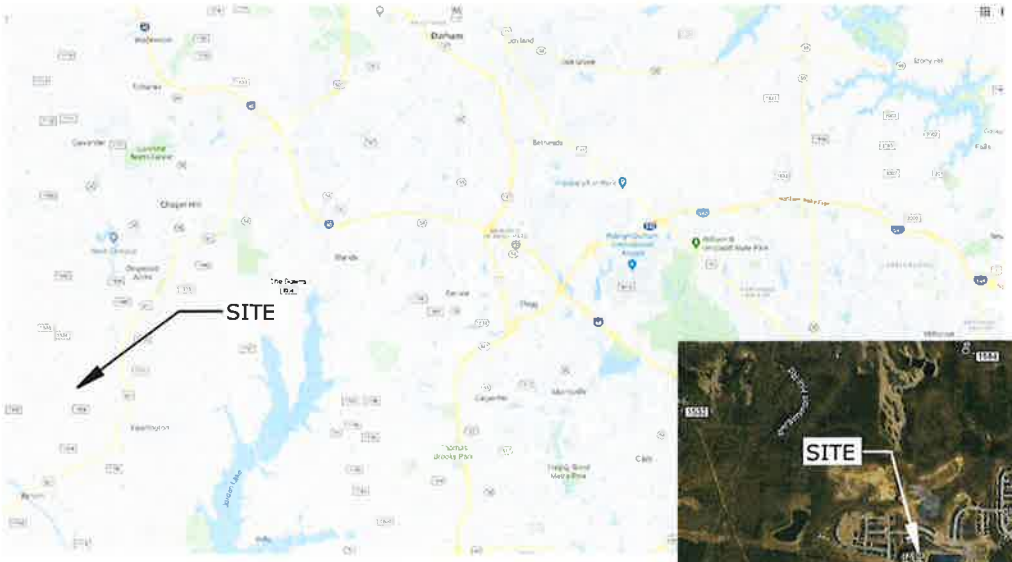
Monteray Shores & Corolla Light Reverse Osmosis Plant
Corolla, NC (Designed, not constructed) — Est. Cost: $9,600,000
2008

Massanutten WWTP Expansion
Elkton, VA — Cost of Work: $7,400,000
2004

NARRATIVE

As a business owner and manager Mr. Burgin has completed over 850 water and wastewater treatment system designs in his forty-two years of experience. Such designs have included various water treatment, storage, and distribution systems, as well as wastewater effluent disposal by direct river discharge, spray irrigation, drip irrigation, infiltration basins and subsurface irrigation. He has been responsible for all aspects of various projects from initial client meetings, proposal development, preliminary engineering reports, preparations of plans and specifications, regulatory review and permitting, bidding and construction management. Further duties have included preliminary cost estimating, preparation of project budgets, development of operation and maintenance procedures, and serving as an expert witness on behalf of his clients. Additionally, he has planned roads, drainage, grading, and erosion control for numerous detention facilities, commercial developments and residential subdivisions.

Exhibit "B"



VICINITY MAP

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OFFICIAL COPY

Dec 04 2019

NORTH CAROLINA
FIRM LICENSE
C-4218
BURGIN ENGINEERING, INC.

LOCATION MAP

prepared by:
Burgin Engineering Inc.
PO Box 1804 Irmo, SC 29063
803-730-1173

prepared for:
ONSWC - Chatham North, LLC
4700 Homewood Court, Suite 108
Raleigh, NC 27609

project:
Briar Chapel

sheet title:
G-100: COVER

Approved By: RGB
Drawn By: SEB
Current Issue Date: July 15, 2019
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Project #88-001 Page 1 of XX

PRELIMINARY: FOR REVIEW ONLY
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