

CLARENDON COUNTY

Engineering Department

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North Shore Hotel Development

Wastewater Disposal Preliminary Considerations Revised

March 20, 2023

Considerations for providing sewer service to proposed North Shore Hotel Development including 117 unit hotel, 11 cabins and Restaurant.

North Shore Hotel Development Requested Wastewater Flow:

Developer provided requested average daily flow of 17,325 gpd not including restaurant. Assuming a 100 seat restaurant at 70 gallons per seat per day total flow needed will be 24,325 gpd. At a peaking factor of 2.5 pump flow would be minimum of 42.2 gallons per minute (gpm)

Summerton Wastewater Treatment Plant Capacity:

Andrew Edwards with SCDHEC provided the current Flow Inventory (Attachment 2) for the Summerton Plant. The inventory shows Plant Design Capacity of 349,000 gpd with permitted disposal capacity of 584,750 gpd. The remaining capacity based on plant design is 20,133 gpd. This is adequate for the hotel and cottages proposed, but not quite enough for including the restaurant. Since Summerton has installed pumps and force main to divert excess flow to the City of Manning Plant it is assumed that if necessary this slight additional flow could be diverted. We were advised that there are significant infiltration or inflow flows into the plant during wet periods.

To check the diversion capability, pump curves were obtained from the pump supplier and calculations were made to estimate flow capacity. The system includes two pumps originally proposed for 520 gpm (gallons per minute) each at the Plant and two pumps originally proposed for 520 gpm at Davis Station. 520 gpm is equivalent to 750,000 gpd (gallons per day). Ruben Hardy with the City of Manning advised that Summerton had contracted for 300,000 gallons per day plant capacity with ability to increase to 500,000 gallons per day. Hydraulic calculations for the pump curves provided indicate that one pump at the plant can supply about 650 gpm and that two pumps at the plant can supply about 800 gpm total. Also one pump at Davis Station can pump about 620 gpm and two pumps only about 650 gpm. We were informed that the plant pumps have to be throttled somewhat to keep from overflowing the Davis Station facility. The above calculated flows indicate this is possible.

North Shore Existing Wastewater System

Gravity sewer and a pump station with 53,000 linear feet of 6" force main was installed in 2008. The developers contracted with Summerton to accept 83,200 gpd at the Wastewater Treatment Plant. Pumping capacity needed for this flow would be about 144 gpm. A pump curve was acquired from the pump supplier (Pete Duty and Associates) and calculations indicated that the station should be able to pump about 230 gpm to the plant with no other flows connected to the force main. In 2019 the KOA Santee Lakes Campground connected to the North Shore to Summerton force main about 4,000' from the existing North Shore Pump Station. Based on permitted flow of 26,200 gpd minimum pump needed

capacity is assumed about 45 gpm. Pump curve for the KOA pump was also provided by Pete Duty and Associates. Pump data indicates 16.8 HP pump was supplied with design point of 68 gpm at 232' total head. Calculations indicated that the KOA pump can supply about 120 gpm when the North Shore Station is not running and about 70 gpm when the North Shore Station is also running. Calculations indicate that the North Shore Station would be limited to about 180 gpm with both pump stations on. Since North Shore existing flow needed is about 144 gpm, about 36 gpm spare capacity is still available. This is sufficient for just the hotel and cottages but under flow needed for the new hotel and restaurant development.

Proposed North Shore Hotel and Restaurant Development Wastewater Improvements

To address the small capacity deficiency and also to provide spare capacity for future development, a new pump station is proposed near the intersection of Oaks Rd. and Liberty Hill Rd. See attached Google Map of the area (Attachment 4) with infrastructure located. The new Liberty Hill pump station would repump the flow coming from North Shore and KOA pump stations. This would increase capacity at the existing North Shore Pump Station and also provide spare future capacity at the new pump station. Calculations indicate the new available capacity at KOA station would be about 75 gpm and at North Shore Station would be 260 gpm with both stations in operation.

The North Shore Pump Station could then supply the 186.2 gpm needed and would have approximately 73.8 gpm spare capacity. Based on a peaking factor of 2.5 the spare capacity would be about 42,509 gallons per day. At 400 gallons per residence this is adequate for about 106 additional residences in the future.

The new Liberty Hill pump station, assuming the same pumps as the North Shore pump station could pump approximately 360 gpm. This is 30 gpm above the total of North Shore and KOA pump stations pumping together. This spare capacity would be about 17,280 gallons per day or equivalent to about 43 residences. A slightly higher capacity pump could be selected if desired for more capacity at the new pump station.

A preliminary cost estimate, Attachment 1, shows total estimated cost of \$692,660.50:

- ATTACHMENT 1: Preliminary Cost Estimate
- ATTACHMENT 2 Existing Flow Inventory from SCDHEC
- ATTACHMENT 3 Map of Proposed Sewer at Development
- ATTACHMENT 4 Map of Force Main with Proposed Pump Station Location

CLARENDON COUNTY ENGINEERING					
Sewer Expansion and New PS for North Shore Hotel Development Preliminary Estimate					
03/20/23					
	Description	Units	Quantity	Unit Price	Item Price
1	8" PVC Sewer Main	LF	900.00	50.00	45,000.00
2	Bore and Jack Casing	LF	100.00	150.00	15,000.00
3	8" DI Sewer Main	LF	120.00	60.00	7,200.00
4	Manholes	EA	6	5,000.00	30,000.00
5	6" Service Wye and Piping	EA	14	1,000.00	14,000.00
6	Asphalt Drive Cut and Patch	LF	100	35.00	3,500.00
7	Connect to Existing Manhole	EA	1	1,000.00	1,000.00
8	Erosion Control Measures	Lump	1	5,000.00	5,000.00
9	Grassing	Acres	0.50	2,000.00	1,000.00
10	Cut-In to Exist. Force Main / Valves	Lump	1	22,000.00	22,000.00
11	8' Dia Wet Well, Hatch, Hoist	Lump	1	80,000.00	80,000.00
12	6' Valve vault and valves	Lump	1	42,000.00	42,000.00
13	360 gpm Pumps and Controls	Lump	1	55,000.00	55,000.00
14	Generator and Electrical	Lump	1	160,000.00	160,000.00
15	Site Work and Fencing	Lump	1	25,000.00	25,000.00
16	Mobilization and Bonds	EA	1	30,000.00	30,000.00
	Total Construction Estimate				535,700.00
	Contingency 10%				53,570.00
	Total Construction				589,270.00
	Engineering 15%				88,390.50
	Land Purchase for Station				15,000.00
	Total Estimate				692,660.50

Flow Inventory

Data Updated On: February 24, 2023

NPDES #: ND0063401 Name: SUMMERTON TOWN OF WWTP

Design Capacity: 349,000

Disposal Capacity: 584,750

Total Num of Permits: 20

In Process Permits:	0
Issued Permits:	20
In Process Flow:	0
Permitted Flow:	328,867
Rem Capacity:	20,133

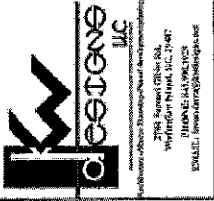
Permitted Flow with In Process Permits: 328,867

Remaining Capacity with In Process Permits: 20,133

Description	Permit #	Issue Date	Flow	Status	Cumulative
14,928 - PANOLA RD,GIBSON ST	MANUAL	1/12/1989	-36,000		-36,000
N/A - BASE FLOW EST.(3/1/88-2/14/90)	MANUAL	3/31/1989	-166,000		-202,000
HARVIN MANOR	17167-DW	6/25/1991	-6,400		-208,400
SUMMERTON, TOWN OF/2ND AVENUE	17633-DW	3/2/1992	0		-208,400
LOA - CLARENDON MIDDLE & HIGH SCHOOL	MANUAL	1/27/1993	-16,000		-224,400
TOWN OF SUMMERTON SANITARY SEWER IMP	18804-DW	11/1/1993	0		-224,400
CLARENDON COURT	18796-DW	11/1/1993	-10,600		-235,000
FIRST STREET SUBDIVISION	19290-DW	6/22/1994	-7,600		-242,600
WEST SUMMERTON SEWER	21543-DW	12/4/1996	-40,000		-282,600
WEST SUMMERTON SEWER REPLACEMENT	26748-WW	6/21/2001	0		-282,600
Manual - ADJUSTMENT FOR DMR DATA MIKE M	MANUAL	8/9/2002	-66,400		-349,000
Manual - Adjustment for DMR data-NoCapacity Remains	MANUAL	8/30/2007	-262,270		-611,270
NORTH SHORE (GEC# 250172)	34259-WW	6/24/2008	-83,200	Extended	-694,470
FELTON STREET SEWER IMPROVEMENTS	35664-WW	12/22/2008	-690	Extended	-695,160
SAINT PAUL ELEMENTARY SCHOOL	36376-WW	7/21/2010	-4,840	Supersede	-700,000
Manual - Adjustment for elimination of Federal Mogul flow (18,5	MANUAL	8/24/2011	18,500		-681,500
TOWN OF SUMMERTON SPRAYFIELD REPAIRS	38938-WW	7/14/2015	0	Supersede	-681,500
Manual - WWTP Design Update : 700,000-349,000 GPD	MANUAL	2/19/2019	0		-681,500
Manual - Adjustment for DMR data	MANUAL	2/28/2019	378,833		-302,667
KOA SANTEE LAKES CAMPGROUND- CONNECT TO SUMMERTON	41640-WW	3/4/2019	-26,200	Supersede	-328,867

ATTACHMENT 2

PROPOSED SEWER EXPANSION FOR SUMMERTON NORTH SHORE



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Project:
 Polly Landing
 Sumter, SC
 Lakefront Master Plan

Owner / Client:
 Bennett Holford
 Construction, Co.
 Charleston, SC

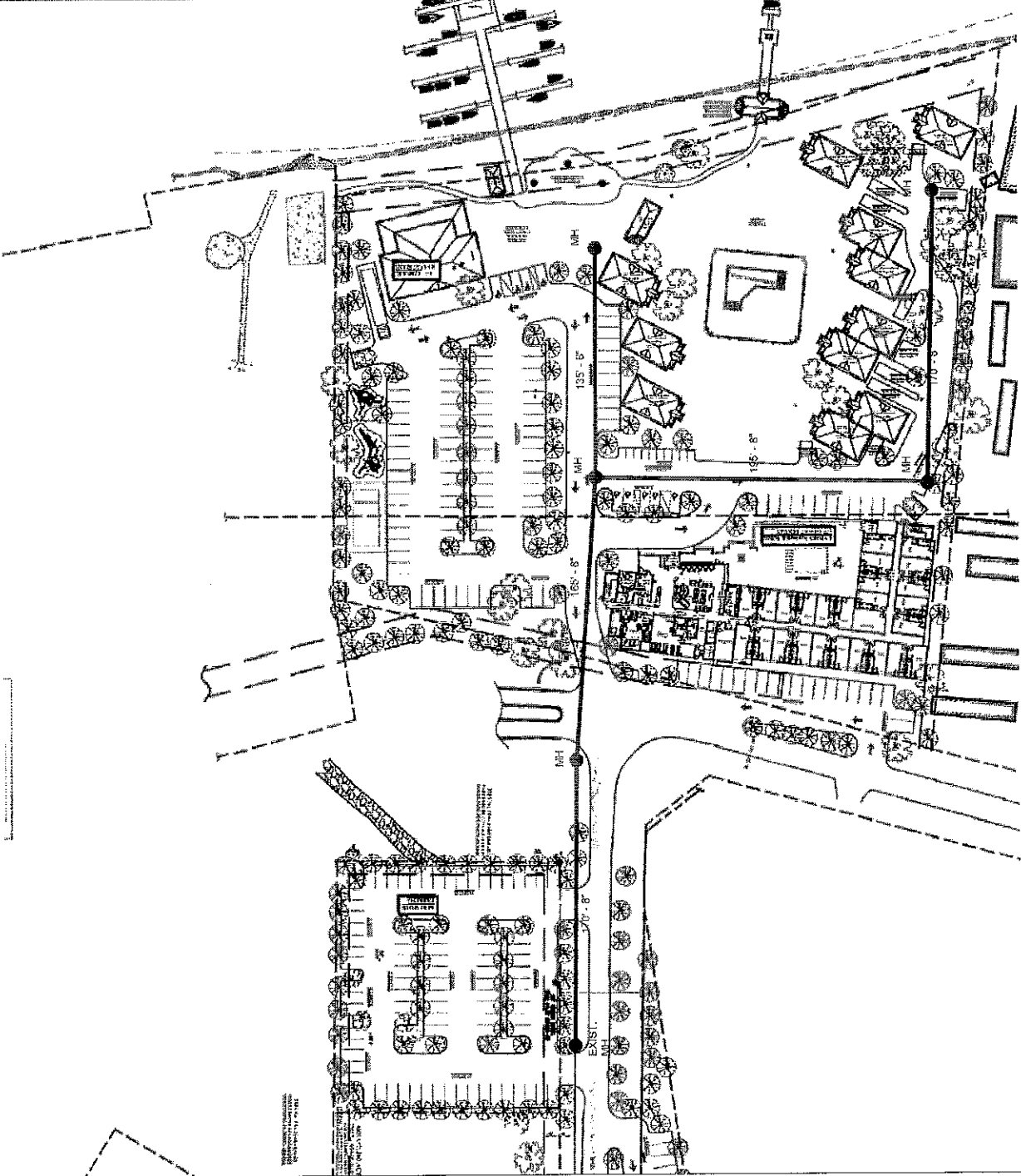
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Revision:	Date:

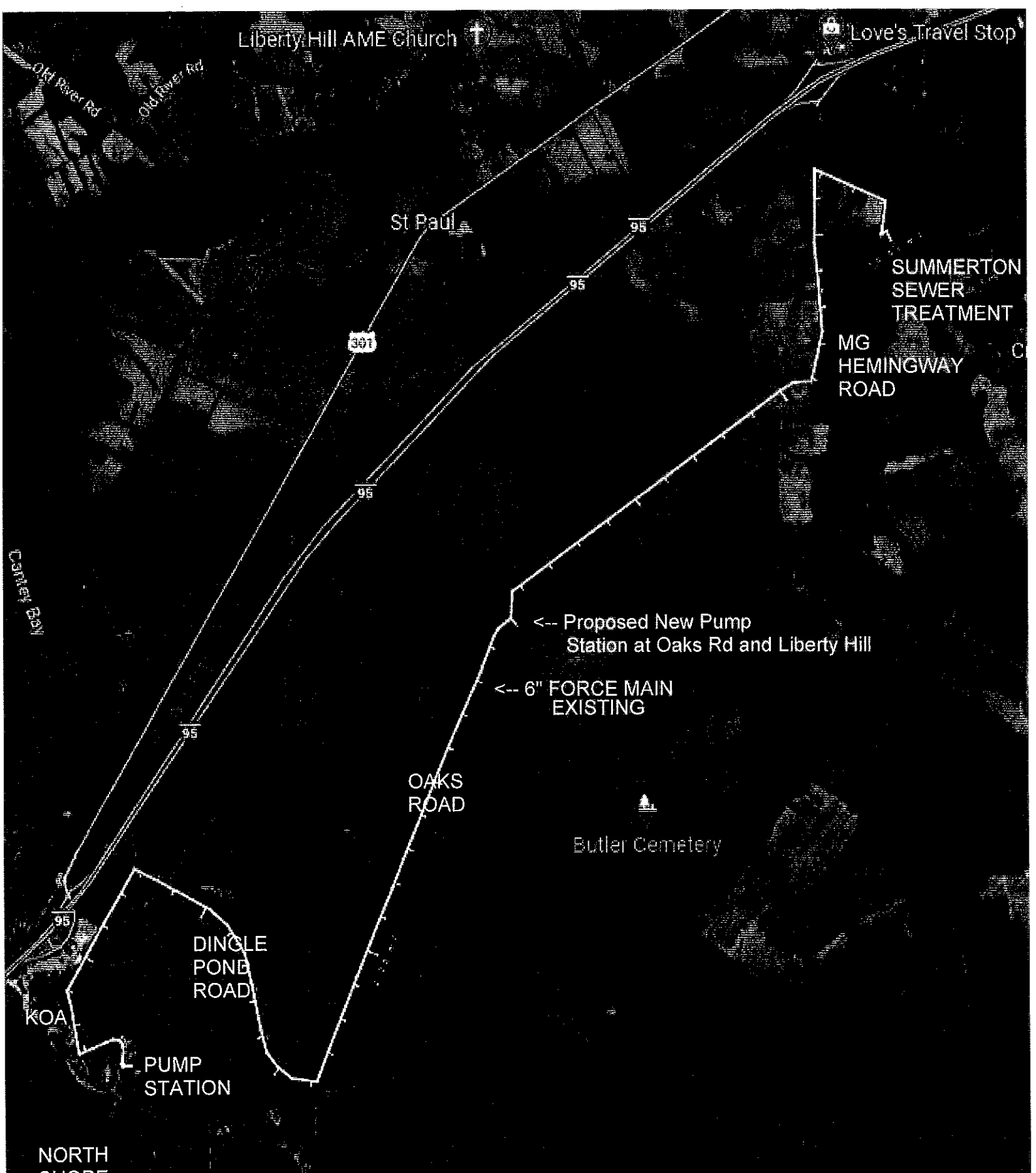
Issue Date: 04.13.22
Project No: KWD11-019

Sheet Title:
 Polly Landing
 Lakefront Site
 Option "C.3"

Sheet Number:
A-100c.3



Lakefront Site Overview
 1" = 30'-0"



NORTH SHORE

NEW PUMP STA. &
FORCE MAIN
LOCATION MAP

ATTACHMENT 4 ✕

Measure distance
Click on the map to add to your path
Total distance: 10.01 mi (16.11 km)

*Pine Island
Unit National
Wildlife*