

New Business (NB2)

**Lower Cape Fear Water & Sewer
Authority**

AGENDA ITEM

To: CHAIRMAN MILLIKEN AND BOARD MEMBERS

From: TIM H. HOLLOMAN, EXECUTIVE DIRECTOR

Date: June 8, 2020

Re: Annual Update of CAPITAL IMPROVEMENTS PLAN 25 Year Planning Period FY
2020-2045 July 2020

Background: At their November 12, 2018 meeting, the LCFWASA Board approved annual updates of their Capital Improvement Plan (CIP). The fee would be a part of McKim & Creed's annual retainer. During discussion it was decided that a separate committee was not needed to review the CIP, but that the Finance Committee would review and make recommendations to the full Board.

There was also discussion of calculating the cost and linking them to rate justification. At this point, it appears that only the cost of items have been estimated and calculated and that a full rate study is not a part of the traditional CIP process.

Purpose: There are multiple reasons for revisiting the CIP annually and one is to review items that are required to operate efficiently and effectively. Secondly, the review helps to assess the conditions of equipment to implement replacement and purchase. And finally, an annual review provides for planning for making resources available to finance these projects.

Action Requested: Motion to approve/disapprove



DRAFT CAPITAL IMPROVEMENTS PLAN

25 Year Planning Period

FY 2020-2045

July 2020

Prepared for:

Lower Cape Fear Water & Sewer Authority
1107 New Pointe Blvd., Ste. 17
Leland, NC 28451

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5. Bladen Bluffs Regional Surface Water Facility Annual Fiscal Year Budget Breakdown

Executive Summary

I. Kings Bluff Raw Water Facilities

The Authority's proposed 25-year (2020-2045) CIP budget for the Kings Bluff Raw Water Facilities is estimated at approximately \$48 M. Beyond 2045, a 48-inch parallel raw water force main from the 3 MG ground tank to the US 421 service area may potentially be required in order to meet the capacity needs of the US 421 area customers and CFPWA. The cost of this parallel main is estimated at \$45M.

The following summarizes the primary drivers for the 25-year Capital Improvement Plan:

- Increase overall system capacity via new infrastructure and/or parts to meet long term raw water demands.
- Rehabilitate and replace infrastructure as needed to maintain system functionality of raw water pipeline.
- Plan and design system capacity in order to balance the supply with the demands and meet the needs of any potential customers.
- Design and construct maintenance system for pipeline in order to periodically clean pipeline and maintain station capacity.

The largest capital initiatives (over \$1 M) anticipated over the next twenty-five fiscal years is summarized as follows:

- Interim Booster Pump Station upgrade
- New generators at King's Bluff Raw Water Pumping Station
- Pig 48" existing water main from King's Bluff Pumping Station to 3 MG ground tank
- Pig future 54" water main from King's Bluff Pumping Station to 3 MG ground tank
- Install 4th pump at King's Bluff Pumping Station
- Install 5th pump at King's Bluff Pumping Station
- Replace existing pumps at King's Bluff Pumping Station
- After FY 2045, install 48" parallel raw water main from 3 MG ground tank to US 421

In addition to these large capital initiatives, there are a several projects that are estimated at less than \$1 M, which include:

- Refurbish/rebuild existing pumps
- Construction of a new air backwash building and walkway to King's Bluff Pumping Station
- Meter and valve upgrades
- Improvements to SCADA system

- Construction of a shelter at the Interim Booster Pump station
- Installation of a new surge tank at the King's Bluff Pumping Station
- Replacement of the generator radiators
- Replacement of the generator building ventilation system

II. Bladen Bluffs Regional Surface Water Facility

The Authority's proposed 25-year (2020-2045) CIP budget for the Bladen Bluffs Regional Surface Water Facility is estimated at approximately \$8M. However, it is noted that Smithfield Farmland Company (SFC) provides all operation and maintenance of the Bladen Bluffs Regional Surface Water Treatment Facility. The CIP projects detailed in this document would only be required if the LCFWSA assumed full operation of the facility from SFC. Until such time all capital improvements and/or maintenance requirements are solely the responsibility of SFC.

The following summarizes the primary drivers for the 25-year Capital Improvement Plan:

- Replace aging infrastructure and parts to meet long term demand.
- Plan and design to maintain system capacity to meet current and potential future customer demands

The largest capital initiatives (over \$1 M) anticipated over the next twenty-five fiscal years is summarized as follows:

- New 1 MG Capacity Clearwell
- New High Service Pumping Station

In addition to these large capital initiatives, there are a few projects that are estimated at less than \$1 M, which include:

- Replace Pumps at Raw Water Pumping Station
- Replace Pumps at Recycle Pumping Station
- Replace Pumps at Transfer Pumping Station
- Replace Blower in Blower Building
- Replace On-Site Generators
- Replace Anthracite Media in Filters

The proposed CIP budget over the next 25 years has been compiled based on these initiatives. It is recommended that each project be periodically reevaluated, which provides an opportunity to reassess the budget and need for each. This will allow the Authority to adjust priorities and budgets based on meeting customer needs.

III. Capital Projects Evaluations

Each project identified in the CIP was evaluated for the following factors:

1) Category of Need

- Capacity – *the project is needed to either maintain current capacity or increase capacity to meet future need.*
- Renewal/Rehabilitation - *the project is needed to replace or rehabilitate existing infrastructure to maintain capacity and operational readiness.*
- Efficiency- *the project is needed to increase or maintain the efficiency of the facilities and/or to maintain operations.*
- Maintenance – *the project is required for a general maintenance need to maintain equipment and/or facilities in operational condition.*

2) Criticality Score: 1 (Lowest) to 5 (Highest)

The criticality score was developed to for each project to provide a summary assessment of impact to operations as a driver for project implementation. Note that criticality levels provided in this document are specific to the fiscal year for which they have been identified.

Criticality Scoring Scale

1	2	3
The need for the project is low and does not fundamentally impact operational readiness	The project has a moderate impact on operations and may provide limited improvement to the facilities	The project is of critical need and will greatly impact operations if not completed.

3) Consequence of No-Action

In addition to the identification of the category and criticality assessment, a “Consequence of No-Action” statement has been included for each project. The intent of this statement is to clarify the impacts to operations, capacity, facility maintenance, etc. that would result if the project were not implemented.

4) Project Raw Water Demands

For capacity related improvements, updated customer projections were taken from the May 2018 Preliminary Design Memorandum for the Lower Cape Fear Water & Sewer Authority Parallel Raw Water Main report. A summary of the projected demands is provided as follows:

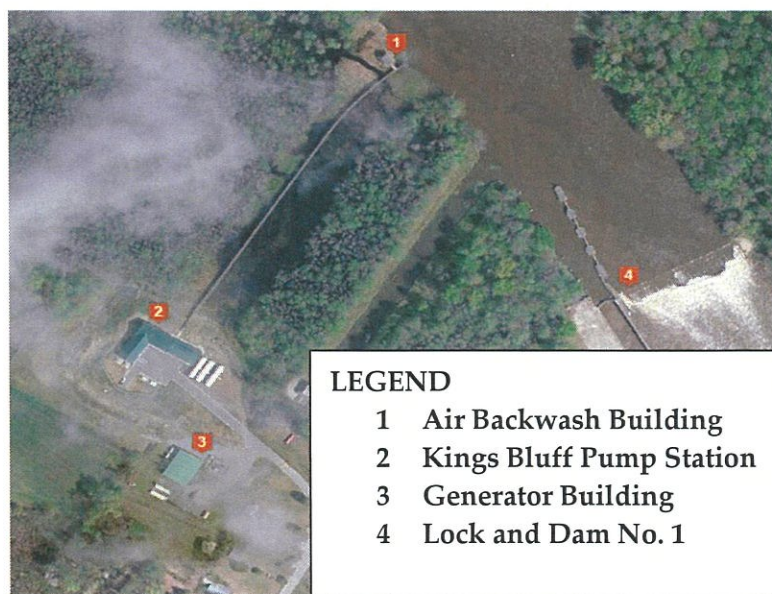
LCFWSA Projected Raw Water Demands

Customer	2015 Demands (MGD)	2025 Demands (MGD)	2035 Demands (MGD)	2045 Demands (MGD)	2055 Demands (MGD)	2062 Demands (MGD)
CFPUA	10.4	13.5	20.5	28.6	34.3	38.2
Brunswick County	19.7	25.1	30.6	36.67	43.89	49.8
US 421 Industries	2.0	2.0	2.0	2.0	2.0	2.0
Pender County	1.1	2.4	4.8	6.0	6.0	6.0
Totals	33.2	43.01	57.9	73.27	87.55	96.0

**IV.Kings Bluff Raw Water Facilities
Capital Improvements Projects
FY 2020-2045**

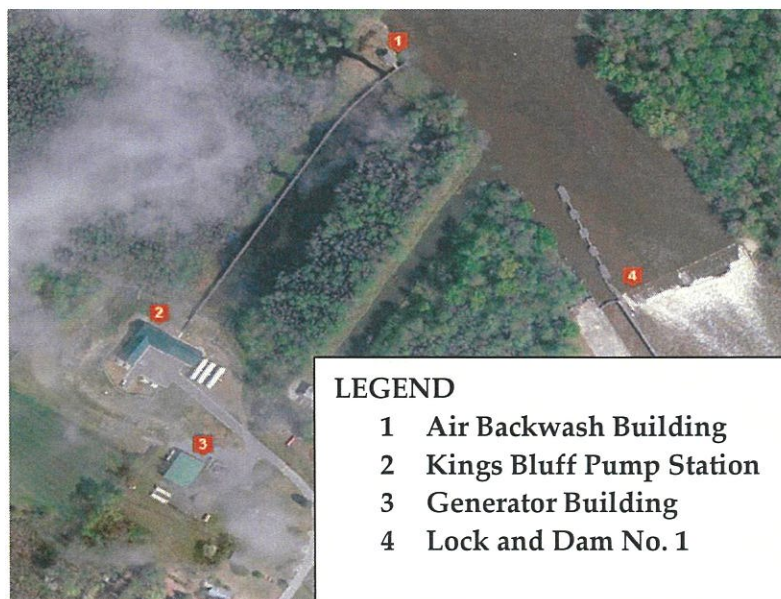
KING'S BLUFF RAW WATER FACILITIES

PROJECT TITLE	New 4 th Pump at King's Bluff Raw Water Pump Station	KB 1
CATEGORY:	Capacity/Efficiency	
Summary: <ul style="list-style-type: none">Provide a fourth raw water pump at King's Bluff Pumping Station to meet projected demands. (See #2 on legend in graphic below) Projected demands will exceed station firm capacity by 2037.		
Justification: <ul style="list-style-type: none">Increase station capacity to meet long term raw water demand.Firm capacity of station will require 3 pumps by 2037. Fourth pump will be standby/backup and added to pump rotation to reduce hours per pump.		
Consequence of No Action: <ul style="list-style-type: none">The projected demands at the station will exceed the firm capacity and the station will not be able to serve the project customer demand.		
Criticality:		
▼		
1	2	3
DURATION (MONTHS)	24	
REQUIRED COMPLETION	2023	
TOTAL ESTIMATED COST	\$3,300,000	
FISCAL YEAR	ANTICIPATED FISCAL YEAR EXPENDITURE	
2022	\$800,000	
2023	\$2,500,000	



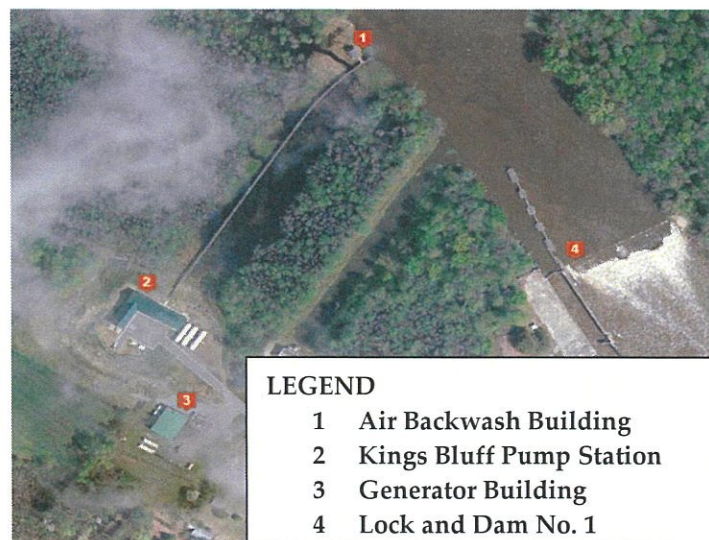
KING'S BLUFF RAW WATER FACILITIES

PROJECT TITLE	New 5 th Pump at King’s Bluff Raw Water Pump Station	KB 1A
CATEGORY:	Capacity	
Summary: <ul style="list-style-type: none">Provide a fifth raw water pump at King’s Bluff Pumping Station to meet projected demands. (See #2 on legend in graphic below) Projected demands will exceed station firm capacity by 2062		
Justification: <ul style="list-style-type: none">Decrease load and run times on existing pumps to extend life and improve reliability.		
Consequence of No Action: <ul style="list-style-type: none">The projected demands at the station will exceed the firm capacity and the station will not be able to serve the project customer demand.		
Criticality:		
1	2	3 ▼
DURATION (MONTHS)	24	
REQUIRED COMPLETION	2032	
TOTAL ESTIMATED COST	\$3,300,000	
FISCAL YEAR	ANTICIPATED FISCAL YEAR EXPENDITURE	
2031	\$800,000	
2032	\$2,500,000	



KING'S BLUFF RAW WATER FACILITIES

PROJECT TITLE	Rebuild/Refurbish Existing 1600 HP Vertical Turbine Raw Water Pumps	KB 2
CATEGORY:	Renewal/Rehabilitation	
Summary: <ul style="list-style-type: none">Rebuild and/or refurbishment of an existing 1600 HP vertical turbine raw water pumps originally installed in 2009 and a proposed 1600 HP vertical turbine raw water pump that will be installed in 2020.		
Justification: <ul style="list-style-type: none">Due to age and mechanical wear, it is anticipated that a rebuild of one of the raw water pumps will be required.Rebuilding of pumps will extend the service life of the pumps		
Consequence of No Action: <ul style="list-style-type: none">The likelihood of failure of the pumps increases due to age and wear of the existing pump.		
Criticality:		
1	2	3
DURATION (MONTHS)	48	
REQUIRED COMPLETION	2022, 2023, 2026, 2044	
TOTAL ESTIMATED COST	\$1,000,000	
FISCAL YEAR	ANTICIPATED FISCAL YEAR EXPENDITURE	
2022	\$250,000	
2023	\$250,000	
2026	\$250,000	
2044	\$250,000	



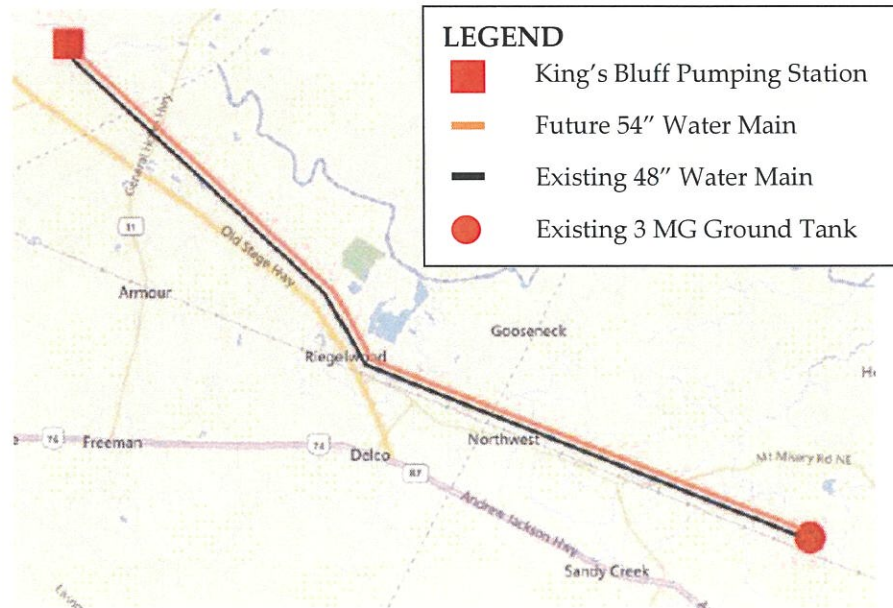
KING'S BLUFF RAW WATER FACILITIES

PROJECT TITLE	Generators at King’s Bluff Raw Water Pump Station	KB 3
CATEGORY:	Capacity, Efficiency, Maintenance	
Summary: <ul style="list-style-type: none">Provide new standby generator(s) and a new generator building at the pump station.		
Justification: <ul style="list-style-type: none">Requires upgrade due to future increased load associated with additional pump motor HP as well as larger quantity of pumps.A new building will be needed to house the new generators.		
Consequence of No Action: <ul style="list-style-type: none">The current generators are undersized to accommodate long term demandsThe existing generators are anticipated to become cost prohibitive to maintain		
Criticality: <div><div>▼</div><div><div>1</div><div>2</div><div>3</div></div></div>		
DURATION (MONTHS)	24	
REQUIRED COMPLETION	2027	
TOTAL ESTIMATED COST	\$8,350,000	
FISCAL YEAR	ANTICIPATED FISCAL YEAR EXPENDITURE	
2026	\$1,000,000	
2027	\$7,350,000	



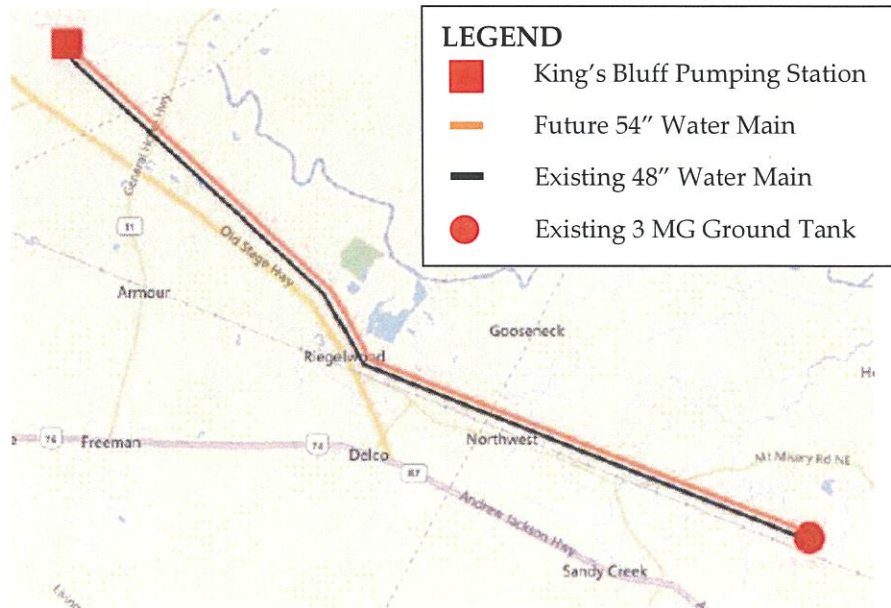
KING'S BLUFF RAW WATER FACILITIES

PROJECT TITLE	Pig 48" Pipe from King's Bluff Pump Station to 3 MG Ground Tank	KB 4
CATEGORY:	Renewal/Rehabilitation, Efficiency	
Summary: <ul style="list-style-type: none">Pig 48" pipeline from King's Bluff to 3 MG ground tank. Repair and/or replace air release valves and blow-offs.		
Justification: <ul style="list-style-type: none">Pigging will maintain a clean pipeline free of sediment, silt, and debris cleaned or emptied in the case of an emergency.Improves efficiency of pumps by reducing frictional characteristics of the pipeline		
Consequence of No Action: <ul style="list-style-type: none">Potential for loss of capacity and/or clogging due to sediment buildup.Loss of efficiency and higher electrical costs		
Criticality: <div>▼</div> <div><div>1</div><div>2</div><div>3</div></div>		
DURATION (MONTHS)	12	
REQUIRED COMPLETION	2034	
TOTAL ESTIMATED COST	\$1,000,000	
FISCAL YEAR	ANTICIPATED FISCAL YEAR EXPENDITURE	
2034	\$1,000,000	



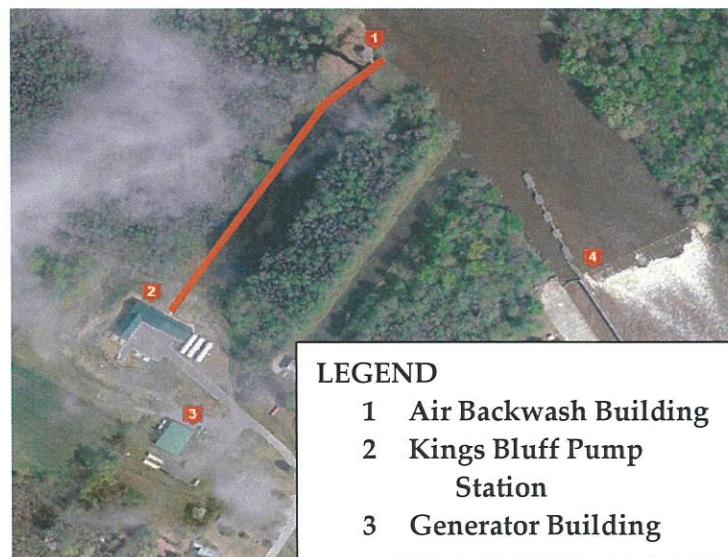
KING'S BLUFF RAW WATER FACILITIES

PROJECT TITLE	Pig Future 54" Pipe from 3 MG Ground Tank to US 421	KB 5
CATEGORY:	Renewal/Rehabilitation, Efficiency	
Summary: <ul style="list-style-type: none">Pig Future 54" pipeline from King's Bluff to 3 MG ground tank. Repair and/or replace air release valves and blow-offs.		
Justification: <ul style="list-style-type: none">Pigging will maintain a clean pipeline free of sediment, silt, and debris cleaned or emptied in the case of an emergency.Improves efficiency of pumps by reducing frictional characteristics of the pipeline		
Consequence of No Action: <ul style="list-style-type: none">Potential for loss of capacity and/or clogging due to sediment buildup.Loss of efficiency and higher electrical costs		
Criticality: <div>▼</div> <div><div>1</div><div>2</div><div>3</div></div>		
DURATION (MONTHS)	12	
REQUIRED COMPLETION	2034	
TOTAL ESTIMATED COST	\$1,000,000	
FISCAL YEAR	ANTICIPATED FISCAL YEAR EXPENDITURE	
2034	\$1,000,000	



KING'S BLUFF RAW WATER FACILITIES

PROJECT TITLE	Walkway and Air Backwash Building Replacement	KB 6
CATEGORY:	Renewal/Rehabilitation/Maintenance	
Summary: <ul style="list-style-type: none">Funding for replacement of existing walkway from the King’s Bluff Pumping Station to the Air Backwash buildings.Consideration of replacement with concrete structure.Upgrade/replace existing air backwash building. (See number 1 on legend below).		
Justification: <ul style="list-style-type: none">Walkway going from pumping station to air backwash buildings is currently in serviceable condition and will need to be replaced by 2030 due to rotting wood and overall weathering of walkway.During Hurricane Florence the walkway was nearing submergenceExisting, original air backwash building needs significant improvements due to a loss of structural integrity caused by the general degradation of original building materials.		
Consequence of No Action: <ul style="list-style-type: none">Deterioration of the walkway could limit access to the air backwash buildings and raw water intakes.The air backwash facility will continue to deteriorate and create potential issues with protection of equipment and access for operations and maintenance.		
Criticality: <div>▼</div>		
1	2	3
DURATION (MONTHS)	12	
REQUIRED COMPLETION	2024	
TOTAL ESTIMATED COST	\$900,000	
FISCAL YEAR	ANTICIPATED FISCAL YEAR EXPENDITURE	
2024	\$900,000	



KING'S BLUFF RAW WATER FACILITIES

PROJECT TITLE	Replace Generator Radiators	KB 7
CATEGORY:	Renewal/Rehabilitation/Maintenance	
Summary: <ul style="list-style-type: none">Replace the generator radiators with larger capacity radiators.		
Justification: <ul style="list-style-type: none">Increased heat generation due to extended generator run times create circumstances that cause the generators to shut down.		
Consequence of No Action: <ul style="list-style-type: none">Generators may shut down due to high temperature conditions.		
Criticality:		
<div><div>▼</div><div><div>1</div><div>2</div><div>3</div></div></div>		
DURATION (MONTHS)	12	
REQUIRED COMPLETION	2023	
TOTAL ESTIMATED COST	\$340,000	
FISCAL YEAR	ANTICIPATED FISCAL YEAR EXPENDITURE	
2023	\$340,000	



KING'S BLUFF RAW WATER FACILITIES

PROJECT TITLE	Meter and Valve Upgrades and Replacements	KB 8
CATEGORY:	Renewal/Rehabilitation/Maintenance	
Summary: <ul style="list-style-type: none">Funding for routine replacement of aging or damaged water meters and valves at customer delivery points.		
Justification: <ul style="list-style-type: none">Allows for accurate readings of volume and pressure of water being used.Allows the flow of water to be redirected, regulated or stopped in the event of emergencies.		
Consequence of No Action: <ul style="list-style-type: none">Failure of valves could cause operational issues including failure to divert or stop flow during an emergency.Potential loss of revenue due to damaged and/or aging water meters.		
Criticality: <div>▼</div>		
1	2	3
DURATION (MONTHS)	12	
REQUIRED COMPLETION	2029	
TOTAL ESTIMATED COST	\$100,000	
FISCAL YEAR	ANTICIPATED FISCAL YEAR EXPENDITURE	
2029	\$100,000	



KING'S BLUFF RAW WATER FACILITIES

PROJECT TITLE	20 MG Ground Tank	KB 9																					
CATEGORY:	Capacity/Efficiency																						
Summary: <ul style="list-style-type: none">Design & construction of a new 20 MG ground tank in close proximity to the existing 3 MG ground tank with sufficient acreage to construct a future 20 MG ground tank.																							
Justification: <ul style="list-style-type: none">Increase in available system storage.Provide a more consistent supply for safe and efficient operation of the adjacent interim booster pump station.																							
Consequence of No Action: <ul style="list-style-type: none">Minimal system storage as system demands continue to increaseIncreased cycling of pumps at the intermediate booster pump station.																							
Criticality: <div>▼</div> <table><tr><td>1</td><td>2</td><td>3</td></tr><tr><td>DURATION (MONTHS)</td><td colspan="2">24</td></tr><tr><td>REQUIRED COMPLETION</td><td colspan="2">2037</td></tr><tr><td>TOTAL ESTIMATED COST</td><td colspan="2">\$ 12,000,000</td></tr><tr><td>FISCAL YEAR</td><td colspan="2">ANTICIPATED FISCAL YEAR EXPENDITURE</td></tr><tr><td>2036</td><td colspan="2">\$3,000,000</td></tr><tr><td>2037</td><td colspan="2">\$9,000,000</td></tr></table>			1	2	3	DURATION (MONTHS)	24		REQUIRED COMPLETION	2037		TOTAL ESTIMATED COST	\$ 12,000,000		FISCAL YEAR	ANTICIPATED FISCAL YEAR EXPENDITURE		2036	\$3,000,000		2037	\$9,000,000	
1	2	3																					
DURATION (MONTHS)	24																						
REQUIRED COMPLETION	2037																						
TOTAL ESTIMATED COST	\$ 12,000,000																						
FISCAL YEAR	ANTICIPATED FISCAL YEAR EXPENDITURE																						
2036	\$3,000,000																						
2037	\$9,000,000																						



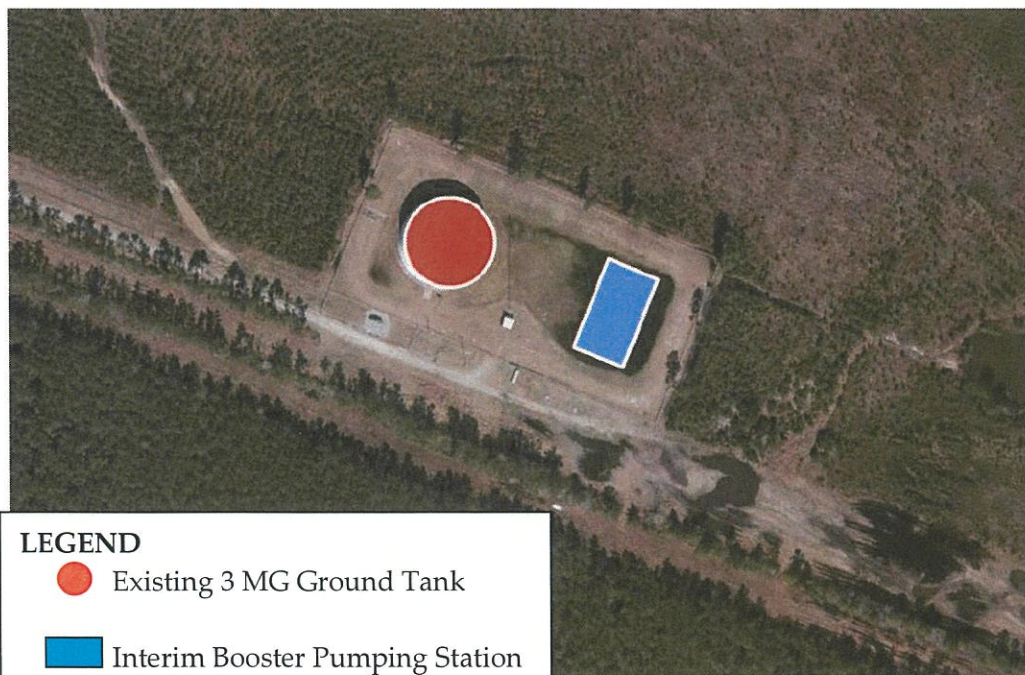
KING'S BLUFF RAW WATER FACILITIES

PROJECT TITLE	Intermediate Booster Pump Station Shelter	KB 10
CATEGORY:	Maintenance/Efficiency	
Summary: <ul style="list-style-type: none">Addition of protective shelter at the Intermediate Booster PS		
Justification: <ul style="list-style-type: none">Required to protect existing pumps, equipment, gear from elementsProvides improved maintenance access during inclement weather		
Consequence of No Action: <ul style="list-style-type: none">Equipment potentially suffers degradation due to exposure to the elements to include freezing conditions, and sun damage.		
Criticality:		
1	2	3
DURATION (MONTHS)	12	
REQUIRED COMPLETION	2025	
TOTAL ESTIMATED COST	\$500,000	
FISCAL YEAR	ANTICIPATED FISCAL YEAR EXPENDITURE	
2025	\$500,000	



KING'S BLUFF RAW WATER FACILITIES

PROJECT TITLE	Intermediate Booster Pump Station Upgrade	KB 11
CATEGORY:	Capacity	
Summary: <ul style="list-style-type: none">Infrastructure upgrades to the existing booster pump station. Diesel pumps to be replaced with new, larger capacity pumps.		
Justification: <ul style="list-style-type: none">US 421 area demands will exceed current 29 MGD capacity in approximately 2037.Recommend upgrade to 37 MGD capacity.		
Consequence of No Action: <ul style="list-style-type: none">Booster Pump Station will not be able to fully serve the projected demands and system pressure for the US 421 area.		
Criticality:		
1	2	3
DURATION (MONTHS)	24	
REQUIRED COMPLETION	2034	
TOTAL ESTIMATED COST	\$7,000,000	
FISCAL YEAR	ANTICIPATED FISCAL YEAR EXPENDITURE	
2033	\$1,000,000	
2034	\$6,000,000	



KING'S BLUFF RAW WATER FACILITIES

PROJECT TITLE	Replace Raw Water Pumps 1, 4, 5	KB 12
CATEGORY:	Renewal/Rehabilitation	
Summary: <ul style="list-style-type: none">Replace 1600 HP vertical turbine raw water pumps 1, 4, 5 originally installed in 2009.		
Justification: <ul style="list-style-type: none">Due to age and mechanical wear, it is anticipated that replacement of raw water pumps 1, 4, and 5 will be required.		
Consequence of No Action: <ul style="list-style-type: none">The likelihood of failure of the pumps increases due to age and wear of the existing pump. The service life of the existing pumps will be expended.		
Criticality:		
▼		
1	2	3
DURATION (MONTHS)	36	
REQUIRED COMPLETION	2041, 2042, 2043	
TOTAL ESTIMATED COST	\$9,000,000	
FISCAL YEAR	ANTICIPATED FISCAL YEAR EXPENDITURE	
2041	\$3,000,000	
2042	\$3,000,000	
2043	\$3,000,000	



KING'S BLUFF RAW WATER FACILITIES

PROJECT TITLE	SCADA Improvements	KB 13
CATEGORY:	Renewal/Rehabilitation	
Summary: <ul style="list-style-type: none">Funding for update of SCADA Systems		
Justification: <ul style="list-style-type: none">Software and updates will be necessary to maintain modernization of the facilities with current technologies		
Consequence of No Action: <ul style="list-style-type: none">Software, programs, and hardware will be unsupported and create issues with long-term maintenance and viability of operations.		
Criticality: <div>▼</div>		
1	2	3
DURATION (MONTHS)	12	
REQUIRED COMPLETION	2025	
TOTAL ESTIMATED COST	\$125,000	
FISCAL YEAR	ANTICIPATED FISCAL YEAR EXPENDITURE	
2025	\$125,000	



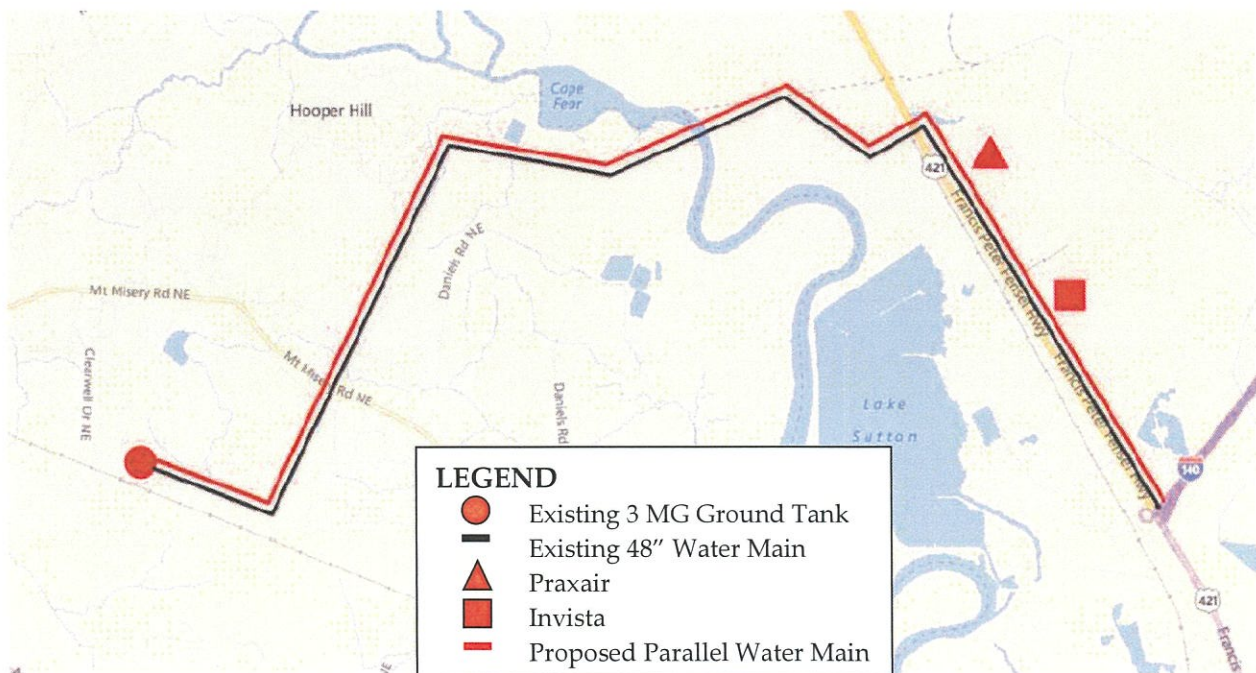
KING'S BLUFF RAW WATER FACILITIES

PROJECT TITLE	New Surge Tank at King's Bluff	KB 14
CATEGORY:	Capacity	
Summary: <ul style="list-style-type: none">Addition of a 4th surge tank at King's Bluff Pumping Station		
Justification: <ul style="list-style-type: none">As demand increases, surges in the system will likely increase. The 4th surge tank will serve to mitigate system surges and protect the pumps, piping and miscellaneous equipment from surges and water hammer.		
Consequence of No Action: <ul style="list-style-type: none">Existing pump station and piping infrastructure would be put at risk for damage due to system surges and could potentially create failures in the pipeline.		
Criticality: <div>▼</div>		
1	2	3
DURATION (MONTHS)	12	
REQUIRED COMPLETION	2043	
TOTAL ESTIMATED COST	\$500,000	
FISCAL YEAR	ANTICIPATED FISCAL YEAR EXPENDITURE	
2043	\$500,000	



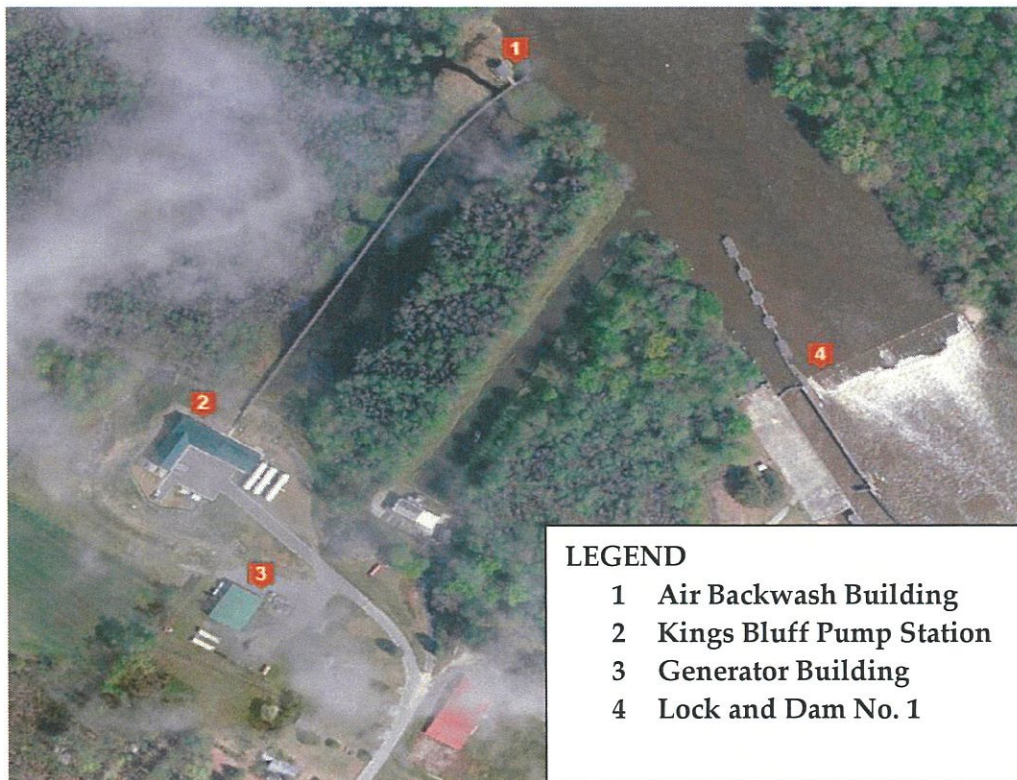
KING'S BLUFF RAW WATER FACILITIES

PROJECT TITLE	Parallel Raw Water Main from 3 MG Ground Tank to US 421 Service Area	KB 15
CATEGORY:	Capacity	
Summary: <ul style="list-style-type: none">Design and construction of approximate 10-mile 48-inch raw water main from 3 MG ground tank to US 421 service area. Pipe would parallel the existing 48-inch raw water main in this area.		
Justification: <ul style="list-style-type: none">Provides additional system capacityReduces reliance on intermediate booster pump station.Improves reliability with a parallel main to serve major customers.		
Consequence of No Action: <ul style="list-style-type: none">The system may not have capability to meet long-term customer demands.The existing 48-inch main is a single point of failure from the 3 MGD ground tank to the US 421 service area.		
Criticality: <div>▼</div> <div><div>1</div><div>2</div><div>3</div></div>		
DURATION (MONTHS)	42	
REQUIRED COMPLETION	Beyond 2045 Planning Period	
TOTAL ESTIMATED COST	\$45,000,000	
FISCAL YEAR	ANTICIPATED FISCAL YEAR EXPENDITURE	
>2045	N/A	



KING'S BLUFF RAW WATER FACILITIES

PROJECT TITLE	Generator Building Ventilation Upgrades	KB 16
CATEGORY:	Maintenance/Efficiency	
Summary: <ul style="list-style-type: none">Upgrades to the existing generator building ventilation system to include new air intake and outlet vents, fans, and air ducts.		
Justification: <ul style="list-style-type: none">To maintain proper ventilation of the generator room to ensure both efficiency and safety of the generator operation.		
Consequence of No Action: <ul style="list-style-type: none">Generators may shut down due to high temperature conditions.		
Criticality: <div><div>▼</div><div><div>1</div><div>2</div><div>3</div></div></div>		
DURATION (MONTHS)	12	
REQUIRED COMPLETION	2023	
TOTAL ESTIMATED COST	\$350,000	
FISCAL YEAR	ANTICIPATED FISCAL YEAR EXPENDITURE	
2023	\$350,000	



KING'S BLUFF RAW WATER FACILITIES

Annual Fiscal Year Budget Breakdown (In Millions of Dollars)

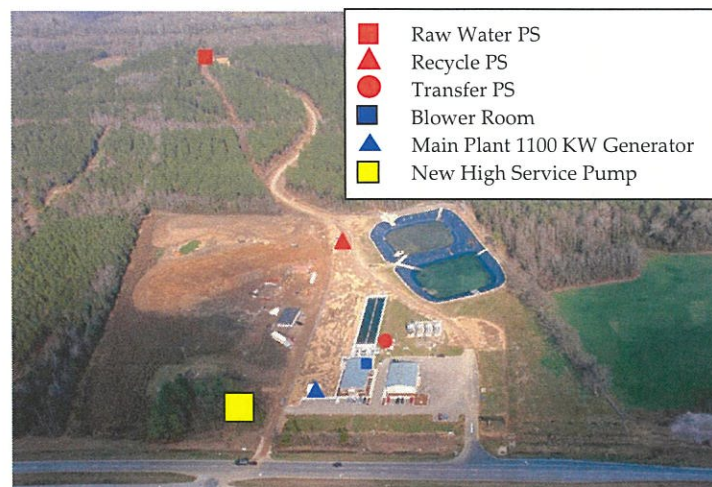
Project No.	Description	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034	FY 2035	FY 2036	FY 2037	FY 2038	FY 2039	FY 2040	FY 2041	FY 2042	FY 2043	FY 2044	FY 2045	Totals
KB 1	New 4th Pump at King's Bluff		\$0.80	\$2.50																							\$3.3
KB 1A	New 5th Pump at King's Bluff											\$0.80	\$2.50														\$3.3
KB 2	Rebuild High Service Pump Motors		\$0.25	\$0.25			\$0.25																	\$0.25			\$1.00
KB 3	New Generators						\$1.00	\$7.35																			\$8.35
KB 4	Pig 48" Water Main														\$1.0												\$1.0
KB 5	Pig Future 54" Water Main														\$1.0												\$1.0
KB 6	Walkway and Air Backwash Building Replacement				\$0.9																						\$0.90
KB 7	Replace Generator Radiators			\$0.34																							\$0.34
KB 8	Meter and Valve Upgrades									\$0.10																	\$0.10
KB 9	20 MG Ground Tank																\$3.00	\$9.00									\$12.0
KB 10	Booster PS Shelter					\$0.5																					\$0.5
KB 11	Booster Pump Station Upgrades													\$1.00	\$6.00												\$7.0
KB 12	Replace Raw Water Pumps 1, 4, 5																					\$3.00	\$3.00	\$3.00			\$9.0
KB 13	SCADA Improvements					\$0.125																					\$0.125
KB 14	New Surge Tank at King's Bluff																							\$0.5			\$0.5
KB 15	48" Parallel Raw Water Main US 421																									>2045	
KB 16	Generator Building Ventilation Upgrades			\$0.35																							\$0.35
Total Fiscal Year Expenditure			\$1.05	\$3.44	\$0.9	\$0.625	\$1.25	\$7.35		\$0.10		\$0.8	\$2.50	\$1.00	\$8.00	\$3.00	\$9.00	\$9.00				\$3.00	\$3.00	\$3.50	\$0.25		\$48.8

BLADEN BLUFFS REGIONAL SURFACE WATER FACILITY

**V. Bladen Bluffs Regional
Surface Water Treatment Facility
Capital Improvements Projects
FY 2020-2045**

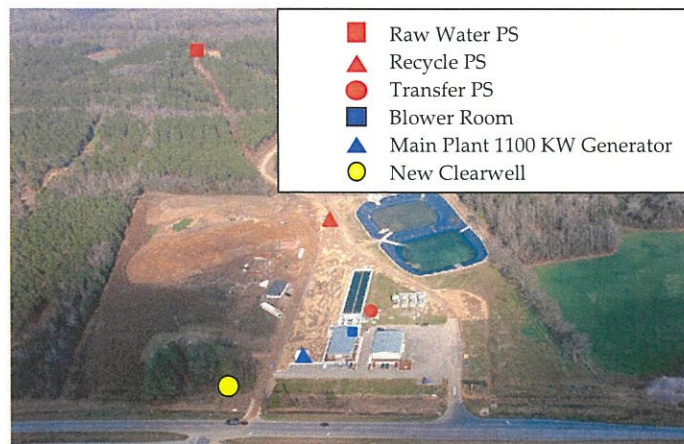
BLADEN BLUFFS REGIONAL SURFACE WATER FACILITY

PROJECT TITLE	New High Service Pump Station	BB 1
CATEGORY:	Capacity	
Summary: <ul style="list-style-type: none">Construct a new high service pumping station to increase capacity. <p><i>Note: Currently Smithfield Farmland Company (SFC) provides all operation and maintenance of the Bladen Bluffs Regional Surface Water Treatment Facility. The CIP project described on this sheet would only be required if the LCFWSA assumed full operation of the facility from SFC. Until such time all capital improvements and/or maintenance requirements are solely the responsibility of SFC.</i></p>		
Justification: <ul style="list-style-type: none">Required to serve new customers.Construction of new high service pump station would only be required when additional customers are identified to be served by the Bladen Bluffs Regional Surface Water Treatment Facility.		
Consequence of No Action: <ul style="list-style-type: none">The system will not have the required capacity to meet new customer demands.		
Criticality: <div>▼</div>		
1	2	3
DURATION (MONTHS)	24	
REQUIRED COMPLETION	2029	
TOTAL ESTIMATED COST	\$3,500,000	
FISCAL YEAR	ANTICIPATED FISCAL YEAR EXPENDITURE	
2028	\$500,000	
2029	\$3,000,000	



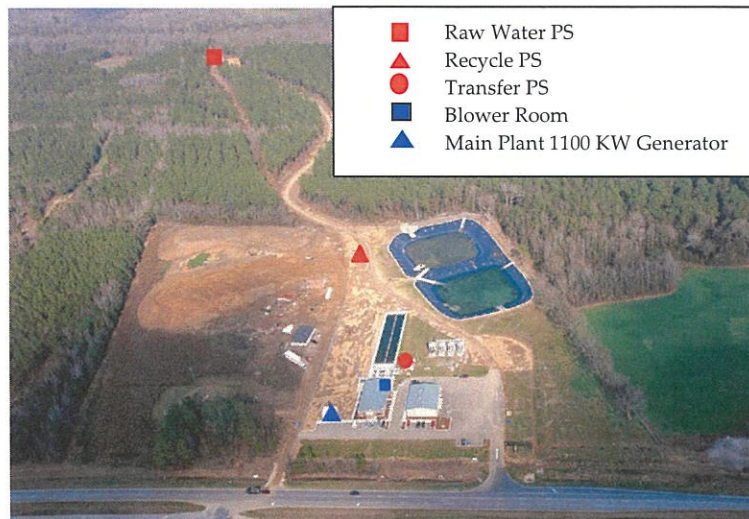
BLADEN BLUFFS REGIONAL SURFACE WATER FACILITY

PROJECT TITLE	Construct New 1 MG Capacity Clearwell	BB 2			
CATEGORY:	Capacity				
Summary: <ul style="list-style-type: none">Construct clearwell to meet future customer finished water storage capacity. <p><i>Note: Currently Smithfield Farmland Company (SFC) provides all operation and maintenance of the Bladen Bluffs Regional Surface Water Treatment Facility. The CIP project described on this sheet would only be required if the LCFWSA assumed full operation of the facility from SFC. Until such time all capital improvements and/or maintenance requirements are solely the responsibility of SFC.</i></p>					
Justification: <ul style="list-style-type: none">Required to serve new customers.Clearwell would only be required when additional customers are identified to be served by the Bladen Bluffs Regional Surface Water Treatment Facility.					
Consequence of No Action: <ul style="list-style-type: none">The system will not have the required capacity to meet new customer demands.					
Criticality: <div>▼</div> <table><tr><td>1</td><td>2</td><td>3</td></tr></table>			1	2	3
1	2	3			
DURATION (MONTHS)	24				
REQUIRED COMPLETION	2029				
TOTAL ESTIMATED COST	\$2,500,000				
FISCAL YEAR	ANTICIPATED FISCAL YEAR EXPENDITURE				
2028	\$500,000				
2029	\$2,000,000				



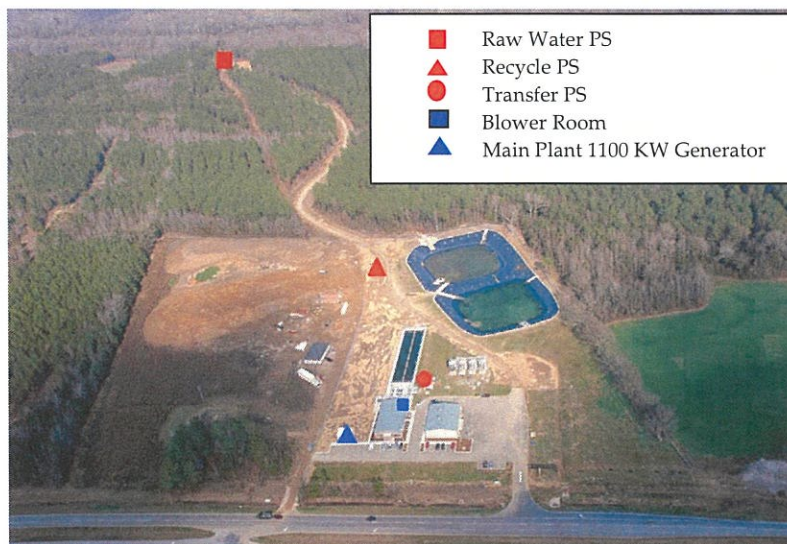
BLADEN BLUFFS REGIONAL SURFACE WATER FACILITY

PROJECT TITLE	Replacement of Anthracite Media in the Treatment Plant Filter System	BB 3																		
CATEGORY:	Renewal/Rehabilitation																			
Summary: <ul style="list-style-type: none">Replace Anthracite Media in the Treatment Plant Filter System. <p><i>Note: Currently Smithfield Farmland Company (SFC) provides all operation and maintenance of the Bladen Bluffs Regional Surface Water Treatment Facility. The CIP project described on this sheet would only be required if the LCFWSA assumed full operation of the facility from SFC. Until such time all capital improvements and/or maintenance requirements are solely the responsibility of SFC.</i></p>																				
Justification: <ul style="list-style-type: none">The effectiveness of the anthracite media will be reduced over the life of the facility. It is recommended that the anthracite be replaced in order to maintain optimum treatment and comply with permit parameters.																				
Consequence of No Action: <ul style="list-style-type: none">Failure to replace anthracite media will create a loss of quality of the treated wastewater discharged from the plant and potential to not meet state requirements.																				
Criticality: <div>▼</div> <table><tr><td>1</td><td>2</td><td>3</td></tr><tr><td>DURATION (MONTHS)</td><td colspan="2">12</td></tr><tr><td>REQUIRED COMPLETION</td><td colspan="2">2030</td></tr><tr><td>TOTAL ESTIMATED COST</td><td colspan="2">\$300,000</td></tr><tr><td>FISCAL YEAR</td><td colspan="2">ANTICIPATED FISCAL YEAR EXPENDITURE</td></tr><tr><td>2030</td><td colspan="2">\$300,000</td></tr></table>			1	2	3	DURATION (MONTHS)	12		REQUIRED COMPLETION	2030		TOTAL ESTIMATED COST	\$300,000		FISCAL YEAR	ANTICIPATED FISCAL YEAR EXPENDITURE		2030	\$300,000	
1	2	3																		
DURATION (MONTHS)	12																			
REQUIRED COMPLETION	2030																			
TOTAL ESTIMATED COST	\$300,000																			
FISCAL YEAR	ANTICIPATED FISCAL YEAR EXPENDITURE																			
2030	\$300,000																			



BLADEN BLUFFS REGIONAL SURFACE WATER FACILITY

PROJECT TITLE	Replace Three (3) Pumps at the Raw Water Pump Station	BB 4			
CATEGORY:	Renewal/Rehabilitation				
Summary: <ul style="list-style-type: none">Routine replacement of three (3) aging pumps at Raw Water Pumping Station. <p><i>Note: Currently Smithfield Farmland Company (SFC) provides all operation and maintenance of the Bladen Bluffs Regional Surface Water Treatment Facility. The CIP project described on this sheet would only be required if the LCFWSA assumed full operation of the facility from SFC. Until such time all capital improvements and/or maintenance requirements are solely the responsibility of SFC.</i></p>					
Justification: <ul style="list-style-type: none">Pumps will be approximately 20 years old by 2032 and approaching end of useful service life.					
Consequence of No Action: <ul style="list-style-type: none">The likelihood of failure of the pumps increases due to age and wear of the existing pump.					
Criticality: <div>▼</div> <table><tr><td>1</td><td>2</td><td>3</td></tr></table>			1	2	3
1	2	3			
DURATION (MONTHS)	12				
REQUIRED COMPLETION	2032				
TOTAL ESTIMATED COST	\$250,000				
FISCAL YEAR	ANTICIPATED FISCAL YEAR EXPENDITURE				
2032	\$250,000				



BLADEN BLUFFS REGIONAL SURFACE WATER FACILITY

PROJECT TITLE	Replace Blower in the Blower Building	BB 5			
CATEGORY:	Renewal/Rehabilitation				
Summary: <ul style="list-style-type: none">Routine replacement of aging blower in blower building. <p><i>Note: Currently Smithfield Farmland Company (SFC) provides all operation and maintenance of the Bladen Bluffs Regional Surface Water Treatment Facility. The CIP project described on this sheet would only be required if the LCFWSA assumed full operation of the facility from SFC. Until such time all capital improvements and/or maintenance requirements are solely the responsibility of SFC.</i></p>					
Justification: <ul style="list-style-type: none">Blower will be approximately 25 years old by 2032 and approaching end of useful service life.					
Consequence of No Action: <ul style="list-style-type: none">The likelihood of failure of the blower increases due to age and wear of the existing blower.					
Criticality: <div>▼</div> <table><tr><td>1</td><td>2</td><td>3</td></tr></table>			1	2	3
1	2	3			
DURATION (MONTHS)	12				
REQUIRED COMPLETION	2032				
TOTAL ESTIMATED COST	\$100,000				
FISCAL YEAR	ANTICIPATED FISCAL YEAR EXPENDITURE				
2032	\$100,000				



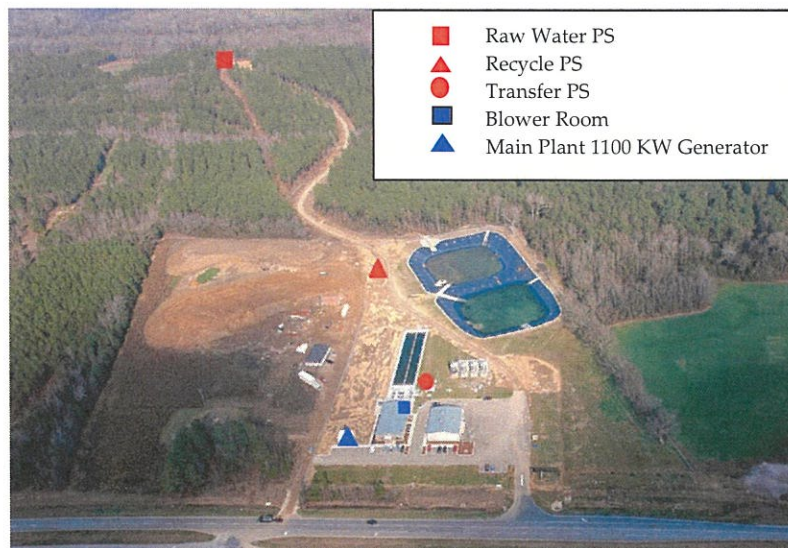
BLADEN BLUFFS REGIONAL SURFACE WATER FACILITY

PROJECT TITLE	Replace Three (3) Pumps at the Recycle Pump Station	BB 6																		
CATEGORY:	Renewal/Rehabilitation																			
Summary: <ul style="list-style-type: none">Routine replacement of three (3) aging pumps at the Recycle Pumping Station. <p><i>Note: Currently Smithfield Farmland Company (SFC) provides all operation and maintenance of the Bladen Bluffs Regional Surface Water Treatment Facility. The CIP project described on this sheet would only be required if the LCFWSA assumed full operation of the facility from SFC. Until such time all capital improvements and/or maintenance requirements are solely the responsibility of SFC.</i></p>																				
Justification: <ul style="list-style-type: none">Pumps will be approximately 20 years old by 2032 and approaching end of useful service life.																				
Consequence of No Action: <ul style="list-style-type: none">The likelihood of failure of the pumps increases due to age and wear of the existing pump.																				
Criticality: <div>▼</div> <table><tr><td>1</td><td>2</td><td>3</td></tr><tr><td>DURATION (MONTHS)</td><td colspan="2">12</td></tr><tr><td>REQUIRED COMPLETION</td><td colspan="2">2032</td></tr><tr><td>TOTAL ESTIMATED COST</td><td colspan="2">\$150,000</td></tr><tr><td>FISCAL YEAR</td><td colspan="2">ANTICIPATED FISCAL YEAR EXPENDITURE</td></tr><tr><td>2032</td><td colspan="2">\$150,000</td></tr></table>			1	2	3	DURATION (MONTHS)	12		REQUIRED COMPLETION	2032		TOTAL ESTIMATED COST	\$150,000		FISCAL YEAR	ANTICIPATED FISCAL YEAR EXPENDITURE		2032	\$150,000	
1	2	3																		
DURATION (MONTHS)	12																			
REQUIRED COMPLETION	2032																			
TOTAL ESTIMATED COST	\$150,000																			
FISCAL YEAR	ANTICIPATED FISCAL YEAR EXPENDITURE																			
2032	\$150,000																			



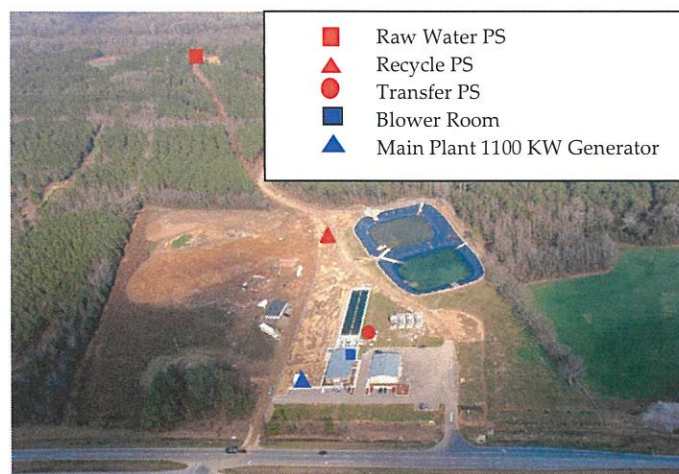
BLADEN BLUFFS REGIONAL SURFACE WATER FACILITY

PROJECT TITLE	Replace Three (3) Pumps at the Transfer Pump Station	BB 7			
CATEGORY:	Renewal/Rehabilitation				
Summary: <ul style="list-style-type: none">Routine replacement of three (3) aging pumps at the Transfer Pumping Station. <p><i>Note: Currently Smithfield Farmland Company (SFC) provides all operation and maintenance of the Bladen Bluffs Regional Surface Water Treatment Facility. The CIP project described on this sheet would only be required if the LCFWSA assumed full operation of the facility from SFC. Until such time all capital improvements and/or maintenance requirements are solely the responsibility of SFC.</i></p>					
Justification: <ul style="list-style-type: none">Pumps will be approximately 20 years old by 2032 and approaching end of useful service life.					
Consequence of No Action: <ul style="list-style-type: none">The likelihood of failure of the pumps increases due to age and wear of the existing pump.					
Criticality: <div>▼</div> <table><tr><td>1</td><td>2</td><td>3</td></tr></table>			1	2	3
1	2	3			
DURATION (MONTHS)	12				
REQUIRED COMPLETION	2032				
TOTAL ESTIMATED COST	\$250,000				
FISCAL YEAR	ANTICIPATED FISCAL YEAR EXPENDITURE				
2032	\$250,000				



BLADEN BLUFFS REGIONAL SURFACE WATER FACILITY

PROJECT TITLE	Replace Two (2) Generators at the Site	BB 8			
CATEGORY:	Renewal/Rehabilitation				
Summary: <ul style="list-style-type: none">Routine replacement of two (2) aging on-site generators. <p><i>Note: Currently Smithfield Farmland Company (SFC) provides all operation and maintenance of the Bladen Bluffs Regional Surface Water Treatment Facility. The CIP project described on this sheet would only be required if the LCFWSA assumed full operation of the facility from SFC. Until such time all capital improvements and/or maintenance requirements are solely the responsibility of SFC.</i></p>					
Justification: <ul style="list-style-type: none">Facility currently has two (2) generators on-site. Generators will be approximately 25 years old by 2037 and approaching end of service life.					
Consequence of No Action: <ul style="list-style-type: none">The current generators are undersized to accommodate long term demands.The existing generators are anticipated to become cost prohibitive to maintain.					
Criticality: <div>▼</div> <table><tr><td>1</td><td>2</td><td>3</td></tr></table>			1	2	3
1	2	3			
DURATION (MONTHS)	24				
REQUIRED COMPLETION	2037				
TOTAL ESTIMATED COST	\$700,000				
FISCAL YEAR	ANTICIPATED FISCAL YEAR EXPENDITURE				
2036	\$200,000				
2037	\$500,000				



Annual Fiscal Year Budget Breakdown (In Millions of Dollars)

Project No.	Description	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034	FY 2035	FY 2036	FY 2037	FY 2038	FY 2039	FY 2040	FY 2041	FY 2042	FY 2043	FY 2044	FY 2045	FY > 2045
BB 1	New High Service Pump Station								\$0.50	\$3.00																	
BB 2	Construct New 1 MG Capacity Clearwell								\$0.50	\$2.00																	
BB 3	Replace Anthracite Media in Filter System										\$0.30																
BB 4	Replace (3) Pumps at Raw Water Pump Station												\$0.25														
BB 5	Replace Blower in Blower Building												\$0.10														
BB 6	Replace (3) Pumps at the Recycle Pump Station															\$0.15											
BB 7	Replace (3) Pumps at the Transfer Pump Station															\$0.25											
BB 8	Replace (2) Generators at the Site																\$0.20	\$0.50									
Fiscal Year Expenditure									\$1.00	\$5.00	\$0.30		\$0.35			\$0.40	\$0.20	\$0.50									