GOMESA PHASE II PROJECT FUNDING

Request for Funding FY2026

Submission ID: #202509301374

PROJECT SUMMARY

1. Title of Project

Long Beach-Pass Christian WWTP New Headworks

2. Location of Project

30°19'49"N 89°14'41"W Lat: 30.330537° Long: -89.244835° North of the intersection at Fleitas Ave and E North St in Pass Christian, MS

3. Requesting Organization:

Harrison County Utility Authority (HCUA)

4. Requesting Agency Representative

a. Name:	John Wilson, P.E.
b. Phone:	228-868-8752
d. Email:	JWilson@HCUA-MS.US
c. Address:	10271 Express Drive
	Gulfport Mississippi

5. Funding Requested:

$15800000

6. Have any other State or Federal funding sources been identified for the project?

No

7. If yes, enter amount and source of additional funds:

$

Source of Additional Funds:

8. Total Project Funds

$15800000

9. Provide Brief Project Description/Overview:

The headworks at the LBPC WWTP consists of two rotary drum screens that frequently overflow at 3.5 MGD, have reached the end of their useful life, and cannot meet nor are they permitted for current or future flow demands. Furthermore, the existing aerated grit removal technology is ineffective by modern standards. The current headworks screens are not effective in providing efficient preliminary treatment.

The proposed project will replace the headworks in its entirety with a modernized structure designed for a peak capacity of 23.5 MGD. This recommendation was outlined in an SRF Facilities Plan provided to the Harrison County Utility Authority. Improvements include the installation of three mechanical plate screens for more effective solids removal and two grit removal systems to enhance grit capture and protect downstream treatment processes. This facility upgrade will provide capacity for current flow and future growth, while extending the facility's service life and reducing high maintenance costs.

10. LIST Project Goals/Objectives:

- Increase Treatment Capacity: Expand headworks mechanical peak capacity of 3.5 MGD to 23.5 MGD to manage current and projected flows, which are already exceed current permitted allowances.

- Protect Downstream Processes: Enhance solids and grit removal to reduce wear, blockages, and maintenance needs in downstream treatment systems. Ragging at the LBPC WWTP is a major issue affecting operations downstream and requires 2-hours daily to de-rag the clarifiers.

- Support Regulatory Compliance and Enhance Environmental Protection: Minimize the risk of untreated bypasses or solids carryover, improving water quality protection and ensure NPDES permit requirements are met.

- Improve Reliability: Replace aging rotary drum screens and grit classifier with modern, efficient equipment to reduce overflows and downtime.

- Reduce Operations & Maintenance Costs: Install equipment designed for easier and more effective operation and lower life-cycle costs, as well as reduce resulting maintenance required downstream.

11. Which of the following authorized uses set forth in the GOMESA Act does this project fall under? Explain SPECIFICALLY and in detail how the project meets the required criteria. Check all that apply - At least one must be checked.

☒ (A) Projects and activities for the purposes of coastal protection, including conservation, coastal restoration, hurricane protection, and infrastructure directly affected by coastal wetland losses

The project protects coastal resources by replacing the existing headworks (which is frequently known to exceed permitted flow capacity) with modern screens and grit removal, sized for 23.5 MGD. The plant discharges to Bayou Portage Coastal Preserve, which is hydrologically adjacent to coastal estuarine and marine wetland. By reliably removing debris and grit before they reach downstream processes, the project prevents untreated solids from entering marine waters and nearby wetlands, vital to Mississippi's coastal resilience. This investment strengthens the long-term coastal protection by ensuring the treatment plant can withstand extreme weather while protecting sensitive wetland ecosystems.

☒ **(B) Mitigation of damage to fish, wildlife, or natural resources.**

Rebuilding the existing headworks will directly mitigate damage to fish, wildlife, and natural resources by elimination of grit and debris pass-through, requiring operators to manually de-rag downstream treatment, increasing the risk of treatment inefficiencies. If left unaddressed, higher suspended solids and organic loads can reach the Bayou Portage Coastal Preserve and surrounding wetlands, which can smother aquatic habitats, stress fish populations, and degrade natural resources (including existing ESA-listed aquatic species). By eliminating these impacts, the project directly protects those critical to the health of Mississippi's marine ecosystem.

☐ **(C) Implementation of a federally-approved marine, coastal, or conservation management plan**

☐ **(D) Mitigation of the impact of Outer Continental Shelf activities through funding of onshore infrastructure projects.**

12. Project Timetable/Milestones:

Commence Engineering Plans - July 2026

Advertise Project - July 2027

Award Project - September 2027

Notice to Proceed Construction - October 2027

Completion of Construction - March 2029

Project Closeout - April 2029

13. Project Timing

Short-term (3 year or less)

APPLICATION SUMMARY QUESTIONNAIRE

14. Current status of architectural/engineering plans & specifications for this project (if applicable):

Group 1:

In Progress

Group 2:

Funds not budgeted

15. In what way does this project meet the goals and objectives of the Department of Marine Resources, which includes enhancing, protecting and conserving the marine interest of Mississippi for present and future generations.?

The project directly supports the goals and objectives of the Mississippi Department of Marine Resources by protecting the State's coastal estuarine and marine wetlands both present and future. The headworks at the LBPC WWTP is past its useful life and inadequate for current needs. Though currently maintaining compliance through the use of a manual screen operating at over 80% capacity, the screens allow excessive debris and solids to pass downstream. This results in frequent ragging of clarifiers, requiring operators to de-rag the equipment daily. Not only do these conditions increase labor and operational costs, but also pose risk of damage to the Bayou Portage Coastal Preserve, hydrologically adjacent to coastal and estuarine waters. Damage to downstream treatment would impair water quality, degrade fish and wildlife habitat, and threaten the long-term health of marine resources.

Additionally, while the plant's permit flow is 7 MGD, actual flows often exceed this level during peak events, placing further strain on the outdated headworks. Without improvement, there is a growing risk that future storm events or population growth could lead to equipment failures or reduced treatment performance, with negative impacts on coastal resources.

Rebuilding the headworks structure with modern screening and grit removal systems will eliminate risk of overflows and improve the reliability of treatment. Additionally, the increased capacity will ensure future development and population growth can be accommodated without additional strain on coastal resources.

Ultimately, the project advances MDMR's mission by protecting the marine and coastal environments through reducing present-day risks and ensuring reliable treatment for potential growth.

16. Estimated number of years to completion:

3

17. Estimated Completion Date:

April 2029

18. Prioritize if your agency has submitted multiple projects:

1

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BUDGET

Category	Total
Salaries	
Travel	
Architecture & Engineering	1900000
Legal	
Consulting	
Construction	13900000
Site Work	
Equipment	
Indirects	
Other	
Total	15800000

Attachments

1. pages-from-gomesa-form-fy2026_newheadworks.pdf

☒ **I hereby certify under penalty of perjury that all information contained in this application packet is true and correct. I have not knowingly or intentionally provided any false information. I understand that a false statement on this application may be grounds for rejection of my application or termination of the award. In addition, a false statement may be punishable under applicable state or federal laws, which may also result in a fine and/or imprisonment.**

☒ **I certify that the above referenced agency / entity has given me the authority to submit this application.**

Name	Phone	Date
Nathan Long	2253474419	09/30/2025

1.0 Summary, Conclusions, and Recommendations

The Harrison County Utility Authority (HCUA) is considering a project to remove existing screening systems that have reached the end of their current operational lives and replacing with a new drum screening system and grit removal system. This project will meet the current and future needs of the plant by helping to reduce solids in the treatment effluent. It will also help to reduce buildup of grit in the plant which will prevent the reduction of treatment capacity. An alternate to this project was not considered as it proposes to replace an existing facility. The estimated project cost is $25,660,000.

2.0 Need For The Project

This project proposes to replace the headworks screening system and grit removal systems. This is necessary as the facility was constructed in 1988 and the systems are past their useful life and need replacement prior to total failure. Failure of these systems will cause buildup of grits and debris such as rags to make their way into the plant and potentially reduce the life of other equipment.

3.0 Existing Situation

3.1 Planning Area and Boundaries

The planning area for the Harrison County Utility Authority (HCUA) is Harrison County, Mississippi. The facility is located in Pass Christian, Mississippi to the East of Bay St. Louis less than a mile North of Hwy 90. Refer to Figure 6.1 and 6.2 for a map of the project area.

3.2 Population Served

It is estimated that this treatment facility serves approximately 25,000 people.

3.3 Surface waters affected by or improved by the proposed project:

Bayou Portage is the receiving stream for treated effluent at the Long Beach-Pass Christian WWTP Plant.

3.4 Organizational context (city only, city-county, intercity, etc.)

The Harrison County Utility Authority (HCUA) is a state formed entity governed by a Board of Directors comprised of the Mayors from each of the five cities and two Representatives from the Harrison County Board of Supervisors. The HCUA provides services for Water, Wastewater, Storm Water and Solid Waste operations throughout designated areas of Harrison County.

3.5 Location, description, and performance of existing facilities

HCUA currently operates approximately 51 sewer pump stations, 10 wastewater treatment facilities, and a large network of gravity sewer and force mains.

Figure 3.1 below shows the general locations and capacities of HCUA's existing facilities in the study area.

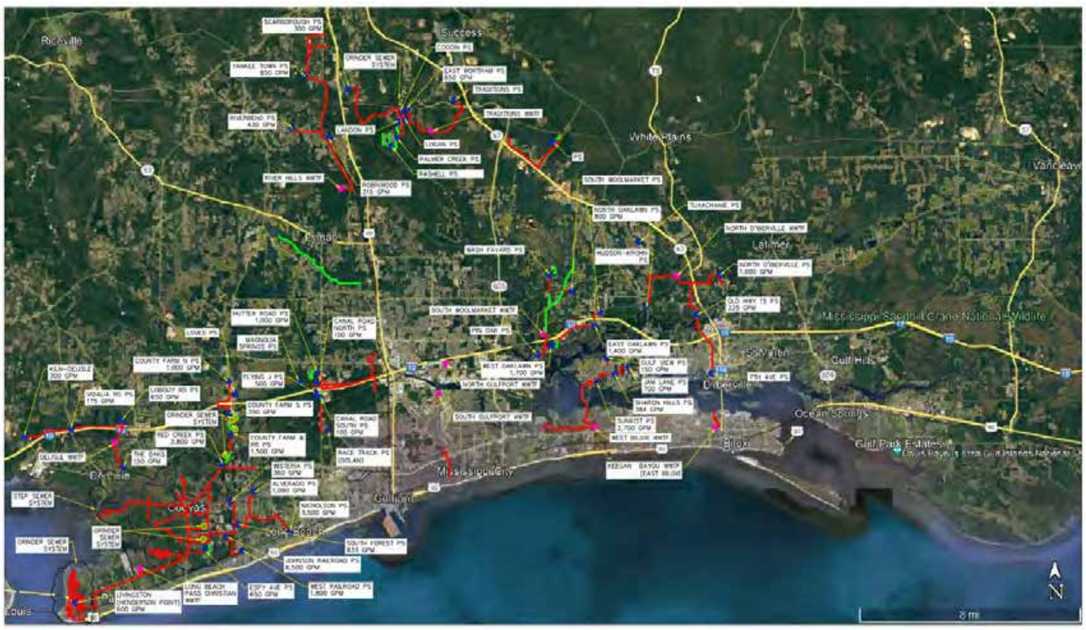

Figure 3.1 - HCUA Facilities and Capacities

Per the Jacobs Engineering technical memorandum included in Attachment 1, The headworks at the LBPC WWTF consists of two rotary drum screens, a manually cleaned bar screen, and grit removal system for removing large debris and grit, respectively. Upstream of the screens, the influent forms a thickened scum in a channel at the headworks. Plant operators try to thin out the influent scum with water before transferring the influent to the rotary drum screens. Operations at the plant's headworks were found to be manually intensive and frequently require major maintenance since the system is now past its useful life.

3.6 Identification of Significant Users

The users in the HCUA service area are primarily residential, although there are also some light commercial users such as restaurants and retail shops as well as light industrial users on the system. However, no single user contributes 5% or more of the treatment plants flow. Therefore there are no significant users on this system.

3.7 Identification of unsewered areas and on-site systems

There are no known unsewered areas within the study area.

4.0 Waste Flow and Load

The Long Beach-Pass Christian (LBPC) treatment plant treats flows from Pass Christian, Long Beach, and Henderson Point which come from a series of 14 pump stations which transports regular domestic sewage from the various portions of the service area. The Long Beach-Pass Christian treatment plant has a design capacity of 3.72 MGD.

Attachment 1 presents a technical memorandum developed by Jacobs as part of HCUA's recent Master Plan. This technical memorandum states that the average and peak daily flows recorded at the LBPC treatment plant for the five-year period from January 2014 to December 2018 was 2.74 and 14.66 MGD, respectively. This technical memorandum projected the 2045 average daily flow to be 3.3 MGD based on an annual population growth rate of 0.69 percent.

4.1 Population Growth Data

Below is a table from the Phase 1 HCUA Master Plan that projects the population growth over time through 2040 in HCUA's different service areas. The Long Beach-Pass Christian Wastewater Treatment Plant service area is represented in the table below as the West Harrison area.

Appendix I:
Projected Population Change to the Year 2040 by Wastewater Treatment Service Area

		ESTIMATED		PROJECTED					2015-2040		
ID	SERVICE AREA	2010	2015	2020	2025	2030	2035	2040	CHANGE	PCT	ANNUAL
1	West Wolf River	4,658	4,896	5,069	5,154	5,298	5,478	5,677	781	16.0	0.59
2	East Wolf River	3,813	3,951	4,029	3,970	4,026	4,250	4,585	635	16.1	0.60
3	Uzana	1,937	2,026	2,086	2,084	2,121	2,212	2,359	333	16.4	0.61
4	Howson	301	309	312	305	310	330	363	54	17.5	0.65
5	Success	1,555	1,637	1,698	1,700	1,719	1,770	1,859	222	13.5	0.51
6	DeSoto	1,319	1,451	1,572	1,672	1,720	1,718	1,679	227	15.7	0.59
7	Tuxachanie Creek	274	309	342	380	408	425	435	126	40.8	1.38
8	Three Rivers	1,012	1,051	1,075	1,072	1,094	1,142	1,214	163	15.5	0.58
9	Tchoutacabouffa River	1,586	1,683	1,760	1,785	1,810	1,845	1,893	210	12.5	0.47
	Unserved Areas Subtotal	16,455	17,314	17,942	18,122	18,505	19,151	20,065	2,751	15.9	0.59
10	DeLisle	1,511	1,592	1,652	1,657	1,676	1,727	1,814	222	13.9	0.52
11	DeLisle North	739	830	915	1,013	1,092	1,157	1,212	383	46.1	1.53
12	Henderson Point	161	171	180	182	184	188	194	23	13.2	0.49
13	Pass Christian	4,581	4,861	5,080	5,186	5,300	5,437	5,602	741	15.3	0.57
14	Bayou Portage	76	85	94	104	112	119	125	39	46.1	1.53
15	Pineville	779	899	1,017	1,176	1,304	1,392	1,445	546	60.7	1.92
16	Long Beach	15,399	16,204	16,793	17,119	17,639	18,276	18,968	2,764	17.1	0.63
17	Long Beach North	2,777	2,880	2,940	2,927	2,983	3,106	3,287	407	14.1	0.53
	West Harrison Subtotal	26,023	27,522	28,670	29,363	30,291	31,403	32,647	5,125	18.6	0.69
18	Gulfport South	32,041	33,894	35,315	36,035	36,962	38,088	39,370	5,476	16.2	0.60
19	Gulfport North	36,907	39,597	41,843	43,684	45,428	46,961	48,249	8,652	21.9	0.79
20	Gulfport North East	9,014	9,743	10,371	10,879	11,333	11,767	12,205	2,462	25.3	0.91
	Gulfport Subtotal	77,962	83,234	87,529	90,597	93,723	96,814	99,823	16,590	19.9	0.73
21	West Biloxi	21,454	22,714	23,710	24,180	24,717	25,367	26,147	3,433	15.1	0.56
22	West Biloxi North	10,337	11,217	11,985	12,821	13,654	14,430	15,129	3,912	34.9	1.20
23	East Biloxi	6,766	7,330	7,819	8,252	8,647	9,017	9,376	2,046	27.9	0.99
	Biloxi Subtotal	38,557	41,261	43,514	45,253	47,018	48,814	50,653	9,392	22.8	0.82
24	D'Iberville	10,457	11,416	12,269	13,101	13,838	14,501	15,117	3,701	32.4	1.13
25	D'Iberville North	1,472	1,718	1,959	2,305	2,591	2,794	2,919	1,202	70.0	2.14
	D'Iberville Subtotal	11,929	13,134	14,228	15,406	16,429	17,295	18,036	4,902	37.3	1.28
26	Woolmarket	5,409	5,922	6,380	6,864	7,301	7,692	8,044	2,123	35.8	1.23
27	Woolmarket East	856	948	1,033	1,119	1,187	1,244	1,296	348	36.7	1.26
	Woolmarket Subtotal	6,265	6,870	7,413	7,982	8,489	8,936	9,340	2,470	36.0	1.24
28	Tradition	1,826	1,956	2,064	2,180	2,339	2,546	2,801	845	43.2	1.45
29	Tradition East	296	357	419	517	611	695	772	415	116.1	3.13
	Tradition Subtotal	2,122	2,313	2,483	2,698	2,949	3,241	3,573	1,260	54.4	1.75
30	River Hills North	4,402	4,711	4,965	5,084	5,176	5,282	5,423	712	15.1	0.57
31	River Hills South	2,969	3,278	3,560	3,864	4,175	4,533	4,961	1,683	51.3	1.67
32	River Hills East	509	555	596	630	658	682	707	152	27.3	0.97
	River Hills Subtotal	7,880	8,543	9,121	9,578	10,008	10,497	11,090	2,547	29.8	1.05
33	Seaway Industrial Park	0	0	0	0	0	0	0	0	0.0	0.00
34	Long Beach Industrial Park	34	38	42	47	50	52	52	13	35.2	1.20
	HCDC Subtotal	34	38	42	48	50	52	52	13	35.2	1.20
	HARRISON COUNTY TOTAL	187,207	200,229	210,942	219,047	227,463	236,203	245,279	45,050	22.5	0.82

1. **Demand:** Demand per the MDEQ Sewer Design Manual is recommended to be between 70 to 120 gallons per day per capita. This range assumes a use of 70 gpd plus between 0 to 50 gpd to account for infiltration into the system. In general, the rate of infiltration varies depending on several factors such as age, size, type, and many other factors.

4.2 Commercial/Industrial:

There are no known or planned major commercial or industrial users that would be connected to this proposed system.

4.3 Infiltration and Inflow:

As discussed above, the infiltration rate into the system is expected to be between 0 to 50 gpd depending on various factors.

4.4 Total Flow/Load:

Table 4.10 shows a summary of flows from the Long Beach-Pass Christian WWTP from the Master Plan which coincides with the expected demand values shown above. Further flow and loading data can be found in **Attachment 1** which is a technical memorandum developed by Jacobs.

TABLE 4.10

HCUA Wastewater Treatment Facilities
Summary of Average and Peak Flows
July 2015

Name	Total Effluent Flow (Permit Mo. Average & Actual Yr. Avg)				Peak Day		Peak Week		Peak Month	
	Permitted Flow (MGD)	Average Daily Flow MGD (1/14-5/15)	Percent of Permitted Capacity	Dry Weather Flow (MGD) (1)	Flow (MGD) (2)	Peaking Factor (3)	Flow (MGD) (2)	Peaking Factor (3)	Flow (MGD) (2)	Peaking Factor (3)
EAST BILOXI (KEEGAN BAYOU) WWTF	10.00	4.34	43%	2.57	14.95	5.81	64.86	3.60	200.96	2.52
WEST BILOXI WWTF	11.70	3.87	33%	3.12	11.13	3.57	55.23	2.53	150.74	1.56
EAGLE POINT WWTF										
WOOLMARKET WWTF	2.00	0.26	13%	0.16	1.58	10.11	5.36	4.90	12.42	2.65
NORTH D'IBERVILLE WWTF	1.50	1.10	73%	0.89	3.20	3.60	44.16	7.09	43.07	1.56
GULFPORT NORTH WWTF	7.75	6.37	82%	4.46	30.52	6.84	212.72	6.81	275.45	2.06
GULFPORT SOUTH WWTF *	10.50	3.63	35%	2.96	37.34 (4)	12.60	165.00 (4)	7.95	356.44 (4)	4.01
RIVERHILLS WWTF	0.50									
TRADITION WWTF	2.00	0.075	4%	0.06	0.58	10.20	1.00	2.51	3.01	1.70
LONG BEACH - PASS CHRISTIAN WWTF	7.00	2.93	42%	1.88	12.38	6.60	45.79	3.49	118.16	2.10
DELISLE WWTF	0.80	0.094	12%	0.07	0.63	9.24	1.45	3.02	3.86	1.88
OVERALL TOTALS:	**53.75**	**22.66**	**42%**	**16.16**	**112.31**		**595.57**		**1164.10**	

NOTES:

(1) Dry Weather Flow based on lowest daily average for the monthly reporting periods.

(2) Flow Data provided by Utility Partners.

(3) Peaking Factors based on Dry Weather Flow.

(4) Measured flow excludes bypass.

* Contains seasonal permit limits of 10.5 MGD and 16.0 MGD.

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Furthermore, the improvements being proposed will be sized adequately to handle a 5-year, 24 hour storm event without any bypasses or overflows occurring.

5.0 Development of Alternatives

According to the WPCRLF Facilities Plan Checklist, this project falls under the category of a treatment system for a population of 10,000 or greater. The current technology includes an oxidation ditch and clarifier train after the headworks. The current project being proposed falls under rehabilitation since it is just replacing aging equipment and therefore does not require a cost-effectiveness analysis.

6.0 Selected Plan

6.1 General Information:

The selected plan includes the replacement of two existing screening systems that have reached the end of their current operational lives and replacing with a 2 new drum screening system and 2 new grit removal system. Below is the current cost opinion for the proposed work as well as a diagram of the existing system layout from the Phase 1 Master Plan. The facility is located at the following coordinates:

Lat: 30.330537°

Long: -89.244835°

Table 2
Cost Estimate
Long Beach- Pass Christian WWTP Headworks
Harrison County Utility Authority

Item	Item Description	Estimated Quantity	Unit	Unit Price	Item Total
1	Remove Existing Screening System and Aerated Grit Removal Basin	1	LS	$ 1,500,000.00	$ 1,500,000.00
2	Pisto-Grit Removal System (including grit handling, installation and appurtenances)	2	EA	$ 2,100,000.00	$ 4,200,000.00
3	Rotating Screen Solids Removal System (including washer, compactor, installation and appurtenances)	3	EA	$ 1,750,000.00	$ 5,250,000.00
4	New Headworks Flow Structure	1	LS	$ 1,800,000.00	$ 1,800,000.00
5	Grit Removal Bypass Structure	1	LS	$ 1,200,000.00	$ 1,200,000.00
6	Piping Rework	1	LS	$ 955,000.00	$ 955,000.00
7	Electrical and Instrumentation	1	LS	$ 1,900,000.00	$ 1,900,000.00
8	Site Work	1	LS	$ 650,000.00	$ 650,000.00
9	Mobilization	1	LS	$ 1,200,000.00	$ 1,200,000.00
10	Painting	1	LS	$ 195,000.00	$ 195,000.00
11	Misc. Metals	1	LS	$ 550,000.00	$ 550,000.00
12	Temporary By-Pass Pumping	1	LS	$ 500,000.00	$ 500,000.00
13	Traffic Control	1	LS	$ 400,000.00	$ 400,000.00
				Sub-Total	**$ 20,300,000.00**
				Contingency (10%)	**$ 2,030,000.00**
				Design	**$ 2,030,000.00**
				CE&I	**$ 1,300,000.00**
				Total Estimated Cost	**$ 25,660,000.00**

Figure 6.0- Cost Estimate

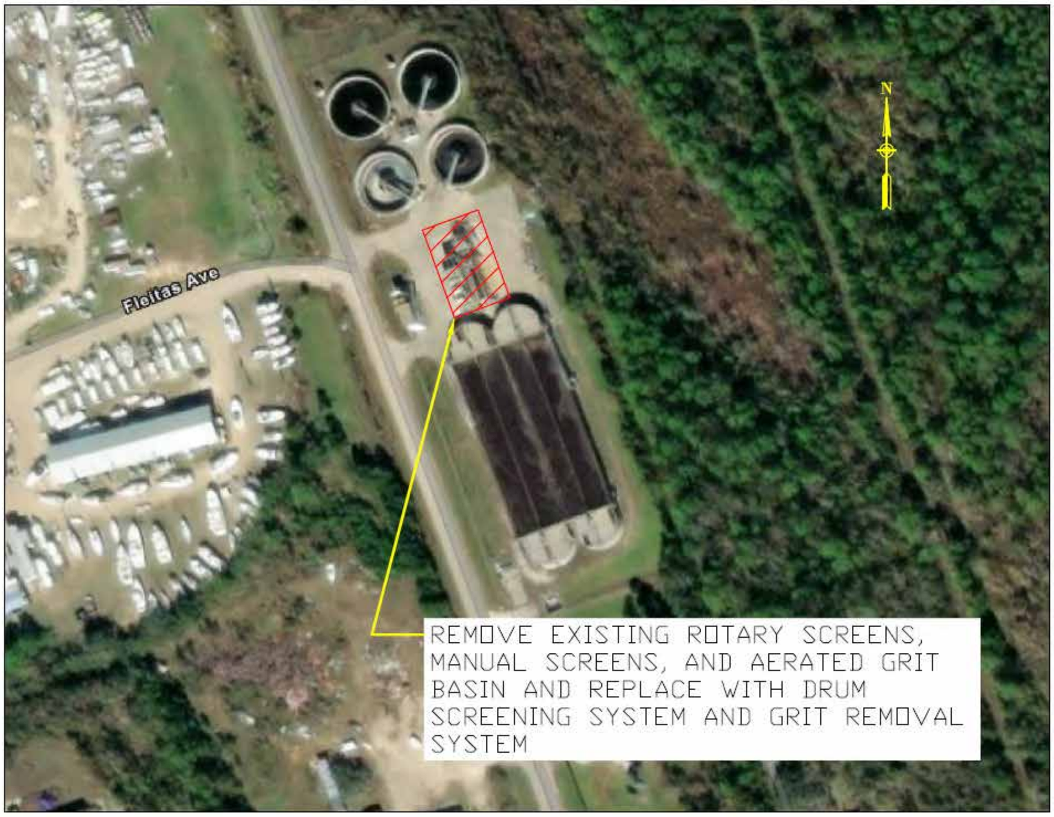


Figure 6.1- Proposed Improvements Map

Furthermore, the project is not located in a minority or low-income area and therefore does not systematically discriminate or effect those populations.

6.2 Environmental Information and Impacts:

The project will be constructed within the limits of the existing treatment facility, and therefore, it is anticipated that all project activity will occur on previously disturbed ground and that no studies or special environmental permits will be required.

As part of the evaluation of the selected alternative, the selected plan was compared to the "no action alternative" for the effects on each of the factors shown:

	Selected Plan	No Action
Surface/groundwaters	Will Improve	Negatively Impact
Archaeological/historical/cultural resources	No Impact	No Impact
Vegetative/wildlife	Will Improve	Negatively Impact
Wetlands/navigable waterways	Will Improve	Negatively Impact
Floodplains	No Impact	No Impact
Coastal zones	No Impact	Negatively Impact
Air Quality	No Impact	No Impact

Presented in **Attachment 2** are the letters where the Facility Plan was mailed to all of the IGR agencies along with their comment letters in return. During the construction phase, minor temporary impacts including noise from construction equipment and dust and other erosion concerns may arise as is common in construction activities. These concerns will be mitigated using MDEQ recommended BMP's during construction to reduce those impacts.

The current plant dewaters sludge created from the treatment process and disposes of solids at an offsite facility.

The project will not result in any increased loading. The plant has the necessary capacity to treat the demands. In fact, the proposed treatment equipment will work to decrease the loading on the downstream equipment by removing solid materials prior to them reaching the treatment stream.

The treated discharge from the treatment plant flows into Bayou Portage which flows into Bay St. Louis which then flows into the Mississippi Sound. The Bay as well as the Mississippi are used heavily for recreational purposes such as swimming, boating, and fishing. Furthermore, those bodies of waters also contain areas in which shellfish are harvested from. The proposed project will help ensure less equipment shutdowns which will result in a cleaner effluent. Therefore, no adverse impacts to downstream potable water sources or recreational areas are anticipated. Below is a map of the general area surrounding the plant and the water bodies in which the plant discharges treated effluent to.

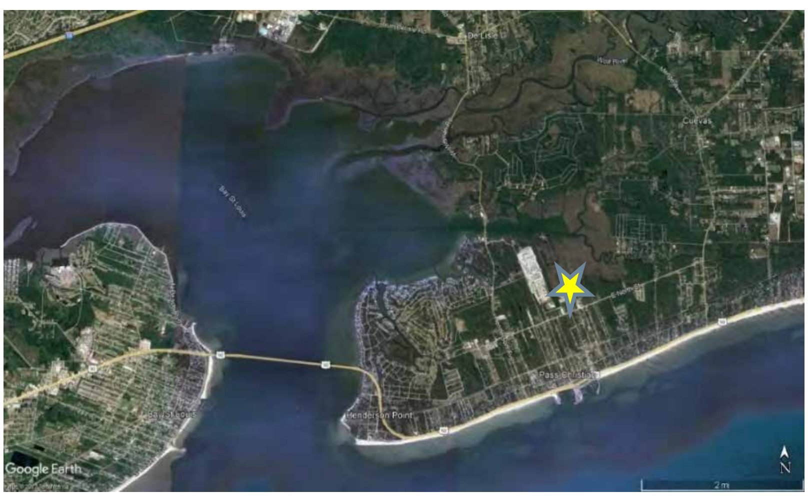
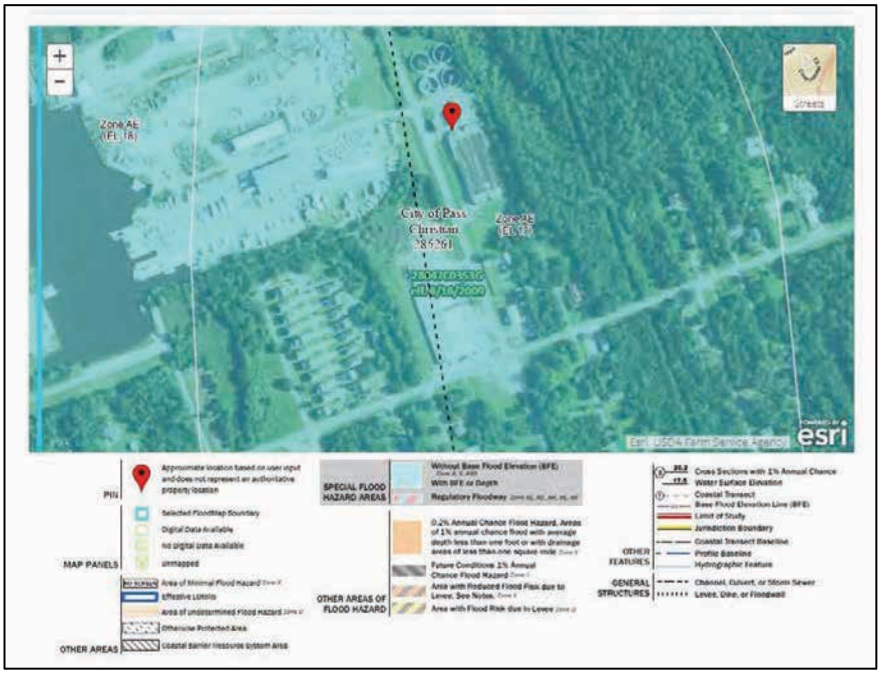


Figure 6.2 - LB-PC WWTP General Location Map

6.3 Flood Risks:

The project area is located in Zone AE which is inside of the 100-year flood hazard boundary. However, any improvements constructed as part of this facility plan will be built so that all critical parts such as water entry points and electrical equipment are located above the 100-year flood plain.



6.4 Minority Issues:

The below table is a breakdown by minority group of the subject area from the 2020 Census. The minority populations of the Long Beach and Pass Christian areas are slightly less than the surrounding cities as seen in the chart below. However, these groups are not being systematically excluded as HCUA is also submitting facility plans for treatment facilities in Gulfport and Biloxi for the same funding year that are also in need of improvements.

	Biloxi, MS	Gulfport, MS	Bay St. Louis	Long Beach	Pass Christian
Race and Hispanic Origin					
White alone, percent	65.60%	52.70%	73.30%	88.50%	71.90%
Black or African American alone, percent(a)	20.90%	39.20%	18.40%	6.20%	19.40%
American Indian and Alaska Native alone, percent(a)	0.40%	0.20%	0.30%	0.00%	0.80%
Asian alone, percent(a)	4.70%	1.30%	1.10%	1.90%	1.10%
Native Hawaiian and Other Pacific Islander alone, percent(a)	0.10%	0.10%	0.00%	0.00%	0.00%
Two or More Races, percent	6.60%	5.10%	3.40%	3.30%	6.80%
Hispanic or Latino, percent(b)	9.00%	5.40%	6.00%	4.80%	4.80%
White alone, not Hispanic or Latino, percent	60.40%	50.00%	70.50%	84.30%	70.90%

7.0 Financial Analysis

See Financial Capability Summary in the following pages.

FINANCIAL CAPABILITY SUMMARY

Loan Recipient: Harrison County Utility Authority Date: 3/20/2023

Project Description:

Installation of a headworks for solids and grit removal at the existing Long Beach/Pass Christian WWTP

1. Estimated Construction Costs

Planning/Application Phase Services	$ 30,000.00
Design/Land Acquisition Phase Services	$ 2,000,000.00
Land/Easement Purchase	$ -
Construction	$ 20,300,000.00
Construction Phase Services	$ 1,300,000.00
Construction Contingency	$ 2,030,000.00
Other( )	
TOTAL	$ 25,660,000.00

2. Funding Sources

WPCRLF Loan	$ 25,660,000.00
Other Loans/Bonds	$ -
CDBG Grant	$ -
Other Grant ( )	$ -
Other ( )	$ -
Less Other Loans	$ -
TOTAL	$ 25,660,000.00

3. New Debt Retirement

Financing Method	Amount	Interest Rate	Term	Annual Payment
WPCRLF (New)	$ 25,660,000.00	1.80%	30	$ 1,114,450.52
WPCRLF (Proposed NG WWTP Project)	$ 17,840,000.00	1.80%	30	$ 774,816.73
WPCRLF (Proposed NG WWTP Project)	$ 4,050,000.00	1.80%	30	$ 175,897.30
WPCRLF (Proposed WB WWTP Project)	$ 15,340,000.00	1.80%	30	$ 666,238.15
Other Loan				$ -
Bonds				$ -
Other				$ -
TOTAL				$ 2,731,402.70

4. Estimated Annual Operation, Maintenance and Replacement (OM&R) Costs

Annual OM&R (new facilities)		
	Labor	$ -
	Utilities	$ 20,000.00
	Materials	$ 5,000.00
	Outside Services	$ 5,000.00
	Equipment Replacement	$ 10,000.00
	Miscellaneous	$ 10,000.00
a. Subtotal		$ 50,000.00
b. Existing OM&R (to remain)		$ 1,256,324.00
c. TOTAL OM&R (4a + 4b)		$ 1,306,324.00

5. Total Estimated Annual Costs

	Amount	Interest Rate	Term	Annual Payment
Existing Debt Service				
WPCRLF (HCUA SRF C280828-06)	$4,665,908.00	0.8%	20	$ 255,482.04
RUS				

Other	$ 367,570.00
New Facilities Debt Service (from 3)	$ 2,731,402.70
Total Annual OM&R (from 4.c.)	$ 1,306,324.00
TOTAL	$ 4,660,778.74

6. User Charges

Existing Monthly Rates

Usage (1000 gal)			Class 1	Class 2	Class 3
First		(or Flat Fee)	$	$	$
	to		$/1000	$/1000	$/1000
	to		$/1000	$/1000	$/1000
Over			$/1000	$/1000	$/1000

Proposed Monthly Rates (if increase is proposed)

Usage (1000 gal)			Class 1	Class 2	Class 3
First		(or Flat Fee)	$	$	$
	to		$/1000	$/1000	$/1000
	to		$/1000	$/1000	$/1000
Over			$/1000	$/1000	$/1000

c. Proposed Revenue

Class	Avg. Use (1000 gal/mo)	Avg. Bill ($/mo)	No. Users	Revenue ($/mo)
1				
2				
3				
4				
Subtotal				

ANNUAL TOTAL (based on billings to member entities (cities and utility districts)) $ 4,700,000.00 *

*HCUA funds its wastewater operations through cost sharing with member entities (Cities).
It does not send out individual customer bills on a monthly basis

7. Source of Funding for Annual Drinking Water Facilities Cost

User Charges (6. ANNUAL TOTAL)	$ 4,700,000.00
Connection Fees	$ -
Other ( )	$ -
TOTAL (must exceed 5 TOTAL)	$ 4,700,000.00

8. Annual User Charge Per Household and High Cost Comparison

a. Total annual user charges (6. ANNUAL TOTAL)	$ 4,700,000.00
b. Non-residential share of total	0
c. Residential share of total (8.a-8.b)	$ 4,700,000.00
d. Existing households to be served	14522
e. Average per household (8.c/8.d)	$ 323.65
f. Median household income	$ 53,567.00
Percentage (8.e/8.fx100)	0.60%
High cost threshold* for community	1.75%
Is this a high cost project?	No

*A project is considered high cost if the average total annual sewer bill per household (including all OM&R and debt retirement costs) exceeds the following thresholds: 1% of the community's Median Household Income (MHI) where MHI < $10,000, 1.5% for $10,000 to $17,000, and 1.75% for MHI > $17,000. Where water and sewer amounts cannot be accurately separated, add 1.5% to these thresholds.

Attachment 1

Long Beach and Pass Christian Wastewater Treatment Facility Assessment Technical Memorandum (From the HCUA Phase 2 Master Plan)

Jacobs

Memorandum

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Subject	**Long Beach and Pass Christian WWTF Assessment**	**Project Name**	Harrison County Utility Authority (HCUA) Water & Sewer Resources Plan Phase II
Attention	John Wilson, PE Executive Director, HCUA	**Project No.**	D3113002
From	Jacobs Engineering Group Inc. (Jacobs)		
Date	October 24, 2020		

1. Introduction

The Long Beach-Pass Christian (LBPC) Wastewater Treatment Facility (WWTF) located in the community of Pass Christian, Mississippi, was constructed in 1988. The plant was built at the site of an existing treatment facility. Only the chlorine control building and aerobic digester were reused in the 1988 LBPC construction. A second aerobic digester was added in 1996. Today, LBPC consists of preliminary treatment unit with rotary drum screens and an aerated grit basin, two oxidation ditches, four secondary clarifiers, two chlorine contact basins (CCBs), a chlorine and sulfur dioxide feed system, and a post-aeration basin. The plant utilizes two aerobic digesters, a gravity belt thickener (GBT), and a belt filter press (BFP) for biosolids handling to process the waste activated sludge (WAS) for reuse land application. The site plan and process flow diagrams for the LBPC WWTF are in Attachment 1.

HCUA anticipates that the electrical system may need to be rehabbed at the LBPC WWTF due to flooding from Hurricane Katrina. The facility is practically split in two parts due to a wetland running through the facility property. The proximity of the wetland makes the plant highly susceptible to future flooding.

The LBPC WWTF receives wastewater from the communities of Long Beach, Pass Christian, and unincorporated Henderson Point of Harrison County, Mississippi. The plant is permitted for a monthly average effluent flow of 7.0 million gallons per day (MGD). The effluent flows by gravity to discharge into the Bayou Portage, leading into the St. Louis Bay.

2. Influent

2.1 Overview

The LBPC WWTF receives influent flow from Pass Christian, Long Beach, and Henderson Point. There are about 14 pump stations that pump raw wastewater to the LBPC WWTF. The Livingston (Henderson point) pump station conveys flow from Henderson Point to the LBPC WWTF. The Espy and Menge Avenue pump stations transfer flow from Pass Christian to LBPC WWTF, while the remaining 11 pump stations convey flow from Long Beach. The flow from Pass Christian is received at the plant's onsite influent pump station, which contains three pumps that discharge the influent to the headworks via an 18-inch pipe. Force mains carrying raw wastewater from Long Beach and Henderson Point discharge flow directly to the headworks structure. There is no plant return flow at the influent pump station.

The average and peak daily flow recorded at the LBPC facility during the 5-year period from January 2014 to December 2018 was 2.74 MGD and 14.66 MGD, respectively, indicating a high peaking factor of 5.4. For this evaluation the plant was evaluated for the 2045 projected flow rates of 3.3 MGD Average Daily Flow, 4.33 MGD Max Month Average Daily Flow, and 23.5 MGD Peak Hourly Flow. The Headworks, return activated sludge (RAS) pump station, and digesters were found to not have sufficient capacity for the projected flow. Figure 2-1 shows the historical monthly average flow received at the LBPC WWTF over the 5-year period.

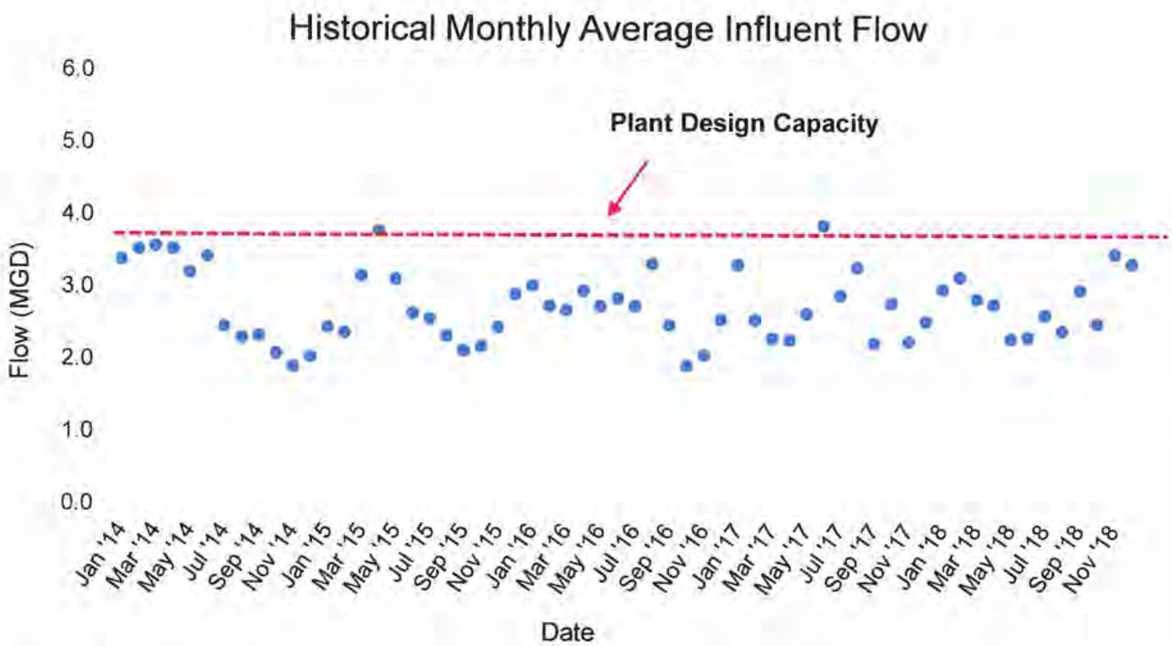

Figure 2-1. Historical Monthly Average Influent Flow

2.2 Influent Flow Projections

The LBPC WWTF treats all the wastewater generated in the West Harrison service area except the flow from Delisle and Delisle North sub service areas. According to the HCUA's 2015 Phase 1 Master Plan by Brown, Mitchell & Alexander, Inc. (BMA 2015), the West Harrison service area is projected to experience an annual population growth rate of 0.69 percent between 2015 and 2040. Additionally, an employment increase of 13.2 percent (0.5 percent per annum) is expected for the West Harrison service area within that same period.

The influent flow projections for the next 25 years (i.e., 2020 to 2045) for the LBPC WWTF was estimated using the Phase 1 population growth factors, as well as the historical influent flow information obtained for 2015 to 2018. An average flow contribution per capita was calculated using the annual average monthly flow and estimated population for 2015 to 2018. An average flow per capita was estimated as 107.6 gallons per day per capita and was assumed to remain the same throughout the planning years. The projected average daily flow for 2045 is expected to be 3.3 MGD and indicates the LBPC WWTF will be operating at 89 percent of the average daily flow rate of 3.72 MGD. Permitted flow is 7.0 MGD with a design peak flow of 12.10 MGD. The projected influent average daily flows and max month influent 5-day biochemical oxygen demand (BOD_5) loadings are shown on Figure 2-2 and in Table 2-1.

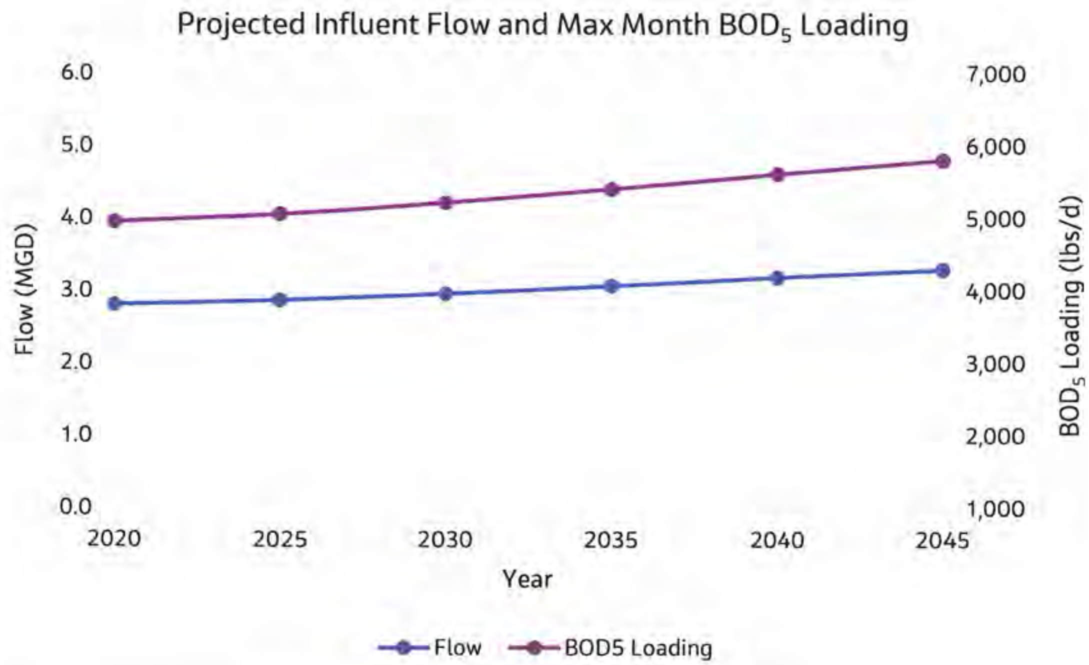

Figure 2-2. Projected Average Influent Flow and Max Month BOD_5 loading

Table 2-1. Projected Influent Wastewater Flow and Loads

Parameter	Unit	2045 Max Month Loads
Influent Average Daily Flow	MGD	3.3
Biochemical Oxygen Demand (BOD_5)	lbs/d	5,804
Ammonia (NH_3-N)	lbs/d	564
Total Suspended Solids (TSS)	lbs/d	6,475
Total Phosphorous (TP)[a]	lbs/d	217

Notes:
[a] Estimated 2045 TP loading using BOD:TP ratio of 27:1
lbs/d = pounds per day

2.3 Equipment

The onsite influent pump station, which only receives flow from Pass Christian, contains three pumps rated at 1,500 gallons per minute (gpm) capacity each and are equipped with 35-horsepower (hp) motors. Plant operators reported the pumps were old and occasionally have overheating problems. In addition, the pumps control trips off during rain events. At the time of visit, one of the influent pumps was not working. Figure 2-3 shows the influent pump station at the LBPC WWTF.

Figure 2-3. Onsite Influent Pump Station at LBPC WWTF

2.4 Recommended Improvement

The pumps at the influent pump station are reaching their end of useful life and one pump was not operational at the time of the site visit. Plant staff also mentioned the pump controls trip off during rain events. The following improvement is recommended for the LBPC WWTF:

- Replace all the pumps at the onsite influent pump station with new pumps.
- Replace the influent pump control system.

3. Headworks

3.1 Overview

The headworks at the LBPC WWTF consists of two rotary drum screens, a manually cleaned bar screen, and grit removal system for removing large debris and grit, respectively. Upstream of the screens, the influent forms a thickened scum in a channel at the headworks. Plant operators try to thin out the influent scum with water before transferring the influent to the rotary drum screens. Operations at the plant's headworks was found to be manually intensive and frequently require major maintenance.

3.2 Flow Measurement

Influent flow from Pass Christian is measured with a 18-inch Parshall flume. The flow from Long Beach and Henderson Point are measured with separate 24-inch and 9-inch Parshall flumes, respectively. The Parshall flume flow meters are located at the headworks. These Parshall flumes will be abandoned in the project study period.

3.3 Headwork Screens

Screening of the influent is carried out in two Parkson rotary drum screens with 0.06-inch openings. The plant's design criteria from HCUA indicate the rotary drum screens at LBPC WWTF have 7.2 MGD capacity each; however, plant staff mentioned the drum screens overflow at 3.5 MGD. Flow above 3.5 MGD is directed to a bypass channel containing a manually cleaned bar screen with a 1-inch opening. According to plant staff, maintenance of the drum screens requires daily manual greasing of the bearings and hosing of the screens three times daily. The continuous greasing has resulted in grease and dirt buildup behind the rotary drum screens. Overall, the screens at the LBPC WWTF are in poor condition. The frequent bypassing to the manual screen has caused major ragging issues downstream. Additionally, handling of screenings needs to be improved. Currently, the screenings are first dropped into a concrete containment area and then manually shoveled into a dumpster. The screenings are shoveled three times daily, which increases operational time and labor costs. Figure 3-1 shows the rotary drum screens at LBPC WWTF.

Figure 3-1. Exterior (left) and Interior (right) of Headwork Drum Screens at LBPC WWTF

3.4 Grit Removal

The screened influent flows to an aerated grit removal system, which consists of a traveling degritter and an aerated grit channel that is approximately 10.4 feet wide, 53 feet long, and has a side water depth of 12.5 feet. The traveling bridge degritter is not automatically operational and is operated by hand. The aeration in the grit system is provided by swing diffusers that were functional at the time of visit. There is a grit classifier and a grit cyclone for dewatering the collected grit from the aerated grit basin. However, the grit classifier and cyclone were not functioning at the time of the visit. As a result, wet grit collected from the aerated grit basin is discharged onto a concrete floor beside the basin and left to dry. The grit is then shoveled from the ground into a dumpster for disposal. Figure 3-2 shows the aerated grit removal system at the LBPC WWTF.

Figure 3-2. Aerated grit removal system at the LBPC WWTF

3.5 Odor Control

The LBPC WWTF uses deodorant mist sprays located at the headworks to control odor.

3.6 Capacity/Reliability Assessment

Assessments of the headworks components at the LBPC WWTF are presented in Tables 3-1 and 3-2. The headworks screens and the grit removal system do not have enough capacity to handle the current peak flow conditions.

Table 3-1. LBPC WWTF Headworks Screens Assessment

Parameter	Design Criteria	Capacity Assessment	Reliability
Number of Units	2 Mechanical screens 1 Manual bar screen	The current peak flow at the LBPC facility is 14.66 MGD. The rotary drum cannot meet peak flow capacity.	Criteria[a]: Manual bar screen shall be designed for 100% of the peak flow if the mechanical screen is taken out of service. Manual bar screen cannot meet capacity for current peak flow.
Type	Rotary Drum Screens		
Capacity, mechanical screens[b]	3.5 MGD		
Capacity, manual bar screen[c]	12.1 MGD		

Notes:

[a] Ten States Standard 2004 (Section 61.124). (Health Research Inc. 2004)

[b] Observed peak capacity by plant staff.

[c] Given capacity from HCUA.

Table 3-2. LBPC WWTF Headworks Grit Removal System Assessment

Parameter	Design Criteria	Capacity Assessment
Number of Units	1	The aerated grit system is approaching design capacity, however, can handle current peak flow with reduced efficiency.
Type	Aerated grit system	
Capacity[a]	3.6 MGD	

Notes:

[a] Given capacity by HCUA.

3.7 Recommended Improvements

The headworks at the LBPC WWTF consists of two rotary drum screens that overflow at 3.5 MGD and have reached the end of their useful life. The manual bar screen design capacity is 83 percent of the current peak flow. The current headworks screens are not effective in providing efficient preliminary treatment, which has resulted in ragging issues downstream. Ragging at LBPC WWTF is a major issue that affects operations of the secondary clarifiers and requires operators to spend approximately 2 hours daily to de-rag the clarifiers.

The grit classifier and grit cyclone are out of service. The following improvement is recommended for the LBPC WWTF:

- Rebuild the entire headworks structure and replace the two rotary drum screens with three 6-millimeter perforated plate screens with firm capacity at future peak day flow of 23.5 MGD. The screens should have covering to help control odor at the headworks.
- Replace the aerated grit removal system with two new grit removal systems with firm capacity of 23.5 MGD. Alternatively, one 23.5 MGD grit removal system with a bypass channel could be provided.
- Ensure the new headworks structure has all channels covered and the channel air routed to a new biofilter odor control system.
- Install magnetic flow meters on each of the influent force mains connected to the headworks.
- Include a 0.2-million gallon (MG) anaerobic selector in the new headworks structure (discussed in Section 4.5).

4. Oxidation Ditches

4.1 Overview

The effluent from the headworks is conveyed to one of two oxidation ditches for biological treatment through a dedicated 30-inch pipe per ditch. Flow is split and controlled at the headworks by weirs. There are two oxidation ditches at the LBPC WWTF and each oxidation ditch is approximately 1.8 MG in volume, with a side water depth of 14 feet. The oxidation ditches are equipped with two surface aerators each, to supply dissolved oxygen (DO) for BOD removal. A review of the monthly operating reports showed that the average BOD_5 loading received at the plant between January 2014 and December 2018 is 3,583 lbs/d. Currently, there are no probes installed in the oxidation ditches for DO measurement. As a result, a member of the plant staff manually measures the DO in the oxidation ditches with a handheld DO probe.

digesters remains above 20°C. However, if the minimum temperature in the digesters is below 20°C, minimum sludge concentration of 3.4 percent will be needed to meet the 60-day SRT at 15°C for Class B requirement. At projected 2045 max month conditions with the existing total digester volume, minimum sludge concentration of 5 percent solids will be needed to meet the 60-day SRT at 15°C for Class B biosolids requirement. The existing decanting system cannot produce the percent solids required.

The primary digesters visually appear under-aerated and the sludge is only slightly digested before being discharged into the secondary digesters. The following improvements are recommended for the LBPC WWTF:

- Monitor the temperature in the aerobic digesters over a period of at least 2 years to determine if digester temperature drops below 20°C. Thickened sludge of a minimum 3 percent solids should be sent to the aerobic digesters to meet Class B biosolids requirement. It is assumed that the temperature in the aerobic digesters will likely be above 20°C with 3 percent solids concentration.
- Repair or replace the GBT.
- Provide conveyance for the thickened sludge to the digesters. Evaluate the pumping capacity and configuration that will enable conveyance of thickened sludge from the GBT to the primary digesters.

The following future (0-5 years) improvements are recommended for the LBPC WWTF:

- Feed the aerobic digesters with minimum sludge concentration of 3.3 percent solids to maintain 40-day SRT at 20°C to meet Class B biosolids requirement for projected 2045 max month conditions. It is assumed that with the 3.3 percent solids thickened sludge, the temperature in the digesters at the LBPC WWTF will likely remain above 20°C. Alternatively, expand the aerobic digesters to meet the Class B requirements at the projected 2045 max month conditions if expected solids concentration is below 3.3 percent.
- Replace the aspirated jets in the primary digesters with blowers and coarse bubble diffuser aeration system to ensure adequate aeration in the primary digesters. The blowers for the existing primary digesters with 3.3 percent feed solids should have a firm capacity of 3,813 scfm. Further evaluation of the blower capacity and the diffuser system should be conducted to account for the sludge thickness being considered.

10. Electrical

10.1 Code Violations

An exhaustive assessment of the plant's electrical equipment installations was not conducted. However, as the site was walked, if any code violations were apparent, they have been noted below.

10.2 NFPA 70 Code Violations

The disconnects for the aerators do not have the required 42 inches of clearance in front of the panel. It is possible when this was installed the 42-inch clearance was not a requirement.

10.3 NFPA 70E Code Violations

There are not any arc flash labels on any of the electrical equipment. Arc flash labels are required along with updated and current one-lines. Plant electrical one-lines are required to be updated every 5 years or when there is a change to the electrical system.

10.4 Safety Issues

The lack of arc flash labels not only violates the code and therefore opens the owner up to significant risk, but it also represents an unsafe condition for personnel who maintain the equipment because they have no way of knowing the appropriate level of personal protection equipment that must be worn while maintaining the equipment.

10.5 Influent

New motors and starters need to be provided for the influent pumps. New starters can be provided in the existing Motor Control Center (MCC) buckets.

10.6 Headworks

- The new screens will require power, which can likely be fed from the existing electrical system.
- The existing electrical infrastructure for the grit removal system can likely be reallocated for the new grit removal system.
- The new equipment associated with the odor control system can likely be fed from the existing electrical system.

10.7 Oxidation Ditches

- New VFDs will need to be provided for the aerators to allow them to change speed in response to DO. The new VFDs can be supplied by the existing electrical system as they will draw that same amount of current as the existing aerator starters.
- The addition of the metal chemical injection pumps can likely be fed from the existing electrical system.

10.8 RAS/WAS Pump Stations

- The increase in size of the RAS/WAS pumps or the installation of additional pumps can likely be supported by the existing electrical infrastructure.
- The RAS pump two-speed starters will be removed and replaced with VFDs.

10.9 Disinfection

- The new chlorine mixer motor can be re-fed from the existing electrical distribution with no alterations.

10.10 Biosolids Handling Reuse

- The addition of the blowers for the biosolids handling can likely be fed from the existing electrical system. The expected increase in load is expected to be about 100 hp, which equates to about 125 amps. This should not be an issue for the existing system.
- New VFDs will need to be located somewhere onsite outside of the existing MCCs. These will most likely need to be located in a National Electrical Manufacturers Association 3R outdoor enclosure because both electrical rooms are at capacity.

10.11 Conductor Insulation Deterioration

When the site visit was conducted, it was discovered that this plant has a lot of issues with conductor insulation degradation. It is unclear why this is occurring, but this seems to be an ongoing problem.

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Apparently at this plant, new conductors are occasionally needed due to ground fault issues and when new conductors are pulled, they only last for 1-2 years before the same issues arise. It is unclear why this is happening, but this could eventually lead to a larger problem and result in a plant shutdown if some of the main feeders become compromised. It would take more investigation to fully understand what may be causing this and come up with a solution.

10.12 Standby Power

The plant has a 600-kilowatt diesel-powered generator and 2,000-gallon fuel tank for backup power. The generator is located near the electrical building at the south side of the plant. If primary power is interrupted, the generator will start automatically. The generator is in good working condition and there are no concerns at this time.

11. Instrumentation and Control

There currently is not a programable logic controller (PLC) system at this plant. To implement the recommendations in this memorandum, a PLC system will need to be installed to monitor DO and flows and control various equipment based on plant conditions.

12. Summary of Recommendations

Unit Process	Recommendation Number	Description
Influent Pump Station	1	*The pumps at the onsite influent pump station are reaching the end of their useful life and one pump is currently not functional. In addition, the pumps control trips off during rain events. The current influent pumps will also not be suitable for the new headworks structure and its hydraulic conditions.* ▪ Replace all the influent pumps with new pumps. ▪ Replace the pump control system.
Headworks	2	*The rotary drum screens and grit removal systems are reaching the end of their useful life and do not have capacity for current peak flow conditions.* ▪ Rebuild the entire headworks structure and replace rotary drum screens with three perforated plate screens of 6-mm openings to provide a firm capacity for future peak hour flow of 23.5 MGD. ▪ Replace the aerated grit removal system with two new grit removal systems with firm capacity for future peak hour flow of 23.5 MGD. Alternatively, provide one 23.5 MGD grit removal system and a bypass channel. ▪ Screens and grit channels should be covered, and channel air should be directed to a new biofilter odor control system. ▪ Install magnetic flow meters on each of the influent force mains connected to the headworks. ▪ The new headworks structure should include a 0.2-MG anaerobic selector.

Unit Process	Recommendation Number	Description
Oxidation Ditches	3	*No data on variability of dissolved oxygen.* ▪ Install two permanent DO probes in each oxidation ditch to monitor DO in the short-term. *Lack of control system to maintain consistent DO.* ▪ Place aerators on VFDs. *Future nutrient limits expected to tighten.* ▪ Include a 0.2-MG anaerobic selector in the new headworks structure upstream of the oxidation ditches. The screen influent and RAS should go into the anaerobic selector before continuing to the oxidation ditches. The anaerobic selector should be equipped with oxidation-reduction potential probes to monitor anaerobic conditions. ▪ Configure the oxidation ditches into anoxic and aerobic bioreactors in series with the upstream anaerobic selector. Flow from the upstream anaerobic selector should first go into the anoxic bioreactor for denitrification and proceed to the aerobic bioreactor for nitrification. The anoxic bioreactor will have one aerator on at a time while the aerobic bioreactor will have both aerators on. ▪ Jacobs recommends the LBPC WWTF uses metal addition to remove phosphorous in the future if the limits are not achievable with biological phosphorous removal. The metal addition system should comprise ferric chloride ($FeCl_3$) dosage of 1,000 lbs/d, a pumping system with firm capacity of 600 gpm, and two 5,000-gallon storage tanks to provide a 30-day storage time at average flow.
	4	*One aerator (aerator #4) was not working at the time of visit.* ▪ Repair aerator #4.
Secondary Clarifiers	5	*The rubber scraper arms of the clarifiers are not working.* ▪ Replace or repair the rubber scraper arms.
CCBs	6	*The CCBs have significant cracks and the rapid chlorine mixer motor is in a rusty condition.* ▪ Rehab or replace the CCBs. ▪ Repair or replace the rapid chlorine mixer. ▪ Install one additional sulfonator for redundancy.
Post-Aeration Basins	7	*The post-aeration basins do not have enough capacity to handle design and current peak flow conditions.* ▪ Evaluate the performance of the aerators for the next 5 years and replace with higher capacity aerators if needed.
RAS Pumping	8	*RAS pumping is only 74 percent of the maximum needed RAS rate.* ▪ Increase the capacity of the RAS pumps to a firm capacity of at least 5,200 gpm to improve clarification capacity ▪ Direct the new RAS lines to the proposed anaerobic selector

Unit Process	Recommendation Number	Description
GBT	9	*Activated sludge is wasted directly into primary aerobic digesters because the GBT has been out of service at least since 2015.* ▪ Repair or replace the GBT. ▪ Provide conveyance for the thickened sludge to the digesters. Evaluate the pumping capacity and configuration that will enable convenient conveyance of thickened sludge from the GBT to the primary digesters.
Aerobic Digesters	10	*The primary aerobic digesters appear under-aerated and Class B solids requirements may be violated if minimum digester temperature is below 20°C.* ▪ Monitor the temperature in the aerobic digesters over a period of at least 2 years to determine if digester temperature drops below 20°C. Thickened sludge of minimum 3 percent should be sent to the aerobic digesters to meet Class B biosolids requirement. It is assumed that temperature in the aerobic digesters will likely be above 20°C with 3 percent solids concentration. *Future expansion needs to meet Class B.* ▪ Feed the aerobic digesters with minimum sludge concentration of 3.3 percent solids to maintain 40-day SRT at 20°C to meet Class B biosolids requirement for projected 2045 max month conditions. It is assumed that with the 3.3 percent solids thickened sludge, the temperature in the digesters at the LBPC WWTF will likely remain above 20°C. Alternatively, expand the aerobic digesters to meet the Class B requirements at the projected 2045 max month conditions if expected solids concentration is below 3.3 percent. ▪ Replace the aspirated jets in the primary digesters with blowers and coarse bubble diffuser aeration system to ensure adequate aeration in the primary digesters. The blowers for the existing primary digesters with 3.3 percent feed solids should have a firm capacity of 3,813 scfm. Further evaluation of the blower capacity and the diffuser system should be conducted to account for the sludge thickness being considered.
PLC Control System	11	*PLC System* ▪ A PLC control system is needed to implement the recommendations in the memorandum.
Future Expansion Need	12	*Projected influent flow indicates plant will be operating near capacity by 2045.* ▪ Consider expansion of the headworks and aerobic digesters in an intermediate to long-term period to accommodate future influent flows by 2045.

13. Cost Estimates

An opinion of estimated project cost including associated non-construction cost was developed. Non-construction cost can include cost associated with land acquisition, geotechnical investigation, legal services, design, and construction administrative services. The total estimated project cost for all the recommended improvements at the LBPC WWTF is $23,490,000. The cost estimates for the major improvements are presented in Table 13-1.

Table 13-1. Cost Estimates of Major Recommended Improvements

Long Beach – Pass Christian WWTF Improvement Description		Capital Cost	Non-Construction Cost	Total Project Cost
Year 0 to 5		**$15,780,000**	**$3,160,000**	**$18,940,000**
Headworks	$15,190,000			
Flow Measurement	$50,000			
Chlorine Contact Basins	$540,000			
Year 5 to 10		**$3,790,000**	**$760,000**	**$4,550,000**
Influent Pump Station	$350,000			
Oxidation Ditches	$470,000			
RAS/WAS Pump Station	$410,000			
Gravity Belt Thickeners	$750,000			
Aerobic Digesters	$1,360,000			
Electrical/PLC Control System	$450,000			
Year 10 to 20		**$0**	**$0**	**$0**
	$0			
		Total		**$23,490,000**

14. References

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