Coastal Protection and Restoration Authority of Louisiana

State of Louisiana
Coastal Protection and Restoration Authority

2026 Annual Inspection Report

for

Penchant Basin Natural Resource Plan, Increment No. 1 (TE-34)

State Project Number TE-34
Priority Project List 6

January 23, 2026
Terrebonne Parish

Prepared by:

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Table of Contents

Appendices

I. Introduction

The Penchant Basin Natural Resource Plan, Increment No. 1 (TE-34) is located in Terrebonne Parish, Louisiana and is bounded on the north by the Gulf Intracoastal Waterway (GIWW), to the east by a north/south line from Lake Decade to the GIWW, to the south by Lake Mechant and Lost Lake, and to the west by a north/south line from Lost Lake to Avoca Island (CWWPRA, February 2008). (Appendix A – Project Features Map)

The Penchant Basin consists of a dynamic and variable-component landscape shaped by deltaic abandonment, initiation of a new delta via the Atchafalaya River and anthropogenic landscape alterations (NRCS, April 2007). To the north, a vast area of freshwater floating marshes transitions south to intermediate and brackish marshes, all of which have experienced some of the highest land loss rates in the state. While the freshwater floating marshes have been studied extensively, the exact cause of the high rates of deterioration remain somewhat elusive. The losses have been attributed to a combination of elevated water levels, increase flows from the Atchafalaya and GIWW and associated water quality impacts, hydrologic alterations, stagnation in some areas that have been isolated from riverine influence and nourishment, and herbivory (O'Neil 1949, Sassar 1994. Coastal Environments, Inc. 1997, Swarzenski 2003). To the south, loss to intermediate and brackish marshes can be contributed to natural deltaic abandonment process of subsidence accelerated by channelization and alteration of hydrology, sea level rise, saltwater intrusion (USDA-SCS, 1984).

The Penchant Basin Natural Resource Plan, Increment No. 1 (TE-34) project is intended to reduce water levels in the northwestern portion of the project by diverting freshwater southeastward to where it is needed (CWWPRA, 2008). The goals of the project are to eliminate erosion and re-establish emergent marsh along the southern bank of Bayou Chene at the intersection of Bayou Penchant, to transfer water, sediment and nutrients from the Atchafalaya River to the lower Penchant Basin tidal marshes to offset saltwater intrusion and subsidence, to maintain the integrity of the northern bank of Bayou Decade and increase nourishment to the deteriorating upper Penchant Basin marshes by providing an exchange of freshwater through the system (NRCS and CPRA, April 2007)

Increment 1 of the Penchant Basin Natural Resource Plan has a twenty-year (20 year) project life, which began in August 2011. The principle project features include foreshore rock dikes and marsh creation at the intersection of Bayou Chene and Bayou Penchant, a weir with a boat bay and flap-gates at the intersection of Bayou Penchant and Brady Canal, a weir with flap-gates along Superior Canal, rock riprap revetment and two (2) fixed crest weirs along the north bank of Bayou Decade from Voss Canal to Lost Lake.

II. Inspection Purpose and Procedures

The annual inspection of Penchant Basin Natural Resource Plan – Increment 1 (TE-34) project took place on January 12, 2026, the same day as the GIWW Bank Restoration of Critical Areas (TE-43) inspection. In attendance were Brandon Carreras and Evan Ledet with CPRA, and Eric

Whitney and Dustin Farmer with NRCS. The inspection began around 11:30 am at the weir structure with boat bay at the intersection of Brady Canal and Bayou Penchant. From there, the inspection team proceeded to the weir structure with flap gates along Superior Canal; the rock revetment and fixed crested weirs along Bayou Decade; and ended at the northern end of the project at the rock dike shoreline and marsh creation areas along Bayous Chene and Penchant. The trip included a visual inspection of the project features, structures and outer edges of the marsh creation areas. Photographs of the inspection are located in Appendix B.

The purpose of the inspection of the Penchant Basin Natural Resource Plan, Increment No. 1 (TE-34) Project is to evaluate the constructed project features in order to identify any deficiencies. The inspection results are used to prepare a report detailing the condition of the project features and recommending any corrective actions that are considered necessary. Should it be determined that corrective actions are needed, the CPRA shall provide in the report, a detailed cost estimate for engineering, design, supervision, inspection, construction, and contingencies, as well as an assessment of the urgency of such repairs. The inspection report also contains a summary of maintenance projects, which were completed since the completion of constructed project features and an estimated cost analysis for operations, maintenance, and rehabilitation. The cost analysis for operations and maintenance is shown in Appendix C. A summary of past operation and maintenance projects completed since construction of the project is outlined in Section IV of this report.

III. Project Description

The following completed, structural components jointly accepted by CPRA and NRCS will require operation, maintenance, repair, and/or rehabilitation throughout the twenty (20) year life of the project.

- Approximately 6,667 linear feet of foreshore rock dike along the southern bank of Bayou Chene at the mouth of Bayou Penchant. The rock dike was constructed to an maximum overbuild elevation of 4.0' NAVD 88 (Geoid 99) and target elevation of +3.5' NAVD88 (Geoid 99); with 4 (H):1(V) side slopes from Station 0+00 to 07+50 along the east dike and 3(H):1(V) from Station 08+00 to the end, and a top width of 3.0'.

- Approximately 30 acres of marsh creation along the southern bank of Bayou Chene at the mouth of Bayou Penchant. The target marsh elevation in this location is approximately 2.0' NAVD 88 (Geoid 99).

- 92' steel sheet pile weir with a ten (10) foot wide boat bay and six (6) - 5' x 5' flap gated openings at the intersection of Brady Canal and Bayou Penchant.

- 85' long steel sheet pile weir with six (6) - 5' x 5' flap gated openings along Superior Canal.

- Approximately 14,500 linear feet of earthen embankment armored with rock riprap along the north bank of Bayou Decade from Voss Canal to the mouth of Lost Lake. The earthen embankment was constructed to an elevation of +4.0' NAVD 88 (Geoid 99) with 6:1 side slopes and a 10' wide earthen embankment crest and 6' rock revetment crest. The rock riprap revetment is approximately 2' thick, 10' wide base and 6:1 side slopes along the canal face of the earthen embankment.

- Structure No.5 – 139 linear feet steel bulkhead weir with 10' wide boat bay. The top elevation of the bulkhead was constructed to an elevation of 0.9' NAVD 88. The crest of the boat bay was constructed to -4.0' NAVD 88 (Geoid 99). A rock scour pad above a geotextile fabric was constructed along both sides of the steel bulkhead to an elevation of -4.0' NAVD (Geoid 99) with 3:1 side slopes.

- Structure No.4 – 120 linear feet steel bulkhead with 10' wide boat bay. The top elevation of the bulkhead was constructed to an elevation of 0.9' NAVD 88 (Geoid 99). The crest of the boat bay was constructed to -4.0' NAVD 88 (Geoid 99). A rock scout pad above a geotextile fabric was constructed along both sides of the bulkhead to an elevation of -4.0' NAVD with 3:1 side slopes.

IV. Summary of Past Operation and Maintenance Projects

2016 Topographic Survey

Over the years since the project was completed, it was noted through periodic inspections that the rock containment dike and marsh platform had settled from observations following the completion of the project. To determine the extent of settlement, CPRA tasked T. Baker Smith to perform a post-construction survey to collect current elevations of the rock containment dike and marsh platforms and to compare them to the constructed elevations. Since no previous survey data was available for the marsh creation areas, the profiles and transect data collected will be used as the baseline data and the comparison in this report will be based on the design elevation of the fill material in the disposal areas. All of the survey data collected for the profiles, transects and settlement plates were collected in NAVD 88 (Geoid 12a). The east and west rock containment dikes elevations were compared to the 2011 as-built drawings survey data collected by NRCS.

A review of the elevation data and drawings of the Penchant Basin Natural Resource Plan, Increment 1 revealed the following:

Bayou Chene Rock Containment Dike – West Side

After comparing the 2017 settlement data and as-built elevation data of the East Containment Dike, it was determined that although the rock structure has experienced

moderate settlement in several locations since construction, the average settlement rates of the majority of the rock structure was minimal.

From Sta. 0+00 to 07+50, the rock containment dike experienced moderate settlement with settlement rates ranging from 1.5' between Sta. 0+00 to 03+00 and 1.0' between Sta. 03+00 to 07+50. The average crest elevation between 0+00 and 07+50 was approximately 0.5' NAVD 88 (Geoid 12a).

From Sta. 07+50 to Sta. 21+00, the rock containment dike experienced minimal settled from a maximum of 1.0'' to a minimum of 0.0. The average settlement rate for this 1,350' section was approximately 0.4'. The average current crest elevation from Sta. 07+50 to Sta. 21+00 is 1.63' NAVD 88 (Geoid 12a).

The settlement increased from 0.0' at Sta. 21+00 to 1.2' at Sta. 23+00. From the maximum settlement of 1.2' near Sta. 23+00, the crest elevation increased back to the original design elevation of 2.0' NAVD near the end of the east containment dike (Sta. 29+00). The average crest elevation between Sta. 23+00 and Sta. 29+00 was approximately 1.2' NAVD 88 (Geoid 12a).

Bayou Chene Rock Containment Dike – East Side

After comparing the as-built survey data to the current 2017 survey data, it was determined that the rock dike has experienced minor to moderate settlement which ranged from 0.1' to a maximum of 1.9'. The average crest elevation of the entire reach was approximately 1.0' NAVD 88 (Geoid 12a).

From Sta. 0+00 to 12+00, the rock dike showed minor settlement, averaging 0.7'. The most settlement between these stations was in the first 500' beginning at Sta. 0+00. From Sta. 5+00 to Sta. 12+00, the settlement varied from a minimum of 0.5' to a maximum 0.9'. The average elevation of the dike between Sta. 0+00 and 12+00 was 1.3' NAVD 88 (Geoid 12a).

From Sta. 12+00 to the end of the dike at Sta. 38+00, the settlement was moderate and more uniform with an average settlement of 1.1'. The settlement was uniform except between Sta. 24+00 and 25+00 where the structure did not settle at all since construction. The average elevation of the dike at the time of the 2017 survey was 0.9' NAVD 88 (Geoid 12a).

Bayou Chene Marsh Fill – West Side

A review of the transect taken during the 2017 survey revealed that the marsh platform had settled from the design elevation of 0.5' NAVD 88 (Geoid 12a). The settlement of the platform appears to be uniform with remnants of the containment dike visible above the design platform elevation on the swamp side. The average elevation of the platform

in 2017 is -0.5' NAVD88 (Geoid 12a) which is about 1.0' lower than the design elevation.

Bayou Chene Marsh Fill – East Side

The east side marsh fill area doesn't appear to have settled as much as the west side. Aside from the high areas in the vicinity of the containment dikes and depressions near the spoil excavation, the marsh platform elevation in 2017 is 0.0' NAVD 88 (Geoid 12a) which is about 0.5' lower than the design elevation.

The complete survey report and drawings can be found at https://cims.coastal.louisiana.gov/DocLibrary/DocumentSearch.aspx?Root=0&Folder=0 on the CPRA website under the CIMS icon.

TE-0034 Floating Debris Barrier (Brady Canal & Superior Canal)

Upon completion of the Brady Canal and Superior Canal structures, it was evident that floating vegetation and debris would present problems with obstruction of the boat bay at Brady Canal and with the functioning of the flap-gates along Superior Canal. NRCS took the lead on designing a debris barrier on the up-stream side of both structures to mitigate any interference with the functionality of the gates and boat bay. The floating debris barriers were completed in 2015 and consisted of floating PVC bodies secured by timber piles and hanging debris screens below the bodies to catch debris above and below the surface of the water. The floating debris barriers were constructed on each side of the boat bay at the Brady Canal Structure and across the entire channel north of the Superior Canal Structure. CPRA has not received As-built Drawings or a Project Completion Report for this project.

V. Inspection Results

Rock Dike and Marsh Creation Area (East and West)

During normal water elevations, the rock dike is barely visible due to the structure settlement over the years. This particular day, the water levels in Bayou Chene were extremely low and the entire rock dike was visible, as well as the marsh creation areas behind the dike. The rock dike stone appeared to be displaced in some areas with vegetation and other debris covering the structure. The west marsh creation area was covered in woody vegetation and trees as well as vegetative debris. The east marsh creation area was more of a marsh grass with visible marsh flats and birds loafing on the flats. There are no plans to refurbish the east or west rock dike sections or nourish the existing marsh since there doesn't appear to be any erosion of the protected marsh behind the structure or major changes since construction was completed.

Brady Canal Structure

The fixed crest weir with a boat bay and flap-gates at the intersection of Brady Canal and Bayou Penchant was in good condition with no structural defects. The earthen bank tie-ins

were stable with no signs of erosion. The floating debris barrier installed to prevent build-up of vegetation against the structure was also in good condition. There was a minor build-up of water hyacinth behind the floating barrier on the south side of the structure. The floating debris barrier is functioning as designed. The warning signs and supports were in good condition as well. No maintenance will be required at this time.

Superior Canal Structure

The fixed crest weir with flap-gates across Superior Canal was in good condition with no obvious structural defects or damage. The galvanized steel components, channel cap and sign supports all appeared to be in good condition. The rock armored bank tie-ins to the earthen bank were also in good condition. The floating debris barrier installed on the north side of the structure was in fair condition and working well. A large portion of the channel was clogged with marsh material and water hyacinth north of the floating barrier. The floating marsh mats and hyacinth may require spraying the near future to kill vegetation and open the channel. The warning signs on both sides of the structure were in good condition with no visible damage.

Structure No. 4

Structure No. 4 appeared to be in good condition with no visible structural damage or excessive corrosion of the steel components. The rock revetment bank tie-ins were also in good condition with no signs of bank erosion. The signs and supports were also in good condition. No maintenance will be required at this site at this time.

Structure No. 5

The fixed crest weir with boat bay closest to Lost Lake along the north bank of Bayou Decade appeared to be in good condition at the time of the inspection. The steel sheet piling and other components of the structure were in good condition with no major corrosion or structural damage. The rock revetment tie-ins to the structure were in good condition with slight settlement of the rock dike on the south side of the structure. There doesn't appear to be any breaching at this time. The warning signs and supports were also in good condition. No maintenance will be required at this time other than monitoring of the south side rock tie-in.

Rock Revetment along Bayou Decade

The rock armored revetment along the north bank of Bayou Decade was constructed in three (3) reaches with the first reach from Lost Lake to Structure No. 5, second reach from Structure No. 5 to Structure No. 4 and the third reach from Structure No. 4 to Voss Canal. The rock revetment was in good condition with no obvious settlement or breaches in the bank line. There was minor erosion of the existing bank line at the southern termination point of Reach 3 along the shoreline of Lost Lake. The marsh erosion at the termination point of a hardened structure is a common occurrence where a rock revetment structure meets natural marsh. The earthen embankment is well vegetated and the rock revetment is stable. No maintenance will be required at this time.

Floating Debris Barriers

Overall, the floating debris barriers at the Brady Canal and Superior Canal structures appeared to be in good condition with no obvious damage or defects. The floating PVC

bodies, timber piles and connections all appear to be functioning properly. We were unable to determine the condition of the debris screens since they are located below the water surface. We did not notice anything unusual with the floating debris barriers that would indicated that the screens were not functioning. We will continue to monitor the condition of the floating debris barriers on future site visits and perform maintenance/cleaning as needed.

VI. Conclusions and Recommendations

All features of the Penchant Basin Natural Resource Plan – Increment 1 appear to be in good condition with only minor debris consolidating on the upstream side of the Superior Canal Structure and behind the floating debris barrier at Brady Canal. The debris does not appear to be affecting the functionality of the structures and will be monitored on future site visits. In the future, Superior Canal may need to be sprayed and/or dredged to remove the consolidation of debris if it is affecting the function of the flap gates. To plan for this potential event, we have included maintenance funding for spraying and dredging of Superior Canal the FY 26/27 funding cycle. Although we are not recommending any immediate actions at this time, we have allocated funding in order to quickly address any issues that may arise before the next schedule inspection.

The rock dike containment and fill areas at the intersection of Bayou Penchant and Bayou Chene were in fair condition with minor to moderate settlement of the rock dike and uniform settlement of the both marsh platforms. This area is subject to seasonal high river stages which at times can cover the structures with several feet of water for extended periods of time. The impact of several feet of water over the disposal areas may have accelerated the consolidation of the marsh platform since construction was completed. At this time, we are not recommending an action to add additional material to the marsh creation areas since these areas will likely be underwater for periods of time resulting in constructability issues, as well as increased consolidation of any new material placed in these locations. Although the rock containment dike has settled since construction, it is still providing protection to the marsh creation areas. The project team will continue to monitor the condition of the dike and fill areas and make appropriate recommendation for maintenance as needed. Further discussions with NRCS will be required prior to pursuing action on marsh re-nourishment or dike restoration.

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U.S. Department of Agriculture, Soil Conservation Service. 1984. Lafourche-Terrebonne cooperative river basin study report.

CWPPRA, Natural Resource Conservation Service (NRCS), Louisiana Department of Natural Resources (LDNR), 2008. Penchant Basin Natural Resource Plan, Increment 1 (TE-34) – Fact Sheet.

NRCS-LDNR, 2007. Penchant Basin Natural Resource Plan, Increment 1 (TE-34), Project Information Sheet for Wetland Value Assessment

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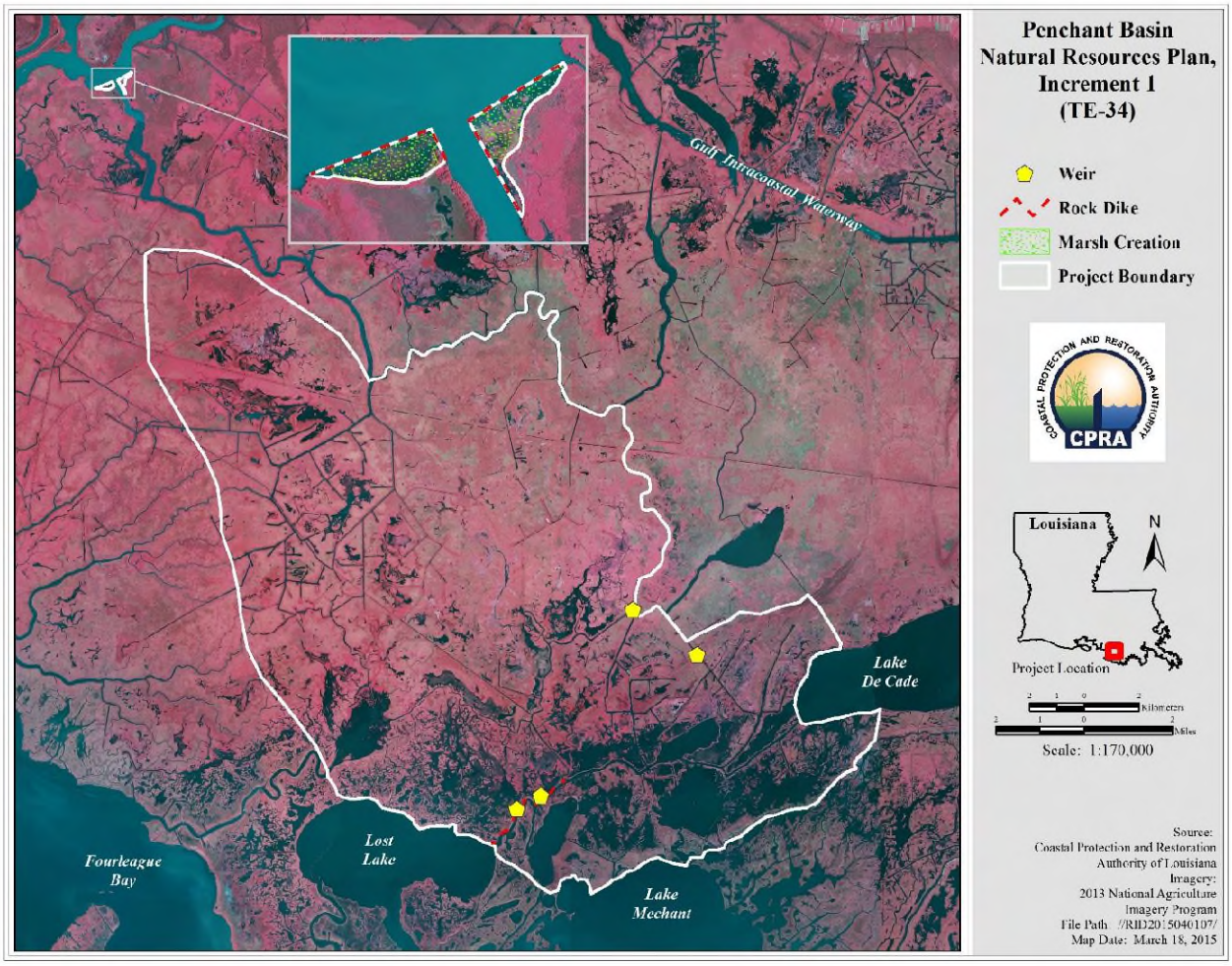
Appendix A

Project Features Map


Penchant Basin
Natural Resources Plan,
Increment 1
(TE-34)
Weir
Rock Dike
Marsh Creation
Project Boundary
Gulf Intracoastal Waterway
Lake
De Cade
Lost
Lake
Lake
Mechant
Fourleague
Bay
COASTAL PROTECTION AND RESTORATION AUTHORITY
CPRA
Louisiana
N
Project Location
Kilometers
Miles
Scale: 1:170,000
Source:
Coastal Protection and Restoration
Authority of Louisiana
Imagery:
2013 National Agriculture
Imagery Program
File Path: //RID2015040107/
Map Date: March 18, 2015

Appendix B

Photographs

Photo No.1 – view of the fixed crest weir at the intersection of Brady Canal and Bayou Penchant.

Photo No.2 – view of timber signage and floating debris barrier at Brady Canal Structure.

Photo No.3 – view of vegetative debris trapped between bulkhead and debris barrier at the Brady Canal Structure.

Photo No.4 – view of water control weir along Superior Canal from Bayou Penchant.

Photo No.5 – view of weir flap gates on the structure along Superior Canal.

Photo No.6 – view of weir structure at Site 4 along Bayou Decade near Lost Lake and rock tie-in to steel sheet pile on the south side of the structure.

Photo No.7 – Rock dike tie-in to the steel bulkhead of Site No.4 and signage.

Photo No.8 – overall view of the weir structure and signage with at Site No.4.

Photo No.9 – view of weir structure at Site No.5 along Bayou Decade near Lost Lake south of Site No.4 and rock dike tie in on the south side of the structure.

Photo No.10 – overall view of weir structure and signage at Site No.5.

Photo No.11 – Rock dike tie-in to the steel bulkhead weir on the north side of the structure at Site No.5.

Photo No.12 – rock dike and marsh creation area along Bayou Chene and Bayou Penchant.

Photo No.13 - rock dike and marsh creation area along Bayou Chene on east side of Bayou Penchant.

Photo No.14 - rock dike and marsh creation area along Bayou Chene on east side of Bayou Penchant.

Photo No.15 - rock dike and marsh creation area along Bayou Chene on west side of Bayou Penchant.

Photo No.16 - rock dike and marsh creation area along Bayou Chene on west side of Bayou Penchant.

Appendix C

Three Year Budget Projection

Penchant Basin/ TE-34 / PPL 6 (2026-2028)
Three-Year Operations & Maintenance Budgets

Project Manager	O & M Manager	Federal Sponsor	Prepared By
	B.Babin	NRCS	B.Babin

	2026	2027	2028
Annual Inspection/Report	$20,000	$20,600	$21,220
Structure Ops/ Nav Aid			
CPRA Administration			
Maintenance/Rehabilitation			

26/27 Description: Annual Inspection Report, Potential spraying/dredging Superior Canal, debris removal, etc.

E&D	
Construction	$150,000
Construction Oversight	

Sub Total - Maint. And Rehab. $ 150,000.00

27/28 Description: Annual Inspection and Report.

E&D	
Construction	
Construction Oversight	

Sub Total - Maint. And Rehab. $ -

28/29 Description: Annual Inspection and Report.

E&D	
Construction	
Construction Oversight	

Sub Total - Maint. And Rehab. $ -

	2026	2027	2028
Annual O&M Budgets	$ 170,000.00	$ 20,600.00	$ 21,220.00

2026 - 2028 O &M Budget (3 yr Total)	**$ 211,820**
Approved O & M Funds	**$1,855,804**
Estimated CPRA Expenditures	**$148,622**
Remaining O & M Budget	**$1,707,182**