



2020-2021

Capital Improvement

Plan

Adopted December 2, 2019

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SECTION I – INTRODUCTION

The North Harris County Regional Water Authority (the “Authority”) was created by the 76th Texas Legislature in 1999 and confirmed by a special public election in 2000. The Authority’s mission included finding and assuring a long-term supply of quality drinking water at the lowest responsible cost. The new entity was also charged with promoting water conservation, as well as maintaining regulatory compliance. This last assignment was critical because the Harris-Galveston Subsidence District (the “HGSD”) had published its 1999 Regulatory Plan requiring our area *to reduce groundwater withdrawals to no more than 20 percent of total water demand by the year 2030*. Since no individual MUD or well owner had the ability to convert to surface water on their own, the Authority became the single entity to negotiate for a secure, long-term supply of drinking water for all the municipal utility districts, small municipalities and other permitted well owners within its boundaries. Perhaps the most critical task was to develop and construct the infrastructure to bring that water to the subdivisions within the boundaries of the Authority. The Authority was not given taxing ability; rather funding for the conversion to surface water comes from pumpage fees charged to the well owners and the sale of surface water.

Several disincentives were built into the HGSD Regulatory Plan, including a \$3.00/1,000 gallons (groundwater pumped) “penalty” fee that would be triggered: 1) If the Groundwater Reduction Plan (the “GRP”) was not submitted and certified according to the timeline; 2) If construction had not begun on the surface water delivery infrastructure by 2005; and 3) If the mandated groundwater pumpage reductions were not accomplished within the 2010, 2020 and 2030 timelines. The HGSD has issued several revisions to their regulatory plan and the currently adopted plan, (HGSD 2013 Regulatory Plan), stipulates a 60% conversion by 2025 and 80% by 2035 while increasing the disincentive fee to approximately \$9.25/1000 gallons for calendar year 2020. The Authority has met all applicable deadlines to date.

As the GRP was being developed, it became apparent that some water districts within the Authority were experiencing difficulty with either water quality or water quantity to meet accelerating demand. These districts would soon be forced to decide whether or not to drill a new well -- sometimes at a cost of more than a million dollars -- that may be minimally used once the area converted to surface water in 2010.

From the outset, the Authority’s cornerstone precept was fairness and equity among all water users within its boundaries and promised that the overall cost of accommodating the HGSD mandate would be shared by everyone. Random drilling of new wells that were not ideally positioned to be incorporated into the long-term distribution system was clearly not cost-effective. Recognizing this, the Authority initiated a bold new strategy to share existing groundwater supplies by connecting the districts that had surplus capacity in their wells with the ones that needed additional water immediately. This innovative solution – called the Groundwater Transfer Program (the “GTP”) – involved constructing portions of the 2010 distribution lines significantly earlier than originally planned. The necessary components of the GTP were completed and the GTP was placed in operation in January 2006. After very

successfully meeting its intended purpose, the GTP ended in June 2010 with the conversion to surface water by the involved districts.

The Authority's system was ready to begin delivering surface water in September 2009. However, the first districts did not begin to take surface water until February 2010. The remaining districts scheduled to receive surface water continued to come online as their chloramination facilities were ready with the last district coming on line in March 2011.

The HGSD updated its Regulatory Plan ("Plan") in January 2013. The updated Plan extended the 2020 and 2030 conversion deadlines each back five years to 2025 and 2035 respectively. Also, the conversion requirements were reduced to 60% in 2025 and set at 80% for 2035. Additionally, existing certified GRPs were required to incorporate any changes required by the updated Regulatory Plan and be resubmitted for certification no later than July 1, 2014. The Authority submitted its updated GRP to the HGSD on June 26, 2014. The HGSD approved the Authority's updated GRP October 14, 2015.

In 2003, the Authority adopted its initial **Capital Improvement Plan** ("CIP") for years 2004-2005. The primary focus of that CIP, and the one following it, was to define and construct the infrastructure necessary to launch the GTP. Subsequent plans expanded on this foundation by outlining and implementing a broad-based program to provide the remainder of the infrastructure necessary to enable the initial conversion to surface water in 2010. The 2020-2021 Capital Improvement Plan (the "2020-2021 CIP") provides for enhancements to the 2010 system to facilitate a continuous satisfactory level of conversion to surface water and focuses on the planning and initial development of the infrastructure, especially those requiring coordination with other regional water providers and long delivery periods, needed to meet the HGSD 2025 and eventual 2035 conversion mandates.

SECTION II – THE 2020-2021 CAPITAL IMPROVEMENT PLAN

Overview

The 2020-2021 CIP continues the systematic planning and development process that began when the Authority's Board adopted the Authority's first CIP in 2003. The primary focus of the 2020-2021 CIP is to continue the planning and development of the infrastructure required to enable the Authority to meet the HGSD's 2025 conversion requirement.

Significant activities addressed in the 2020-2021 CIP are:

- Continue maintenance and enhancements of the Authority's existing Regional Pump Station and Water Plant.
- Continue evaluating the need for additional regional water wells and enhancements to the 2010 system and take necessary efforts to optimize use of the system.
- Identify and purchase the sites for the third Regional Pump Station and second Regional Water Plant.
- Final design and construction of the initial phase of the State Hwy. 249 Regional Pump Station.
- Final design and construction of the 2025 transmission line.
- Provide funding for the Authority's share of the major expansion of the Northeast Water Purification Plant (the "NEWPP").
- Provide funding for the Authority's share of the cost for acquisition of real estate, design and construction of the proposed joint transmission line from the NEWPP site to the Authority's take-point and proposed 2025 transmission line.
- Pay the Authority's portion of the project costs for the Luce Bayou Interbasin Transfer Project.
- Continue the planning and design and construction of the 2025 distribution system.
- Provide funding for the Chloramination Credit.
- Provide funding to help encourage and facilitate implementation of reuse systems.
- Provide professional services to perform the wide variety of activities required to implement the 2020-2021 CIP.
- Details on the specific projects are presented in *Appendix B*.

Considerations

The 2020-2021 CIP has been developed using the best, currently available information for the scope of each project along with cost information from a variety of sources, including cost experience from the Authority's projects completed to date and construction cost tabulations from similar projects in the Great Houston Region. While the Authority's body of empirical cost data is expanding, especially in terms of water lines, the cost base is still evolving in several areas. Accordingly, the following points are offered to help keep the implementation of this 2020-2021 CIP in perspective:

- It is possible that conditions would evolve on a project that could materially impact the cost of the project.
- Real estate and construction costs can be and are influenced by variables over which the Authority has no control.
- It is common to experience unexpected costs in the implementation of a CIP. Provision of a contingency is the most practical way to attempt to address this issue.

Financial

While the 2004-2005 CIP used the best cost estimation available at the time, it did not have the benefit of building upon actual prior Authority project experience; instead, the costing was based on the general project definition presented in the GRP. As the actual design of the projects proceeded and the criteria within which the Authority needed to develop its projects became clearer, it has become possible to sharpen the definition of the projects. As a result, the ability to estimate the project costs has improved. The estimated costs included in the 2020-2021 CIP have been updated and/or based - wherever possible and practical - on experience gained thus far on actual Authority projects.

The Authority has applied for, and was granted, financing through the Texas Water Development Board ("TWDB") via the State Water Implementation Fund for Texas ("SWIFT") program. During SWIFT program years 2015-2018 the TWDB has committed \$2.076 billion of financial support to the Authority.

As seen in the following table, approximately \$49 million of Revenue Bonds will be used to implement the 2020-2021 CIP. Additionally, approximately \$572 million of SWIFT funds are committed to implement the 2020-2021 CIP. The remaining approximately \$31 million of the near \$652 million needed to implement the 2020-2021 CIP will be funded through sources, To Be Determined, i.e. bonds, capital contributions, etc.

SUMMARY OF 2020-2021 CAPITAL IMPROVEMENT PLAN

Category	Fiscal Year Planned Authorizations		Total
	(Thousands \$)		
	2020	2021	
Acquisition	3,569	12,760	16,329
Design	20,752	8,653	29,405
Construction	103,292	202,460	305,752
Equipment	20	0	20
Other	154,321	147,059	301,380
Total Authorizations	281,954	370,932	652,886
Source of Funds			
Revenue Bonds	22,500	26,507	49,007
SWIFT Funds	259,094	313,128	572,222
To Be Determined	360	31,297	31,657
Total Funds	281,954	370,932	652,886

APPENDIX A
GLOSSARY OF TERMS

Acquisition	Includes the cost to purchase land and easements and the acquisition services (i.e. ROW Services, appraisals, legal, etc.) required to accomplish the purchase
Authorization	Amount designated for or authorized for the performance of work, service, equipment or participation agreements - the values typically do not represent actual expenditure of funds
Design	Includes the cost for program management, project planning, design related services, design management and other engineering and planning activities
Construction	Includes the cost of the construction contract, contingencies, construction administration, construction observation and materials testing
Equipment	Includes the cost of any equipment that may be purchased separately from a construction contract
FWSD	Fresh Water Supply District
ID	Improvement District
MUD	Municipal Utility District
N/A	Not Applicable or Contingency C.I.P. Number
Other	A general category that may include participation commitments with other parties, acquisition, design, construction, equipment or any other relevant costs
PUD	Public Utility District
SWIFT	State Water Implementation Fund for Texas
UD	Utility District
VAR	Various districts or key map locations as applicable
WCID	Water Control & Improvement District

APPENDIX B
PROJECT DETAIL FORMS

Project: SPEARS ROAD REGIONAL PUMP STATION	District:	C.I.P. Number	2
	VAR	Key Map:	372J
Description: Project provides for the siting study, real estate acquisition, design, construction and upgrades/enhancements of this regional pump station.			
Category	Fiscal Year Planned Authorizations		Project Total
	(Thousands)		
	2020	2021	
Acquisition			0
Design			0
Construction	2,478		2,478
Equipment	20		20
Other		200	200
Total Authorizations	2,498	200	2,698
Source of Funds			
Revenue Bonds	2,498	200	2,698
SWIFT Funds			0
To Be Determined			0
Total Funds	2,498	200	2,698

Project: REGIONAL WELLS	District:	C.I.P. Number	3
	VAR	Key Map:	VAR
Description: Project provides for the real estate acquisition of well sites and design and construction of new wells and appurtenances and/or the purchase of existing wells. The wells will be constructed or purchased for emergency supplies of water as needed by the Authority to facilitate operation of its System.			
Category	Fiscal Year Planned Authorizations		Project Total
	(Thousands)		
	2020	2021	
Acquisition			0
Design			0
Construction			0
Equipment			0
Other	200	7,500	7,700
Total Authorizations	200	7,500	7,700
Source of Funds			
Revenue Bonds	200	7,500	7,700
SWIFT Funds			0
To Be Determined			0
Total Funds	200	7,500	7,700

Project: LOUETTA REGIONAL WATER PLANT	District:	C.I.P. Number	5
	2, 4	Key Map:	329R
Description: Project provides for the siting study, real estate acquisition, design, construction and upgrades/enhancements of this regional water plant.			
Category	Fiscal Year Planned Authorizations (Thousands)		Project Total
	2020	2021	
Acquisition			0
Design	200	14	214
Construction	1,486	495	1,981
Equipment	0		0
Other	100	100	200
Total Authorizations	1,786	609	2,395
Source of Funds			
Revenue Bonds	1,786	609	2,395
SWIFT Funds			0
To Be Determined			0
Total Funds	1,786	609	2,395

Project: 2025 DISTRIBUTION SYSTEM (6C-1 AND 6C-2)	District:	C.I.P. Number	6
	1	Key Map:	VAR
Description: Project provides for site study, real estate acquisition, design and construction of certain projects within the 2025 System. There are two new projects that have been identified as 6C-1 and 6C-2, extending from the existing Louetta Distribution Line. The Project will serve Faulkey Gully MUD and Northwest Harris County MUD No. 5.			
Category	Fiscal Year Planned Authorizations (Thousands)		Project Total
	2020	2021	
Acquisition	700	233	933
Design	444	148	592
Construction		2,921	2,921
Equipment			0
Other			0
Total Authorizations	1,144	3,302	4,446
Source of Funds			
Revenue Bonds			0
SWIFT Funds	1144	3,302	4,446
To Be Determined			0
Total Funds	1,144	3,302	4,446

Project: 2025 DISTRIBUTION SYSTEM (7D-1)	District:	C.I.P. Number	7
	4	Key Map:	VAR
Description: Project provides for site study, real estate acquisition, design and construction of the second phase of certain projects within the 2025 System. There is a new project that has been identified as 7D-1, extending from the existing CIP No. 7 Projects. 7D-1 will be extending the 2025 System to serve Northwest Harris County MUD No. 32.			
Category	Fiscal Year Planned Authorizations (Thousands)		Project Total
	2020	2021	
Acquisition	487	162	649
Design	306	102	408
Construction		2,146	2,146
Equipment			0
Other			0
Total Authorizations	793	2,410	3,203
Source of Funds			
Revenue Bonds			0
SWIFT Funds	793	2,410	3,203
To Be Determined			0
Total Funds	793	2,410	3,203

Project: WEST REGIONAL WATER PLANT	District:	C.I.P. Number	21
	1	Key Map:	368E
Description: Project provides for the siting study and real estate acquisition for this regional pump station. This facility will be part of the 2035 Water Distribution and Transmission System.			
Category	Fiscal Year Planned Authorizations (Thousands)		Project Total
	2020	2021	
Acquisition	360	4,425	4,785
Design			0
Construction			0
Equipment			0
Other			0
Total Authorizations	360	4,425	4,785
Source of Funds			
Revenue Bonds			0
SWIFT Funds			0
To Be Determined	360	4,425	4,785
Total Funds	360	4,425	4,785

Project: HARDY REGIONAL PUMP STATION	District:	C.I.P. Number	23
	VAR	Key Map:	333S
Description: Project provides for the siting study and real estate acquisition for this regional pump station. This facility will be part of the 2025 Water Distribution and Transmission System.			
Category	Fiscal Year Planned Authorizations (Thousands)		Project Total
	2020	2021	
Acquisition	632	4,579	5,211
Design			0
Construction			0
Equipment			0
Other			0
Total Authorizations	632	4,579	5,211
Source of Funds			
Revenue Bonds			0
SWIFT Funds	632	4,579	5,211
To Be Determined			0
Total Funds	632	4,579	5,211

Project: SH 249 REGIONAL PUMP STATION	District:	C.I.P. Number	24
	VAR	Key Map:	370S
Description: Project provides for the site study, real estate acquisition, design and construction of this regional pump station. This facility will be part of the 2025 Distribution and Transmission System.			
Category	Fiscal Year Planned Authorizations (Thousands)		Project Total
	2020	2021	
Acquisition			0
Design	5,273		5,273
Construction	9,804	58,826	68,630
Equipment			0
Other			0
Total Authorizations	15,077	58,826	73,903
Source of Funds			
Revenue Bonds			0
SWIFT Funds	15,077	58,826	73,903
To Be Determined			0
Total Funds	15,077	58,826	73,903

Project: 2025 TRANSMISSION LINE		District:	C.I.P. Number	25
		VAR	Key Map:	VAR
Description: Project provides for the real estate acquisition, design and construction of a major transmission line generally located in the CenterPoint transmission corridor along North Beltway 8 from the Authority take point just west of IH45 to just west of State Hwy 249. This line will be part of the 2025 Water Distribution and Transmission System.				
Category	Fiscal Year Planned Authorizations (Thousands)		Project Total	
	2020	2021		
Acquisition	680		680	
Design	4,516		4,516	
Construction	37,274	111,822	149,096	
Equipment			0	
Other			0	
Total Authorizations	42,470	111,822	154,292	
Source of Funds				
Revenue Bonds			0	
SWIFT Funds	42,470	84,950	127,420	
To Be Determined		26,872	26,872	
Total Funds	42,470	111,822	154,292	

Project: WATER SUPPLY		District:	C.I.P. Number	26
		ALL	Key Map:	VAR
Description: Provides funding to pay the City of Houston for water in accordance with the Authority's Water Supply Contract and Supplement No. 2 to the Contract with the City. Funding included herein will help pay for the Authority's portion of the cost to expand the Northeast Water Purification Plant (NEWPP). Additionally, funds will be used to pay the Authority's share of the cost of Major Rehabilitation, reconstruction and upgrading of the existing NEWPP.				
Category	Fiscal Year Planned Authorizations (Thousands)		Project Total	
	2020	2021		
Acquisition			0	
Design	75	75	150	
Construction			0	
Equipment			0	
Other	26,647	126,161	152,808	
Total Authorizations	26,722	126,236	152,958	
Source of Funds				
Revenue Bonds			0	
SWIFT Funds	26,722	126,236	152,958	
To Be Determined			0	
Total Funds	26,722	126,236	152,958	

Project: LUCE BAYOU INTERBASIN DIVERSION PROJECT	District:	C.I.P. Number	27
	ALL	Key Map:	VAR
Description: Provides funding to pay the City of Houston for the Authority's portion of the project costs. The project will deliver surface water from the Trinity River to Lake Houston. The water will be treated by the City of Houston and then delivered to the Authority and other users.			
Category	Fiscal Year Planned Authorizations (Thousands)		Project Total
	2020	2021	
Acquisition			0
Design			0
Construction			0
Equipment			0
Other	2,121	2,303	4,424
Total Authorizations	2,121	2,303	4,424
Source of Funds			
Revenue Bonds	2,121	2,303	4,424
SWIFT Funds			0
To Be Determined			0
Total Funds	2,121	2,303	4,424

Project: 2025 DISTRIBUTION SYSTEM	District:	C.I.P. Number	28
	VAR	Key Map:	VAR
Description: Project provides for the design, real estate acquisition and construction of the initial component(s) of the 2025 Distribution System.			
Category	Fiscal Year Planned Authorizations (Thousands)		Project Total
	2020	2021	
Acquisition	410		410
Design	920	80	1,000
Construction	52,000	26,000	78,000
Equipment			0
Other			0
Total Authorizations	53,330	26,080	79,410
Source of Funds			
Revenue Bonds			0
SWIFT Funds	53,330	26,080	79,410
To Be Determined			0
Total Funds	53,330	26,080	79,410

Project: CHLORAMINATION SYSTEMS		District:	C.I.P. Number	29
		VAR	Key Map:	VAR
Description: Provides funding to pay a Chloramination Credit to Public Water Systems (the "PWSs") which receive surface water and converted to surface water. The Chloramination Credit is intended to reimburse the PWSs for the cost of chloramination facilities the PWSs constructed in order to use surface water.				
Category	Fiscal Year Planned Authorizations (Thousands)		Project Total	
	2020	2021		
Acquisition				0
Design				0
Construction				0
Equipment				0
Other	1,545	1,545		3,090
Total Authorizations	1,545	1,545		3,090
Source of Funds				
Revenue Bonds	1,545	1,545		3,090
SWIFT Funds				0
To Be Determined				0
Total Funds	1,545	1,545		3,090

Project: NORTHEAST TRANSMISSION LINE		District:	C.I.P. Number	30
		VAR	Key Map:	VAR
Description: This is the line from the Northeast Water Purification Plant which will be built in two segments. The first segment will be a 120-inch line in which all four water authorities and the City of Houston will own capacity. The second segment will be a 108-inch line in which the City of Houston, North Harris County Regional Water Authority and the Central Harris County Regional Water Authority will own capacity. The City is responsible for designing, acquiring land/easements for the line and constructing the line.				
Category	Fiscal Year Planned Authorizations (Thousands)		Project Total	
	2020	2021		
Acquisition	300			300
Design				0
Construction				0
Equipment				0
Other	114,458			114,458
Total Authorizations	114,758	0		114,758
Source of Funds				
Revenue Bonds				0
SWIFT Funds	114,758			114,758
To Be Determined				0
Total Funds	114,758	0		114,758

Project: 2025 DISTRIBUTION SYSTEM (Second Phase)	District:	C.I.P. Number	31
	VAR	Key Map:	VAR
Description: Project provides for the site study, design, real estate acquisition and construction of the initial components of the second phase of the 2025 Distribution System.			
Category	Fiscal Year Planned Authorizations (Thousands)		Project Total
	2020	2021	
Acquisition		3,361	3,361
Design	3,918	3,134	7,052
Construction			0
Equipment			0
Other			0
Total Authorizations	3,918	6,495	10,413
Source of Funds			
Revenue Bonds			0
SWIFT Funds	3,918	6,495	10,413
To Be Determined			0
Total Funds	3,918	6,495	10,413

Project: CITY OF TOMBALL	District:	C.I.P. Number	32
	VAR	Key Map:	VAR
Description: Project provides for the design, real estate acquisition and construction of the 2025 Distribution System to the City of Tomball.			
Category	Fiscal Year Planned Authorizations (Thousands)		Project Total
	2020	2021	
Acquisition			0
Design			0
Construction			0
Equipment			0
Other	250	250	500
Total Authorizations	250	250	500
Source of Funds			
Revenue Bonds			0
SWIFT Funds	250	250	500
To Be Determined			0
Total Funds	250	250	500

Project: SYSTEM IMPROVEMENTS	District:	C.I.P. Number	100
	VAR	Key Map:	VAR
Description: Project provides funding for possible required expansions or upgrades to the distribution system or transmission system, additional flushing hydrants, replacement flow control and/or metering station components, additional connection to districts receiving surface water, district backfill pilot systems, and other supplemental additions to facilitate the efficient operation of the Authority's System.			
Category	Fiscal Year Planned Authorizations (Thousands)		Project Total
	2020	2021	
Acquisition			0
Design			0
Construction			0
Equipment			0
Other	3,200	3,200	6,400
Total Authorizations	3,200	3,200	6,400
Source of Funds			
Revenue Bonds	3,200	3,200	6,400
SWIFT Funds			0
To Be Determined			0
Total Funds	3,200	3,200	6,400

Project: CENTRAL CONTROL SYSTEM	District:	C.I.P. Number	101
	VAR	Key Map:	VAR
Description: Project provides the design and construction of the Supervisory Control and Data Acquisition (SCADA) System, upgrades to same and related activities to facilitate the operation of the Authority's System.			
Category	Fiscal Year Planned Authorizations (Thousands)		Project Total
	2020	2021	
Acquisition			0
Design	100	100	200
Construction			0
Equipment			0
Other	500	500	1,000
Total Authorizations	600	600	1,200
Source of Funds			
Revenue Bonds	600	600	1,200
SWIFT Funds			0
To Be Determined			0
Total Funds	600	600	1,200

Project: WATER REUSE	District:	C.I.P. Number	102
	VAR	Key Map:	VAR
Description: Project provides for engineering and other services to support the Authority's Water Reuse efforts and an allowance to participate in water reuse projects.			
Category	Fiscal Year Planned Authorizations (Thousands)		Project Total
	2020	2021	
Acquisition			0
Design	50	50	100
Construction	250	250	500
Equipment			0
Other	300	300	600
Total Authorizations	600	600	1,200
Source of Funds			
Revenue Bonds	600	600	1,200
SWIFT Funds			0
To Be Determined			0
Total Funds	600	600	1,200

Project: SUPPORT AND SPECIALTY	District:	C.I.P. Number	200
	VAR	Key Map:	VAR
Description: Provides various support and specialty professional services such as program management, control surveying, well location assessments, corrosion protections analysis, surge analysis, GIS and pricing policy/model updates.			
Category	Fiscal Year Planned Authorizations (Thousands)		Project Total
	2020	2021	
Acquisition			0
Design	4,950	4,950	9,900
Construction			0
Equipment			0
Other			0
Total Authorizations	4,950	4,950	9,900
Source of Funds			
Revenue Bonds	4,950	4,950	9,900
SWIFT Funds			0
To Be Determined			0
Total Funds	4,950	4,950	9,900

Project: CONTINGENCY	District:	C.I.P. Number	N/A
	VAR	Key Map:	VAR
Description: Provides funding for costs in excess of original program estimates and unexpected necessary expenses such as those to facilitate escalation of program components, to facilitate system operations and to enable payment of exceptional real estate judgements.			
Category	Fiscal Year Planned Authorizations (Thousands)		Project Total
	2020	2021	
Acquisition			0
Design			0
Construction			0
Equipment			0
Other	5,000	5,000	10,000
Total Authorizations	5,000	5,000	10,000
Source of Funds			
Revenue Bonds	5,000	5,000	10,000
SWIFT Funds			0
To Be Determined			0
Total Funds	5,000	5,000	10,000