

Texas Water

Development Board

OLA ID 880702

PIF No. 12576

Entity Name: North Harris Co Regional WA

Project Name: Additional Funding for NEWPP
Expansion

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Submittal

General Information

Project Information

Funding Type: SWIFT

Contact Information

County: Harris

Entity Contact Information	Engineering Firm Contact Information
Name of Entity: North Harris Co Regional WA	Name of New Entity:
Prefix: Mr.	Prefix: Mr.
First Name: Mark	First Name: Michael V.
Last Name: Evans	Last Name: Reedy
Addr 1: 3648 Cypress Creek Parkway	Addr 1: 10497 Town and Country Way
Addr 2: Ste 110	Addr 2: Ste 600
City: Houston	City: Houston
State: TX	State: TX
Zip: 77068-3609	Zip: 77024-1133
Phone: (281) 440-3924	Phone: (713) 600-6828
Fax: (281) 440-4104	Fax: (713) 600-6801
Suffix:	Suffix: P.E.
OrgName:	OrgName:
DeptName:	DeptName:
Title: Planning & Governmental Affairs Director	Title: Vice President
Email: mevans@nhcrwa.com	Email: mvr@freese.com
	Firm Name: Freese and Nichols, Inc.
Make Changes: Y	Make Changes: Y
No Entity TxWISE Id	No Engineering TxWISE Id

Service Area

Population Served: 938,598

Project Description

Project Name: Additional Funding for NEWPP Expansion

Where can Project be found in the most recent Regional Water Plan?

Project listed on page: : See Attachment A

Capital costs on page: : See Attachment A

Region: H - REGION H

Phase(s) Applied For

Planning: Y

Acquisition: Y

Design: Y

Construction: Y

Emergency

Applicant/entity's water supply will last less than 180 days.: N

Applicant has received or applied for Federal emergency funding.: N

None of the above.: Y

Agricultural Efficiency Project?: N

Estimated average annual residential water bill: \$488

Annual Median Household Income: \$77,750

Project will produce water: Y

Project will conserve water: N

Please provide the volume of water anticipated to be produced or conserved by the project per decade:

2020	2030	2040	2050	2060	2070
74394	115942	143360	143360	143360	143360

Project will address water loss: N

Description of Proposed Project Components: Expansion of the City of Houston (COH) water treatment capacity is required to meet increasing customer demands resulting from projected increases in regional population. The COH is among the largest providers of surface water to customers in Region H. The COH currently treats water from Lake Houston and Lake Livingston at three treatment plants prior to distribution to customers. The three plants are the Northeast Water Purification Plant (NEWPP), the East Water Purification Plant (EWPP), and the Southeast Water Purification Plant (SEWPP). The expansion of the NEWPP will accommodate Houston customers including the needs of the four Regional Water Authorities (North Harris County Regional Water Authority, West Harris County Regional Water Authority, Central Harris County Regional Water Authority, and North Fort Bend Water Authority). This application addresses the needs of the North Harris County Regional Water Authority (NHCRWA). The NHCRWA intends to purchase an additional 113 MGD of treated water capacity from the COH out of the expanded NEWPP for use in implementing the NHCRWA's Groundwater Reduction Plan (GRP). Treated water purchased from the COH will be conveyed to water districts

and cities in the NHCRWA service area through a proposed delivery system (Second Source Line, Initial Phase of NHCRWA 2025 Transmission System, and the NHCRWA 2025 Distribution System) for which the NHCRWA is seeking TWDB funds through separate applications.

See Attachment B for further information and background for the NHCRWA.

ATTACHMENT C

REGIONAL PROJECT WORKSHEET

Texas Water Development Board

State Water Implementation Fund for Texas (SWIFT)

Abridged Application Regional Project Worksheet

Applicant: North Harris County Regional Water Authority

Project Name: Additional Funding for NEWPP Expansion

Instructions: List all entities (aside from the applicant) that will be served by the proposed project. Use the "Rural" column to indicate the entities serving populations of 10,000 or fewer.

Press "Tab" to add new rows as needed.

Entity Name	Rural
1. Bammel UD	Yes
2. Bilma PUD	Yes
3. Bridgestone MUD	No
4. Charterwood MUD	Yes
5. City of Jersey Village	Yes
6. City of Tomball	No
7. City of Waller	Yes
8. CNP UD	No
9. Cy-Champ PUD	Yes
10. Cypress Creek UD	Yes
11. Cypress Forest PUD	Yes
12. Cypress Hill MUD 1	Yes
13. Cypress-Klein UD	Yes
14. Cypresswood UD	Yes
15. Dowdell PUD	Yes
16. Emerald Forest UD	Yes
17. Encanto Real UD	Yes
18. Faulkey Gully MUD	Yes
19. Fountainhead MUD	Yes
20. Grant Road PUD	Yes
21. Harris County FWSD 52	Yes
22. Harris County FWSD 61	No
23. Harris County ID 18	Yes
24. Harris County MUD 001	Yes
25. Harris County MUD 016	Yes
26. Harris County MUD 018	Yes
27. Harris County MUD 024	Yes
28. Harris County MUD 025	Yes
29. Harris County MUD 026	No
30. Harris County MUD 043	Yes

Texas Water Development Board

State Water Implementation Fund for Texas (SWIFT)

Abridged Application Regional Project Worksheet

31.	Harris County MUD 044	Yes
32.	Harris County MUD 048	Yes
33.	Harris County MUD 069	Yes
34.	Harris County MUD 082	No
35.	Harris County MUD 086	Yes
36.	Harris County MUD 104	Yes
37.	Harris County MUD 109	Yes
38.	Harris County MUD 118	Yes
39.	Harris County MUD 168	No
40.	Harris County MUD 170	Yes
41.	Harris County MUD 180	Yes
42.	Harris County MUD 191	Yes
43.	Harris County MUD 202	Yes
44.	Harris County MUD 211	Yes
45.	Harris County MUD 220	Yes
46.	Harris County MUD 222	Yes
47.	Harris County MUD 230	Yes
48.	Harris County MUD 231	Yes
49.	Harris County MUD 233	Yes
50.	Harris County MUD 248	Yes
51.	Harris County MUD 249	Yes
52.	Harris County MUD 273	Yes
53.	Harris County MUD 275	Yes
54.	Harris County MUD 280	Yes
55.	Harris County MUD 281	Yes
56.	Harris County MUD 282	Yes
57.	Harris County MUD 286	Yes
58.	Harris County MUD 316	Yes
59.	Harris County MUD 322	Yes
60.	Harris County MUD 354	Yes
61.	Harris County MUD 358	Yes
62.	Harris County MUD 360	Yes
63.	Harris County MUD 364	Yes
64.	Harris County MUD 365	Yes
65.	Harris County MUD 367	Yes
66.	Harris County MUD 368	No
67.	Harris County MUD 383	Yes
68.	Harris County MUD 387	Yes
69.	Harris County MUD 389	Yes
70.	Harris County MUD 391	Yes
71.	Harris County MUD 396	Yes

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State Water Implementation Fund for Texas (SWIFT)

Abridged Application Regional Project Worksheet

72.	Harris County MUD 397	Yes
73.	Harris County MUD 401	Yes
74.	Harris County MUD 416	Yes
75.	Harris County MUD 454	Yes
76.	Harris County MUD 468	Yes
77.	Harris County MUD 480	Yes
78.	Harris County WCID 091	Yes
79.	Harris County WCID 092	Yes
80.	Harris County WCID 099	Yes
81.	Harris County WCID 109	Yes
82.	Harris County WCID 110	Yes
83.	Harris County WCID 113	Yes
84.	Harris County WCID 114	Yes
85.	Harris County WCID 116	Yes
86.	Harris County WCID 119	Yes
87.	Harris County WCID 132	Yes
88.	Harris County WCID 136	Yes
89.	Harris County WCID 155 (Partial)	Yes
90.	Harris Montgomery County MUD 386	No
91.	Heatherloch MUD	Yes
92.	Hunter's Glen MUD	Yes
93.	Inverness Forest ID	Yes
94.	Klein PUD	Yes
95.	Kleinwood MUD	Yes
96.	Lake Forest UD	Yes
97.	Louetta North PUD	Yes
98.	Louetta Rd. UD	Yes
99.	Malcomson Road UD	Yes
100.	Meadowhill Regional MUD	Yes
101.	Memorial Hills UD	Yes
102.	Mills Road MUD	Yes
103.	North Park PUD	Yes
104.	Northampton MUD	Yes
105.	Northgate Crossing MUD 1	Yes
106.	Northgate Crossing MUD 2	Yes
107.	Northwest Freeway MUD	Yes
108.	Northwest Harris County MUD 05	No
109.	Northwest Harris County MUD 06	Yes
110.	Northwest Harris County MUD 09	Yes
111.	Northwest Harris County MUD 10	Yes
112.	Northwest Harris County MUD 15	Yes

Texas Water Development Board

State Water Implementation Fund for Texas (SWIFT)

Abridged Application Regional Project Worksheet

113.	Northwest Harris County MUD 19	Yes
114.	Northwest Harris County MUD 20	Yes
115.	Northwest Harris County MUD 21	Yes
116.	Northwest Harris County MUD 22	Yes
117.	Northwest Harris County MUD 23	Yes
118.	Northwest Harris County MUD 24	Yes
119.	Northwest Harris County MUD 28	Yes
120.	Northwest Harris County MUD 29	Yes
121.	Northwest Harris County MUD 30	Yes
122.	Northwest Harris County MUD 32	Yes
123.	Northwest Harris County MUD 36	Yes
124.	Northwest Park MUD	Yes
125.	Oakmont PUD	Yes
126.	Ponderosa Forest UD	Yes
127.	Post Wood MUD	Yes
128.	Prestonwood Forest UD	Yes
129.	Reid Road MUD 1	Yes
130.	Reid Road MUD 2	Yes
131.	Richey Road MUD	Yes
132.	Shasla PUD	Yes
133.	Spring Creek Forest PUD	Yes
134.	Spring West MUD	Yes
135.	Tattor Road MUD	Yes
136.	Terranova West MUD	Yes
137.	Timber Lane UD	No
138.	Timberlake ID	Yes
139.	West Harris County MUD 01	Yes
140.	West Harris County MUD 09	Yes
141.	West Harris County MUD 10	Yes
142.	West Harris County MUD 11	Yes
143.	West Harris County MUD 15	Yes
144.	West Harris County MUD 21	Yes
145.	Westador MUD	Yes
146.	White Oak Bend MUD	Yes
147.	Woodcreek MUD	Yes

Readiness to Proceed to Construction

Preliminary planning or design work (30% of total project) has been completed or is not required.:
N

Applicant is prepared to begin implementation or construction within 18 months of application
deadline.: Y

Applicant has acquired all water rights associated with the proposed project, or none will be
required.: Y

Estimated Costs

TWDB Requested Amount

Low-Interest Loan Amount: \$222070000.00

Deferred Loan Amount:

Board Participation Amount:

Local Contribution Amount:

Other Amount: \$551760000.00

Other Desc: Prior SWIFT Commitments

Total Estimated Project Costs: \$773830000.00

Anticipated Debt Service for 2018 Loan Closing is anticipated to be:: LEVEL

ATTACHMENT D

PROJECT FUNDING DETAILS

Additional Attachments

The following documents are attached after this page:

Attachment A_020218.pdf

Attachment B_020218.pdf

ATTACHMENT A

SECTION 1. APPLICANT INFORMATION

REFERENCES TO 2016 REGION H REGIONAL WATER PLAN

SECTION 1. APPLICANT INFORMATION

The applicant project can be found in the 2016 Region H Regional Water Plan in the following:

Chapter 5 – Water Management Strategies

Table 5-4 WMS and Key Project Relationships – page 5-18

Table 5-5 Key Project Overview – page 5-21

Appendix 5-A – Water Management Strategy Tables

Table 5-A3 Scoring for Key Projects – page 5-A-11

Table 5-A4 Water Management Strategy and Project Relationships – page 5-A-14

Table 5-A10 Project Costs Summary – page 5-A-99

Table 5-A11 Project Cost Summary (Unit Cost) – page 5-A-133

Appendix 5-B – Project Technical Memoranda

Northeast Water Purification Plant Expansion – pages 5-B-TRET-004-1 through 5-B-TRET-004-6

Appendix 5-DB – DB17 Reports

Recommended Projects Associated with Water Management Strategies – page 10 of 23

Capital costs associated with the applicant project can be found in the 2016 Region H Water Plan in the following:

Chapter 5 – Water Management Strategies

Table 5-5 Key Project Overview – page 5-21

Appendix 5-A – Water Management Strategy Tables

Table 5-A10 Project Costs Summary – page 5-A-99

Appendix 5-B – Project Technical Memoranda

Northeast Water Purification Plant Expansion – pages 5-B-TRET-004-1 through 5-B-TRET-004-6

Appendix 5-DB – DB17 Reports

Recommended Projects Associated with Water Management Strategies – page 10 of 23

Water Management Strategy*	WMS Project Name
New / Expanded Contract With BRA	Allens Creek Reservoir
	BRA System Operation Permit (Region G Project)
New / Expanded Contract With BWA	BWA Treatment Plant Expansion
New / Expanded Contract With BWA - Brackish Groundwater	BWA Brackish Groundwater
New / Expanded Contract With CLCND	CLCND West Chambers System
New / Expanded Contract With COH	City of Houston GRP
	City of Houston Treatment Expansion
	COH Northeast Water Purification Plant Expansion
	Luce Bayou Interbasin Transfer
	San Jacinto Basin Regional Return Flows
	TRA to COH Transfer
New / Expanded Contract With GCWA	GCWA Reclaimed Water from COH
New / Expanded Contract With LNVA	WUG Infrastructure Expansion (WUG-level projects)
New / Expanded Contract With SJRA	Lake Livingston to SJRA Transfer
	San Jacinto Basin Regional Return Flows
	SJRA GRP
NFBWA Grand Lakes Reuse	Grand Lakes Reclaimed Water System
NFBWA GRP	City of Houston Reuse
	COH Northeast Water Purification Plant Expansion
	Luce Bayou Interbasin Transfer
	NFBWA GRP
	NFBWA Phase 2 Distribution Segments
	San Jacinto Basin Regional Return Flows
	TRA to COH Transfer
	WHCRWA/NFBWA Transmission Line
NHCRWA GRP	City of Houston Reuse
	COH Northeast Water Purification Plant Expansion
	COH, NHCRWA, and CHCRWA Shared Transmission
	Luce Bayou Interbasin Transfer
	NHCRWA Distribution Expansion
	NHCRWA GRP
	NHCRWA Transmission Line
	San Jacinto Basin Regional Return Flows
	TRA to COH Transfer
Old Galveston Road Transmission Improvements	Old Galveston Road Transmission Improvements
Panorama Village And Shenandoah Joint GRP	Panorama Village and Shenandoah Joint GRP
Pearland SWTP	Allens Creek Reservoir
	GCWA Reclaimed Water from COH
	Pearland Surface Water Treatment Plant
Porter SUD Joint GRP	City of Conroe Reuse
	Porter SUD Joint GRP

Project	Potential Volume ¹ (ac-ft)	Capital Cost (\$)	Unit Cost (\$/ac-ft)		Start Decade
			Start Decade	2070	
Reuse					
City of Conroe Reuse ⁴	3,694	\$0	\$0	\$0	2020
City of Houston Reuse	197,467	\$78,121,149	\$56	\$12	2040
City of Pearland Reuse	1,154	\$5,895,808	\$517	\$90	2020
GCWA Reclaimed Water from COH	33,712	\$56,379,232	\$187	\$47	2020
Grand Lakes Reclaimed Water System	661	\$13,148,843	\$2,276	\$612	2020
Montgomery County MUDs #8 and #9 Reuse	1,680	\$15,351,774	\$1,360	\$595	2020
San Jacinto Basin Regional Return Flows ⁴	150,994	\$0	\$0	\$0	2020
SJRA Conroe Reuse Project ⁴	6,807	\$0	\$0	\$0	2020
Wastewater Reclamation for Municipal Irrigation	38,940	\$103,454,114	\$290	\$161	2030
Surface Water Development					
Allens Creek Reservoir	99,650	\$316,226,894	\$321	\$33	2020
BRA System Operation Permit ⁴	25,350	\$0	\$0	\$0	2020
Dow Reservoir and Pump Station Expansion	80,000	\$255,865,694	\$303	\$36	2020
Freeport Seawater Desalination	11,200	\$132,937,747	\$2,454	\$1,461	2040
Treatment					
BWA Treatment Plant Expansion	8,400	\$15,951,976	\$353	\$194	2020
City of Houston Treatment Expansion	116,258	\$288,529,429	\$386	\$183	2040
CLCND West Chambers System	2,800	\$24,657,839	\$1,354	\$617	2020
COH Northeast Water Purification Plant Expansion	358,400	\$1,263,612,418	\$784	\$489	2020
Pearland Surface Water Treatment Plant	22,400	\$112,947,347	\$839	\$230	2020
Other Infrastructure					
Brazos Saltwater Barrier	72,396	\$55,771,408	\$69	\$5	2020

1. Volumes listed in this table represent the maximum anticipated volume associated with the projects rather than new increments of yield. Volumes shown in this table may overlap and are not necessarily additive.

2. Insufficient information to determine cost.

3. Includes brackish groundwater projects implemented under Expanded Use of Groundwater. Costs vary by WUG.

4. Costs included under associated infrastructure projects.

5. Supply generated through expanded use of existing infrastructure. Cost estimated to be minimal.

5.5.5 Selected WMS and Project Costs

The total capital costs identified for the 2016 Region H RWP total \$10,878,701,123. These costs are distributed over the planning period as shown in *Figure 5-5*. *Figure 5-5* also includes the annual costs anticipated over each decade of the plan. Detailed costs by project are shown in **Table 5-A10** and **Table 5-A11** in **Appendix 5-A**.

WMS Project		Cost	Location	Water Quality	Environmental Land & Habitat	Impacts on Environmental Flows	Local Preference	Institutional Constraints / Risk of Implementability	Development Timeline	Sponsorship	Vulnerability	Impacts on Other WMS
REUS-010	Wastewater Reclamation for Municipal Irrigation	4	5	3	5	2	3	3	5	3	5	3
Surface Water Development												
SWDV-001	Allens Creek Reservoir	5	5	3	4	3	4	4	4	4	2	5
SWDV-002	BRA System Operation Permit	5	4	3	3	2	2	2	5	5	5	3
SWDV-003	Dow Reservoir and Pump Station Expansion	4	5	4	4	2	5	4	5	5	3	4
SWDV-004	Freeport Seawater Desalination	1	3	3	3	3	3	3	5	2	3	3
SWDV-005	Lake Somerville Augmentation	3	4	3	3	2	3	3	4	3	4	4
SWDV-006	Little River Off-Channel Reservoir	4	4	3	3	2	2	3	3	3	2	4
SWDV-007	Lone Star Lake	1	5	4	1	2	3	2	2	2	2	3
Treatment												
TRET-001	BWA Water Treatment Plant Expansion	4	3	3	5	3	4	3	5	5	4	5
TRET-002	City of Houston Treatment Expansion	4	3	3	4	3	3	3	5	3	4	5
TRET-003	CLCND West Chambers System	1	3	4	3	2	4	3	5	4	4	3
TRET-004	COH Northeast Water Purification Plant Expansion	2	3	3	4	3	5	4	4	5	4	5
TRET-005	Pearland Surface Water Treatment Plant	2	5	3	4	2	4	3	5	4	5	3
Other Infrastructure												
OTHR-001	Brazos Saltwater Barrier	5	5	5	2	2	4	2	4	3	3	5

Project	Project Type	Associated WMS
CITY OF HOUSTON TREATMENT EXPANSION - PHASE 2	WMS	CITY OF HOUSTON GRP
		COH REUSE
		EAST TEXAS TRANSFER
		NEW / EXPANDED CONTRACT WITH COH
CLCND WEST CHAMBERS SYSTEM	WMS	NEW / EXPANDED CONTRACT WITH CLCND
COH NORTHEAST WATER PURIFICATION PLANT EXPANSION	WMS	CHCRWA GRP
		CITY OF HOUSTON GRP
		COH REUSE
		NEW / EXPANDED CONTRACT WITH COH
		NFBWA GRP
		NHCRWA GRP
COH, NHCRWA, AND CHCRWA SHARED TRANSMISSION	WMS	WHCRWA GRP
		CHCRWA GRP
		CITY OF HOUSTON GRP
CONROE BRACKISH GROUNDWATER DESALINATION	WMS	CONROE BRACKISH GROUNDWATER DESALINATION
DOW RESERVOIR AND PUMP STATION EXPANSION	WMS	DOW RESERVOIR AND PUMP STATION EXPANSION
EAST TEXAS TRANSFER	WMS	EAST TEXAS TRANSFER
FORT BEND MUD 25 GRP	WMS	FORT BEND MUD 25 GRP
FORT BEND WCID 2 GRP INFRASTRUCTURE	WMS	FORT BEND WCID 2 GRP
FREEPORT SEAWATER DESALINATION	WMS	FREEPORT SEAWATER DESALINATION
GCWA REUSE FROM COH	WMS	ADDITIONAL SUPPLY FROM GCWA
		NEW / EXPANDED CONTRACT WITH GCWA
		PEARLAND SWTP
GRAND LAKES RECLAIMED WATER SYSTEM	WMS	NFBWA GRAND LAKES REUSE
GROVETON WELL DEVELOPMENT	WMS	GROVETON GROUNDWATER EXPANSION
INDUSTRIAL CONSERVATION, AUSTIN COUNTY	WUG	INDUSTRIAL CONSERVATION

Table 5-A10 – Project Cost Summary (Sponsor-Level Data)

Project Name	Proj. Level	Sponsor	Capital Cost (\$)	Annual Cost (\$/year)					
				2020	2030	2040	2050	2060	2070
ALLENS CREEK RESERVOIR	WMS	BRAZOS RIVER AUTHORITY	\$94,868,068	\$6,906,835	\$6,906,835	\$6,906,835	\$6,906,835	\$994,625	\$994,625
		HOUSTON	\$221,358,826	\$16,115,949	\$16,115,949	\$16,115,949	\$16,115,949	\$2,320,790	\$2,320,790
BRA SYSTEM OPERATION PERMIT	WMS	BRAZOS RIVER AUTHORITY	\$-	\$-	\$-	\$-	\$-	\$-	\$-
BRAZOS SALTWATER BARRIER	WMS	DOW CHEMICAL USA	\$55,771,408	\$5,025,714	\$5,025,714	\$358,800	\$358,800	\$358,800	\$358,800
BWA BRACKISH GROUNDWATER DEVELOPMENT	WMS	BRAZOSPORT WATER AUTHORITY	\$34,016,950	\$6,718,216	\$6,718,216	\$3,871,700	\$3,871,700	\$3,871,700	\$3,871,700
BWA CONVENTIONAL TREATMENT EXPANSION	WMS	BRAZOSPORT WATER AUTHORITY	\$15,951,976	\$2,963,331	\$2,963,331	\$1,628,480	\$1,628,480	\$1,628,480	\$1,628,480
CHCRWA GRP	WMS	CENTRAL HARRIS COUNTY REGIONAL WATER AUTHORITY	\$-	\$-	\$-	\$-	\$-	\$-	\$-
CHCRWA TRANSMISSION AND INTERNAL DISTRIBUTION	WMS	CENTRAL HARRIS COUNTY REGIONAL WATER AUTHORITY	\$23,207,659	\$1,915,660	\$1,915,660	\$208,000	\$208,000	\$208,000	\$208,000
CITY OF CONROE REUSE PROJECT	WMS	CONROE	\$-	\$-	\$-	\$-	\$-	\$-	\$-
CITY OF HOUSTON GRP	WMS	HOUSTON	\$-	\$-	\$-	\$-	\$-	\$-	\$-
CITY OF HOUSTON REUSE	WMS	HOUSTON	\$78,121,149	\$-	\$-	\$8,813,733	\$8,813,733	\$2,276,607	\$2,276,607
CITY OF HOUSTON TREATMENT EXPANSION - PHASE 1	WMS	HOUSTON	\$183,404,685	\$-	\$-	\$28,901,793	\$28,901,793	\$13,554,612	\$13,554,612
CITY OF HOUSTON TREATMENT EXPANSION - PHASE 2	WMS	HOUSTON	\$105,124,744	\$-	\$-	\$-	\$-	\$16,476,272	\$16,476,272
CLCND WEST CHAMBERS SYSTEM	WMS	CHAMBERS-LIBERTY COUNTIES NAVIGATION DISTRICT	\$24,657,839	\$3,790,051	\$3,790,051	\$1,726,700	\$1,726,700	\$1,726,700	\$1,726,700
COH NORTHEAST WATER PURIFICATION PLANT EXPANSION	WMS	CENTRAL HARRIS COUNTY REGIONAL WATER AUTHORITY	\$18,715,506	\$4,162,841	\$4,162,841	\$2,596,740	\$2,596,740	\$2,596,740	\$2,596,740
		HOUSTON	\$192,837,642	\$42,892,370	\$42,892,370	\$26,755,845	\$26,755,845	\$26,755,845	\$26,755,845
		NORTH FORT BEND WATER AUTHORITY	\$266,358,201	\$59,245,355	\$59,245,355	\$36,956,679	\$36,956,679	\$36,956,679	\$36,956,679
		NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	\$462,850,625	\$102,950,649	\$102,950,649	\$64,219,619	\$64,219,619	\$64,219,619	\$64,219,619
		WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	\$322,850,444	\$71,810,776	\$71,810,776	\$44,794,867	\$44,794,867	\$44,794,867	\$44,794,867
COH, NHCRWA, AND CHCRWA SHARED TRANSMISSION	WMS	CENTRAL HARRIS COUNTY REGIONAL WATER AUTHORITY	\$10,365,344	\$855,600	\$855,600	\$92,900	\$92,900	\$92,900	\$92,900
		HOUSTON	\$32,870,079	\$2,630,638	\$2,630,638	\$212,000	\$212,000	\$212,000	\$212,000
		NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	\$107,089,958	\$8,839,667	\$8,839,667	\$959,800	\$959,800	\$959,800	\$959,800
CONROE BRACKISH GROUNDWATER DESALINATION	WMS	CONROE	\$40,691,342	\$4,801,167	\$4,801,167	\$1,807,027	\$1,807,027	\$1,807,027	\$1,807,027

Table 5-A11 – Project Cost Summary (Unit Cost)

Project Name	Proj. Level	Unit Cost (\$/ac-ft)					
		2020	2030	2040	2050	2060	2070
ALLENS CREEK RESERVOIR	WMS	\$231	\$231	\$231	\$231	\$33	\$33
BRA SYSTEM OPERATION PERMIT	WMS	\$0	\$0	\$0	\$0	\$0	\$0
BRAZOS SALTWATER BARRIER	WMS	\$69	\$69	\$5	\$5	\$5	\$5
BWA BRACKISH GROUNDWATER DEVELOPMENT	WMS	\$600	\$600	\$346	\$346	\$346	\$346
BWA CONVENTIONAL TREATMENT EXPANSION	WMS	\$353	\$353	\$194	\$194	\$194	\$194
CHCRWA GRP	WMS	\$0	\$0	\$0	\$0	\$0	\$0
CHCRWA TRANSMISSION AND INTERNAL DISTRIBUTION	WMS	\$409	\$409	\$44	\$44	\$44	\$44
CITY OF CONROE REUSE PROJECT	WMS	\$0	\$0	\$0	\$0	\$0	\$0
CITY OF HOUSTON GRP	WMS	\$0	\$0	\$0	\$0	\$0	\$0
CITY OF HOUSTON REUSE	WMS	\$0	\$0	\$229	\$195	\$46	\$40
CITY OF HOUSTON TREATMENT EXPANSION - PHASE 1	WMS	\$0	\$0	\$386	\$386	\$181	\$181
CITY OF HOUSTON TREATMENT EXPANSION - PHASE 2	WMS	\$0	\$0	\$0	\$0	\$399	\$399
CLCND WEST CHAMBERS SYSTEM	WMS	\$1,354	\$1,354	\$617	\$617	\$617	\$617
COH NORTHEAST WATER PURIFICATION PLANT EXPANSION	WMS	\$784	\$784	\$489	\$489	\$489	\$489
COH, NHCRWA, AND CHCRWA SHARED TRANSMISSION	WMS	\$83	\$83	\$9	\$9	\$9	\$9
CONROE BRACKISH GROUNDWATER DESALINATION	WMS	\$857	\$857	\$323	\$323	\$323	\$323
DOW RESERVOIR AND PUMP STATION EXPANSION	WMS	\$303	\$303	\$36	\$36	\$36	\$36
EAST TEXAS TRANSFER	WMS	\$0	\$0	\$145	\$145	\$15	\$15
FORT BEND MUD 25 GRP	WMS	\$0	\$282	\$282	\$40	\$40	\$40
FORT BEND WCID 2 GRP INFRASTRUCTURE	WMS	\$800	\$800	\$571	\$343	\$343	\$343
FREEPORT SEAWATER DESALINATION	WMS	\$0	\$0	\$2,454	\$2,454	\$1,461	\$1,461
GCWA REUSE FROM COH	WMS	\$187	\$187	\$47	\$47	\$47	\$47
GRAND LAKES RECLAIMED WATER SYSTEM	WMS	\$2,276	\$2,276	\$612	\$612	\$612	\$612
GROVETON WELL DEVELOPMENT	WMS	\$1,277	\$1,277	\$136	\$136	\$136	\$136
LAKE LIVINGSTON TO SJRA TRANSFER	WMS	\$0	\$0	\$0	\$311	\$311	\$32

REGION H PROJECT ANALYSIS TECHNICAL MEMORANDUM

Project Name:	Northeast Water Purification Plant Expansion
Project ID:	TRET-004
Project Type:	Existing Surface Water Source
Potential Supply Quantity (Rounded):	358,400 ac-ft/yr (320 mgd)
Implementation Decade:	2020 (Phase 1 in 2021, Phases 2, 3, and 4 in 2025)
Development Timeline:	9 years
Project Capital Cost:	\$1,263,612,418 (Sept. 2013)
Unit Water Cost (Rounded):	\$784 per ac-ft (during loan period) \$489 per ac-ft (after loan period)

PROJECT DESCRIPTION

The Northeast Water Purification Plant (NEWPP) is an 80 MGD facility located in northeast Harris County. The plant diverts water from nearby Lake Houston and treats it for use by the City of Houston (COH), North Harris County Regional Water Authority (NHCRWA), and Central Harris County Regional Water Authority (CHCRWA). The facility serves as the sole source of treated surface water for NHCRWA and CHCRWA, enabling them to meet the groundwater reduction requirements of the Harris-Galveston Subsidence District (HGSD).

The NEWPP will continue to serve these users with treated surface water as their demands and conversion requirements increase over time. An increased level of conversion will be needed in order to allow the three current customers to meet their conversion requirement of 80 percent by 2025. In addition, the West Harris County Regional Water Authority (WHCRWA) and North Fort Bend Water Authority (NFBWA) will rely on water from this plant in order to meet their 2025 conversion obligations. Meeting these future conversion targets will require the combined benefit of the individual authority Groundwater Reduction Plans (GRPs) and their associated infrastructure, the expanded NEWPP, and the Luce Bayou transfer project.

PROJECT ANALYSES

The project analyses for NEWPP Expansion include evaluations of the potential supply to be created, environmental factors involved in the project, permitting and development considerations, and an analysis of project cost.

Supply Development

The projected plant capacity was developed based on estimated needs by the project participants. These shares are shown below in *Table 1*.

Table 1 – NEWPP Prorata Shares

Participant	Prorata Share
NHCRWA	113.00
CHCRWA	4.88
NFBWA	68.50
WHCRWA	82.42
COH	51.20
TOTAL	320.00

The expansion is expected to be developed in two phases. The first will begin in 2018 to add an 80 MGD module to the existing plant. Second, third, and fourth phases will begin in 2019 to add an additional three 80 MGD modules for a total of 320 MGD for the expansion.

Environmental Considerations

The NEWPP site was fully acquired during the development of the initial-phase project. Impacts will be associated with the development of property that was disturbed during the construction of the initial project. Improvements to the intake structure and pipeline conveyance to the plant may also involve mitigation efforts.

Permitting and Development

Permitting requirements for this project are subject to the scope of the initial permitting process conducted for the NEWPP site. Infrastructure constructed outside of these permits will require additional permitting efforts.

Cost Analysis

Costs for the proposed expansion were provided by COH. These were adapted to meet regional planning requirements for presentation of project costs and are shown believe in *Table 2*.

Table 2 – Northeast Water Purification Plant Expansion Costs

OPINION OF PROBABLE CONSTRUCTION COST						January 10, 2015
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL	
PROJECT CAPITAL COST SUMMARY						
1	CONSTRUCTION COST	1	LS	\$1,020,310,000	\$1,020,310,000	
2	ENGINEERING, FINANCIAL, AND LEGAL SERVICES AND CONTINGENCIES	1	LS	\$112,210,000	\$112,210,000	
3	LAND AND EASEMENTS	1	LS	\$0	\$0	
4	ENVIRONMENTAL - STUDIES AND MITIGATION	1	LS	\$0	\$0	
5	INTEREST DURING CONSTRUCTION	1	LS	\$131,092,418	\$131,092,418	
PROJECT CAPITAL COST					\$1,263,612,418	

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		2020	2030	2040	2050	2060	2070
1	DEBT SERVICE	\$105,738,241	\$105,738,241	\$0	\$0	\$0	\$0
2	OPERATION AND MAINTENANCE (O&M)	\$175,323,750	\$175,323,750	\$175,323,750	\$175,323,750	\$175,323,750	\$175,323,750
3	PUMPING ENERGY COSTS	\$0	\$0	\$0	\$0	\$0	\$0
4	PURCHASE COST OF WATER	\$0	\$0	\$0	\$0	\$0	\$0
TOTAL ANNUAL COST		\$281,061,991	\$281,061,991	\$175,323,750	\$175,323,750	\$175,323,750	\$175,323,750

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		2020	2030	2040	2050	2060	2070
1	ANNUAL COST	\$281,061,991	\$281,061,991	\$175,323,750	\$175,323,750	\$175,323,750	\$175,323,750
2	YIELD	358,400	358,400	358,400	358,400	358,400	358,400
3	UNIT COST	\$784	\$784	\$489	\$489	\$489	\$489
TOTAL UNIT COST		\$588					

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL	
CONSTRUCTION COST SUMMARY						
1	PUMP STATIONS	1	LS	\$104,450,000	\$104,450,000	
2	WATER TREATMENT PLANTS	1	LS	\$860,810,000	\$860,810,000	
3	OTHER	1	LS	\$55,050,000	\$55,050,000	
PROJECT COST					\$1,020,310,000	

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL	
OPERATION AND MAINTENANCE (O&M) COST SUMMARY						
1	PUMP STATIONS	2.5	%	\$104,450,000	\$2,611,250	
2	WATER TREATMENT PLANTS	1.0	LS	\$172,162,000	\$172,162,000	
3	OTHER	1.0	%	\$55,050,000	\$550,500	
ANNUAL OPERATION AND MAINTENANCE COST					\$175,323,750	

PROJECT EVALUATION

Based on the analysis provided above, the NEWPP Expansion project was evaluated across eleven different criteria for the purpose of quick comparison against alternative projects that may be incorporated into the Regional Water Plan. The results of this evaluation can be seen in the table below.

CRITERIA	RATING	EXPLANATION
Cost	2	High project cost
Location	3	Conveyance required to make water supply available to intended users. This is planned under other projects.
Water Quality	3	No known issues related to water quality.
Environmental Land and Habitat	4	Expansion to be constructed on existing plant site.
Environmental Flows	3	No direct impact to environmental flows although water diverted for treatment at the NEWPP may reduce flows and wastewater
Local Preference	5	Substantial support for project development.
Institutional Constraints	4	Property acquired and preliminary steps under way.
Development Timeline	4	Project development timeline of less than 10 years.
Sponsorship	5	Sponsors identified and engaged in project development.
Vulnerability	4	Minor risks from natural and man-made disasters associated with source availability.
Impacts on Other Projects	5	NEWPP expansion is a significant piece of the overall water supply project for Harris and Fort Bend Counties as the means of treating water delivered by Luce Bayou before transmission to regional water authority customers.

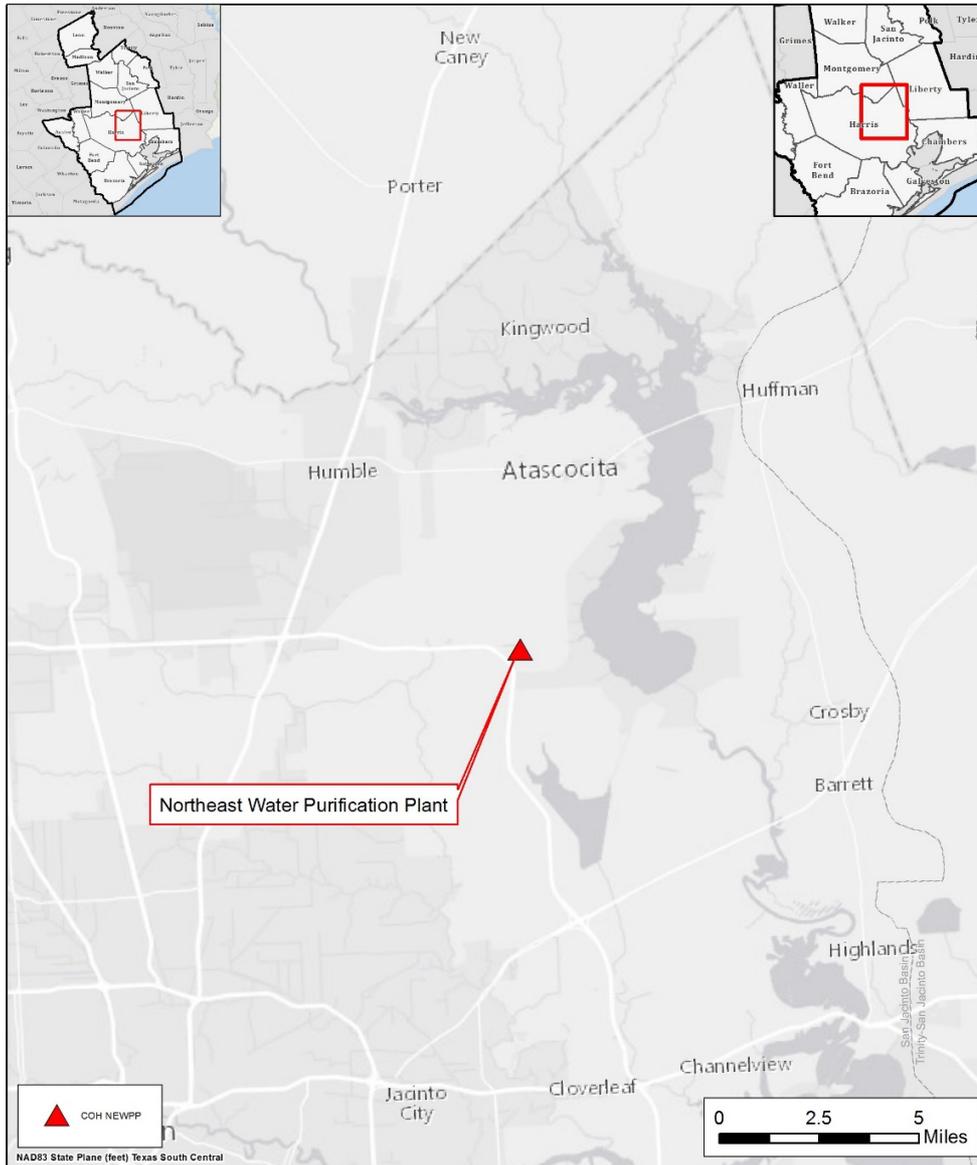
The NEWPP Expansion is not anticipated to affect acreage or vulnerable species. The NEWPP Expansion will not directly impact environmental flows and is not anticipated to impact agricultural land or production.

WATER USER GROUP APPLICATION

The NEWPP Expansion project was evaluated on a basis of several criteria to determine the Water User Groups (WUGs) to which it may be applied. Consideration was given to the proximity of the project to identified needs, the volume of the supply made available, the quality of the water provided, and the unit cost of the project as well as other factors that may relate to the auditability of the project to the WUGs served.

CRITERIA	WUG SUITABILITY
Proximity	Treated water from the NEWPP expansion can be made available to meet demands in the immediate vicinity of the plant or conveyed through additional projects to other demand areas.
Size	The expansion provides a sizable amount of treated surface water for use throughout the greater Houston area. The total volume is divided among project participants.
Water Quality	The project provides treated surface water for potable uses such as for meeting municipal demands.
Unit Cost	The unit cost of this project makes it an acceptable project for municipal and other potable water demands.
Other Factors	The participants in this project have been identified and are moving forward with project development.

LOCATION MAP



Northeast Water Purification Plant Location Map



Texas

Recommended Projects Associated with Water Management Strategies

Sponsor Name	Is Sponsor a WWP?	Project Name	Project Description	Capital Cost	Online Decade
HARRIS COUNTY WCID #1	N	WATER LOSS REDUCTION, HARRIS COUNTY WCID #1	WATER LOSS CONTROL	\$516,480	2020
HARRIS COUNTY WCID #133	N	MUNICIPAL CONSERVATION, HARRIS COUNTY WCID #133	MUNICIPAL CONSERVATION CAPITAL COST (DOES NOT INCLUDE METER REPLACEMENT OR WATER LOSS)	\$301,990	2020
HARRIS COUNTY WCID #133	N	WUG INFRASTRUCTURE EXPANSION (GROUNDWATER) - HARRIS COUNTY WCID #133 - PHASE 1	MULTIPLE WELLS/WELL FIELD	\$1,866,551	2030
HARRIS COUNTY WCID #133	N	WUG INFRASTRUCTURE EXPANSION (GROUNDWATER) - HARRIS COUNTY WCID #133 - PHASE 2	MULTIPLE WELLS/WELL FIELD	\$1,080,966	2050
HARRIS COUNTY WCID #74	N	MUNICIPAL CONSERVATION, HARRIS COUNTY WCID #74	MUNICIPAL CONSERVATION CAPITAL COST (DOES NOT INCLUDE METER REPLACEMENT OR WATER LOSS)	\$353,050	2020
HARRIS COUNTY WCID #74	N	WATER LOSS REDUCTION, HARRIS COUNTY WCID #74	WATER LOSS CONTROL	\$594,240	2020
HARRIS COUNTY WCID #74	N	WUG INFRASTRUCTURE EXPANSION (GROUNDWATER) - HARRIS COUNTY WCID #74	MULTIPLE WELLS/WELL FIELD	\$2,057,703	2030
HARRIS COUNTY WCID #96	N	MUNICIPAL CONSERVATION, HARRIS COUNTY WCID #96	MUNICIPAL CONSERVATION CAPITAL COST (DOES NOT INCLUDE METER REPLACEMENT OR WATER LOSS)	\$911,940	2020
HEDWIG VILLAGE	N	MUNICIPAL CONSERVATION, HEDWIG VILLAGE	MUNICIPAL CONSERVATION CAPITAL COST (DOES NOT INCLUDE METER REPLACEMENT OR WATER LOSS)	\$765,210	2020
HEMPSTEAD	N	MUNICIPAL CONSERVATION, HEMPSTEAD	MUNICIPAL CONSERVATION CAPITAL COST (DOES NOT INCLUDE METER REPLACEMENT OR WATER LOSS)	\$120,900	2020
HEMPSTEAD	N	WATER LOSS REDUCTION, HEMPSTEAD	WATER LOSS CONTROL	\$3,451,010	2020
HEMPSTEAD	N	WUG INFRASTRUCTURE EXPANSION (GROUNDWATER) - HEMPSTEAD	SINGLE WELL	\$1,866,551	2060
HILLCREST	N	MUNICIPAL CONSERVATION, HILLCREST	MUNICIPAL CONSERVATION CAPITAL COST (DOES NOT INCLUDE METER REPLACEMENT OR WATER LOSS)	\$53,090	2020
HILLCREST	N	WATER LOSS REDUCTION, HILLCREST	WATER LOSS CONTROL	\$372,200	2020
HILSHIRE VILLAGE	N	MUNICIPAL CONSERVATION, HILSHIRE VILLAGE	MUNICIPAL CONSERVATION CAPITAL COST (DOES NOT INCLUDE METER REPLACEMENT OR WATER LOSS)	\$108,480	2020
HITCHCOCK	N	MUNICIPAL CONSERVATION, HITCHCOCK	MUNICIPAL CONSERVATION CAPITAL COST (DOES NOT INCLUDE METER REPLACEMENT OR WATER LOSS)	\$144,420	2020
HITCHCOCK	N	WATER LOSS REDUCTION, HITCHCOCK	WATER LOSS CONTROL	\$1,144,110	2020
HOLIDAY LAKES	N	MUNICIPAL CONSERVATION, HOLIDAY LAKES	MUNICIPAL CONSERVATION CAPITAL COST (DOES NOT INCLUDE METER REPLACEMENT OR WATER LOSS)	\$38,270	2020
HOUSTON	Y	ALLENS CREEK RESERVOIR	CONVEYANCE/TRANSMISSION PIPELINE; PUMP STATION; RESERVOIR CONSTRUCTION	\$221,358,826	2028
HOUSTON	Y	CITY OF HOUSTON REUSE	PUMP STATION; CONVEYANCE/TRANSMISSION PIPELINE	\$78,121,149	2040
HOUSTON	Y	CITY OF HOUSTON TREATMENT EXPANSION - PHASE 1	WATER TREATMENT PLANT EXPANSION	\$183,404,685	2040
HOUSTON	Y	CITY OF HOUSTON TREATMENT EXPANSION - PHASE 2	WATER TREATMENT PLANT EXPANSION	\$105,124,744	2060
HOUSTON	Y	COH NORTHEAST WATER PURIFICATION PLANT EXPANSION	WATER TREATMENT PLANT EXPANSION	\$192,837,642	2021
HOUSTON	Y	COH, NHCRWA, AND CHCRWA SHARED TRANSMISSION	CONVEYANCE/TRANSMISSION PIPELINE	\$32,870,079	2025
HOUSTON	Y	EAST TEXAS TRANSFER	CONVEYANCE/TRANSMISSION PIPELINE; PUMP STATION	\$388,064,210	2040
HOUSTON	Y	LUCE BAYOU TRANSFER	CONVEYANCE/TRANSMISSION PIPELINE; NEW SURFACE WATER INTAKE; PUMP STATION	\$360,004,806	2020
HOUSTON	Y	MUNICIPAL CONSERVATION, HOUSTON	MUNICIPAL CONSERVATION CAPITAL COST (DOES NOT INCLUDE METER REPLACEMENT OR WATER LOSS)	\$227,698,870	2020
HOUSTON	Y	OLD GALVESTON ROAD TRANSMISSION IMPROVEMENTS	CONVEYANCE/TRANSMISSION PIPELINE	\$99,886,253	2020
HOUSTON	Y	WATER LOSS REDUCTION, HOUSTON	WATER LOSS CONTROL	\$701,968,780	2020

ATTACHMENT B

ADDITIONAL INFORMATION AND BACKGROUND ON NHCRWA

The North Harris County Regional Water Authority (NHCRWA) is a special purpose political subdivision of the State of Texas created in 1999. The NHCRWA has jurisdiction over an approximately 338 square mile area, largely comprised of County-Other as defined by the Texas Water Development Board (TWDB), located in northwest Harris County. The NHCRWA has the statutory power to conserve, preserve, protect, recharge, and prevent waste of groundwater including, but not limited to, the power to acquire or develop surface water supplies; to acquire, construct, operate, and maintain a water treatment or supply system; to store, transport, treat, and sell water to others; to allocate water among participants in its Groundwater Reduction Plan (GRP); to coordinate water services; and to exercise the power of eminent domain. Based on the Region H Regional Water Plan, the NHCRWA area is expected to experience significant growth throughout the planning cycle, from approximately 750,000 people in 2020 to approximately 940,000 by 2070. This growth in population will result in significant increased water demands. The NHCRWA was created to develop and implement the strategies for complying with the Harris-Galveston Subsidence District's Regulatory Plan. The NHCRWA's GRP establishes the framework and plans for the implementation of projects to optimize groundwater and surface water supplies and ensuring a sustainable water supply for the population served by the NHCRWA.

Submittal

I, Michael V. Reedy, Vice President, as the designated authorized representative of the North Harris Co Regional WA, hereby approve and authorize the submission of this project information form to the Texas Water Development Board. I certify that all information contained herein is true and correct to the best of my knowledge. I understand the failure to submit a complete project information form by the stated deadlines may result in the withdrawal of the form without review.

Submitted by: Michael V. Reedy, Vice President

Telephone Number: (713) 600-6828

Submitted date: 2018-02-01 13:53:19.22