Alliance Regional Water Authority
Technical Committee

REGULAR MEETING

ALLIANCE WATER

COMMITTEE MEMBER PACKETS

Wednesday, March 11th, 2020 at 3:00 P.M.

Kyle - Public Works Building
520 E. RR 150, Kyle, TX 78640

REGULAR MEETING
Alliance Regional Water Authority Technical Committee

COMMITTEE MEMBER PACKETS
Wednesday, March 11th, 2020 at 3:00 P.M.
520 E. RR 150, Kyle, TX 78640

This Notice is posted pursuant to the Texas Open Meetings Act (Texas Government Code Chapter 551). The Technical Committee of the Board of Directors of the Alliance Regional Water Authority (the Authority) will hold a meeting at 3:00 PM, Wednesday, March 11, 2020, at Kyle Public Works Building, 520 E. RR 150, Kyle, Texas. Additional information can be obtained by calling Graham Moore at (512) 294-3214.

Because this meeting is open to the public, members of the Authority Board of Directors who are not members of the Technical Committee may attend this meeting. If any such Board member attends this meeting such that a quorum of the Authority Board is present, this serves as notice of that potential quorum. The meeting will continue as a meeting of the Authority Technical Committee, and not a meeting of the Authority Board. A Board member who is not a Technical Committee member will have no right to vote on any matter before the Committee.

A. CALL TO ORDER

B. ROLL CALL

C. PUBLIC COMMENT PERIOD (Note: Each person wishing to speak must submit a completed Public Comment Form to the Executive Director or his/her designee before the public comment period begins.)

D. CONSENT AGENDA

D.1 Consider approval of minutes of the Special Technical Committee Meeting held February 12, 2020. *~ Graham Moore, P.E., Executive Director*

E. PRESENTATIONS TO THE COMMITTEE

E.1 None.

F. ITEMS FOR COMMITTEE ACTION OR DISCUSSION/DIRECTION

F.1 Update and possible direction to Staff regarding the Authority's Phase 1A projects. *~ Jason Biemer, Project Coordinator*

F.2 Update and possible direction to Staff regarding the Authority's Phase 1B program. *~ Ryan Sowa, P.E., Kimley-Horn & Associates*

REGULAR MEETING
Alliance Regional Water Authority Technical Committee

COMMITTEE MEMBER PACKETS
Wednesday, March 11th, 2020 at 3:00 P.M.
520 E. RR 150, Kyle, TX 78640

F.3 Discussion and possible recommendation to the Board to approve a work order with Walker Partners, LLC for Final Design and Procurement Services for the Authority's Phase 1B Segment E project. ~ *Ryan Sowa, P.E., Kimley-Horn & Associates*

F.4 Discussion and possible direction to Staff regarding the preliminary Commissioning Plan for the Phase 1B projects. ~ *Ryan Sowa, P.E., Kimley-Horn & Associates*

F.5 Discussion and possible direction to Staff regarding the preliminary findings of the Solar Field Production System Estimate for the Authority's property at the Phase 1B Water Treatment Plant. ~ *Ryan Sowa, P.E., Kimley-Horn & Associates*

F.6 Update, discussion and possible direction to Staff regarding the Authority's submission of an Abridged Application to the Texas Water Development Board for additional SWIFT Funding. ~ *Graham Moore, P.E., Executive Director*

F.7 Update on status of groundwater management in project target area, and Gonzales County Underground Water Conservation District, Plum Creek Conservation District, Groundwater Management Area 13, Region L Planning Group, Guadalupe-Blanco River Authority, Hays County and CAPCOG activities. ~ *Graham Moore, P.E., Executive Director*

G. EXECUTIVE DIRECTOR REPORT - Update on future meeting dates, locations, consultant invoices paid, approved changed orders, status of Authority procurements, Executive Director activities and other operational activities where no action is required. ~ *Graham Moore, P.E., Executive Director*

H. COMMITTEE MEMBER ITEMS OR FUTURE AGENDA ITEMS – Possible acknowledgement by Committee Members of future area events and/or requests for item(s) to be placed on a future agenda where no action is required.

REGULAR MEETING
Alliance Regional Water Authority Technical Committee

COMMITTEE MEMBER PACKETS
Wednesday, March 11th, 2020 at 3:00 P.M.
520 E. RR 150, Kyle, TX 78640

I. EXECUTIVE SESSION

I.1 *Executive Session pursuant to the Government Code, Section 551.071 (Consultation with Attorney) and/or Section 551.072 (Real Property Deliberations) regarding:*
- *A. Water supply partnership options*
- *B. Groundwater leases*
- *C. Acquisition of real property for water supply project purposes*

I.2 Action from Executive Session on the following matters:
- *A. Water supply partnership options*
- *B. Groundwater leases*
- *C. Acquisition of real property for water supply project purposes*

J. ADJOURNMENT

NOTE: *The Technical Committee may meet in Executive Session to consider any item listed on this agenda if a matter is raised that is appropriate for Executive Session discussion. An announcement will be made of the basis for the Executive Session discussion. The Technical Committee may also publicly discuss any item listed on the agenda for Executive Session.*

REGULAR MEETING
Alliance Regional Water Authority Technical Committee

COMMITTEE MEMBER PACKETS
Wednesday, March 11th, 2020 at 3:00 P.M.
520 E. RR 150, Kyle, TX 78640

A. CALL TO ORDER

No Backup Information for this Item.

REGULAR MEETING
Alliance Regional Water Authority Technical Committee

COMMITTEE MEMBER PACKETS
Wednesday, March 11th, 2020 at 3:00 P.M.
520 E. RR 150, Kyle, TX 78640

B. ROLL CALL

NAME	PRESENT
Kenneth Williams	
James Earp	
Tom Taggart	
Humberto Ramos	
Brian Lillibridge	
Mike Taylor	

NON-VOTING MEMBERS	PRESENT
Mayor George Haehn	

REGULAR MEETING
Alliance Regional Water Authority Technical Committee

COMMITTEE MEMBER PACKETS
Wednesday, March 11th, 2020 at 3:00 P.M.
520 E. RR 150, Kyle, TX 78640

C. PUBLIC COMMENT PERIOD

Each person wishing to speak must submit a completed Public Comment Form to the Executive Director or his/her designee before the public comment period begins.

Comments are limited to 3-minutes per agenda item and three minutes total for all non-agenda topics. If using a translator, comments are limited to six minutes per agenda item and six minutes total for non-agenda topics.

REGULAR MEETING
Alliance Regional Water Authority Technical Committee

COMMITTEE MEMBER PACKETS
Wednesday, March 11th, 2020 at 3:00 P.M.
520 E. RR 150, Kyle, TX 78640

D. CONSENT AGENDA

Item D.1 is presented as part of the consent agenda.

REGULAR MEETING
Alliance Regional Water Authority Technical Committee

COMMITTEE MEMBER PACKETS
Wednesday, March 11th, 2020 at 3:00 P.M.
520 E. RR 150, Kyle, TX 78640

D.1 Consider approval of minutes of the Regular Technical Committee Meeting held February 12th, 2020. *~ Graham Moore, P.E., Executive Director*

Attachment(s)

- 2020 02 12 Technical Committee Meeting Minutes

Technical Committee decision needed:

- Approval of minutes.

Alliance Regional Water Authority

TECHNICAL COMMITTEE MEETING

MINUTES

Wednesday, February 12, 2020

The following represents the actions taken by the Technical Committee of the Alliance Regional Water Authority (Alliance Water) in the order they occurred during the meeting. The Technical Committee convened in a meeting on Wednesday, February 12, 2020 at the Kyle Public Works Facility, 520 E. RR 150, Kyle, Texas.

A. CALL TO ORDER.
The Alliance Water Technical Committee Meeting was called to order at 3:03 p.m. by Mr. Earp.

B. ROLL CALL.
- **Present: Williams, Earp, Taggart, Ramos, and Taylor.**
- **Absent: Parker and Haehn.**

C. PUBLIC COMMENT PERIOD
- **None.**

D. CONSENT AGENDA

D.1 Consider approval of minutes of the Regular Technical Committee Meeting held January 15, 2020.
- **Motion to adopt the consent agenda as presented was made by Mr. Ramos, seconded by Mr. Taylor and approved on a 5-0 vote.**

E. PRESENTATIONS TO THE COMMITTEE

E.1 None.

F. ITEMS FOR COMMITTEE ACTION OR DISCUSSION/DIRECTION

F.1 Update and possible direction to Staff regarding the Authority's Phase 1A projects.

- **Mr. Biemer provided an update on the projects.**
- **Mr. Ramos inquired is a windsock at the pump station is needed.**
- **Mr. Biemer responded that it's not necessary because we are using liquid chlorine, not chlorine gas.**
- **Mr. Taggart asked if there is any fenced security at the Buda Delivery Point.**
- **Mr. Biemer responded that it will be coordinated with Buda's ultimate infrastructure plans at the site.**
- **No Action.**

F.2 Update and possible direction to Staff regarding the Authority's Phase 1B program.

- **Mr. Ryan Sowa with Kimley-Horn went through the presentation in the packet summarizing Kimley-Horn's recent activities.**
- **Mr. Taggart inquired as to where we are in the program as compared to the revised schedule.**
- **Mr. Sowa responded that we are on track with the revised schedule and that no additional schedule slipping has occurred.**
- **No Action.**

F.3 Discussion and possible recommendation to the Board to approve a work order with Freese & Nichols, Inc. for Final Design and Procurement Services for the Authority's Phase 1B Booster Pump Station and Delivery Point project.

- **Motion to recommend to the Board to approve a work order with Freese & Nichols, Inc. for Final Design and Procurement Services for the Authority's Phase 1B Booster Pump Station and Delivery Point project was made by Mr. Earp, seconded by Mr. Ramos and approved on a 5-0 vote.**

F.4 Discussion and possible recommendation to the Board to approve a work order with Blanton & Associates, Inc. for additional Environmental Field Investigations for the Authority's Phase 1B projects.

- **Motion to recommend to the Board to approve a work order with Blanton & Associates, Inc. for additional Environmental Field Investigations for the Authority's Phase 1B projects was made by Mr. Earp, seconded by Mr. Taylor and approved on a 5-0 vote.**

F.5 Discussion and possible recommendation to the Board to approve a work order with Kimley-Horn & Associates, Inc. for Owner's Representative Services for March 2020 through February 2021 for the Authority's Phase 1B Program.

- **Mr. Moore discussed the proposed work order with Kimley-Horn to continue to act as the Authority's Owner's Representative for the Phase 1B Program.**
- **Mr. Earp inquired where this work order is compared to the budget.**
- **Mr. Moore responded that he and Kimley-Horn both believe this will be the biggest annual authorization for Kimley-Horn. In addition, Kimley-Horn has done a projection of future anticipated expenditures through completion of the program and that the total will be approximately 85% of the total budgeted amount.**
- **Mr. Ramos inquired as to what the implications would be of not approving the work order.**
- **Mr. Moore stated that the current schedule would not be able to be met. The Authority would have to seek to hire the appropriate staff to fill all of the various roles that Kimley-Horn is serving for the Program, which would take considerable time and expense.**
- **Mr. Taggart asked why the environmental services task sems elevated.**
- **Mr. Sowa responded that there is considerable coordination between the environmental firm, the design teams, the Texas Water Development Board and the other agencies that must review and approve each environmental document.**
- **Mr. Earp inquired if some of the services could be reduced.**
- **Mr. Moore stated that he believes the Authority has the right to reduce the services at our discretion, should we choose.**
- **Motion to recommend to the Board to approve a work order with Kimley-Horn & Associates, Inc. Owner's Representative Services for March 2020 through February 2021 for the Authority's Phase 1B Program was made by Mr. Taggart, seconded by Mr. Taylor and approved on a 5-0 vote.**

F.6 Update, discussion and possible direction to Staff regarding the Authority's submission of an Abridged Application to the Texas Water Development Board for additional SWIFT Funding.

- **Committee received an update on the SWIFT funding process.**
- **Mr. Williams inquired if any direction is needed by Staff from the Committee.**
- **Mr. Moore responded that no direction is needed at this time.**

F.7 Update on status of groundwater management in project target area, and Gonzales County Underground Water Conservation District, Plum Creek Conservation District, Groundwater Management Area 13, Region L Planning Group, Guadalupe-Blanco River Authority, Hays County and CAPCOG activities.

- **Mr. Moore provided an update on the various topics.**
- **No Action.**

G. EXECUTIVE DIRECTOR REPORT

- **Update, no action.**

H. COMMITTEE MEMBER ITEMS OR FUTURE AGENDA ITEMS

- **The Committee requested that the Public Relations RFQ be sent out to the entire Board.**
- **Mr. Earp requested that an item be added to a future agenda for possible donation to the scholarship fund being setup in honor of Mr. Alan Thompson, formerly with LNV, at Texas A&M University.**

I. EXECUTIVE SESSION

I.1 Executive Session pursuant to the Government Code, Section 551.071 (Consultation with Attorney) and/or Section 551.072 (Real Property Deliberations) regarding:

A. Water supply partnership options
B. Groundwater leases
C. Acquisition of real property for water supply project purposes

- **No Executive Session.**

I.2 Action from Executive Session on the following matters:

A. Water supply partnership options
B. Groundwater leases
C. Acquisition of real property for water supply project purposes

- **No Action.**

J. ADJOURNMENT

- **Meeting was adjourned at 4:08 p.m. by Mr. Earp.**

APPROVED: _____, 2020

_____

REGULAR MEETING
Alliance Regional Water Authority Technical Committee

COMMITTEE MEMBER PACKETS
Wednesday, March 11th, 2020 at 3:00 P.M.
520 E. RR 150, Kyle, TX 78640

F.1 Update and possible direction to Staff regarding the Authority's Phase 1A projects.
~ Jason Biemer, Project Coordinator

Background/Information
Below are brief updates on the Phase 1A projects.

Segment B Pipeline:

- Project on time. No change orders currently issued.
- Approximately 3,950 feet of pipe laid down so far

Pump Station:

- Pump station construction proceeding. See attached slides.
- 2nd Half of SCADA training occurred the week of February 24, 2020.
- Current substantial completion date is March 3, 2020.
- Current final completion is scheduled for April 17, 2020.
- Final and substantial dates may slide out as the coordination effort continues with various vendors.

Technical Committee Decisions Needed:

- None.

REGULAR MEETING
Alliance Regional Water Authority Technical Committee

COMMITTEE MEMBER PACKETS
Wednesday, March 11th, 2020 at 3:00 P.M.
520 E. RR 150, Kyle, TX 78640

F.2 Update and possible direction to Staff regarding the Authority's Phase 1B program.
~ Ryan Sowa, P.E., Kimley-Horn & Associates

Ryan Sowa with Kimley-Horn will update the Committee on their recent activities associated with the Phase 1B program.

Included in the discussion is an update on the current schedule and budget projections for the Program and the tracking methods.

Attachment(s)

- Phase 1B Program Update – March 11, 2020
- Kimley-Horn Monthly Summary of Activities for February 2020

Technical Committee Decisions Needed:

- None.

Phase 1B Program Update

Technical Committee Meeting
March 11, 2020

ALLIANCE WATER

Kimley»Horn

Agenda

Ongoing Progress

Schedule & Budget Update

Segment E – Final Design/Procurement Contract (Walker Partners)

Ongoing Progress

Consultant Contracting Update

- Pipeline Segment E
  - Final Design Phase Contract (March)
- Pipeline Segment C
  - Final Design Phase Contract (April)

Texas Water Development Board Update

- EFR's Under Review
  - Water Treatment Plant
- EFR's to be Submitted
  - Booster Pump Station
  - Raw Water Infrastructure
- Release of Funds No. 6 Being Prepared
  - Well Drilling – Final Design, Procurement, and Construction
  - Booster Pump Station – Property Acquisition

ALLIANCE WATER

Kimley»Horn

Pipeline Route Analyses & Rights of Entry

Pipeline Segment	Number of Right-of-Entry Requests	Right-of-Entry Received or Access Granted (No. of Parcels)	Right-of-Entry Received or Access Granted (%)	Alignment Confirmed (%)
A	38	38	100%	100%
B	46	46	100%	85%
D	69	69	100%	100%
C	90	84	93%	32%
E	32	31	97%	59%
Wellfield	20	8	40%	0%
Total	**295**	**276**		

ALLIANCE WATER

Kimley»Horn

Pipeline Easement Acquisition Status

Pipeline Segment	Number of Parcels	Appraisals Prepared	Inital Offer Letter Delivered	Purchase Agreement Signed / Easement Closed
A	38	35	29	7
B	46	14	11	1
D	69	5	3	1
C	90	0	0	0
E	32	0	0	0
Wellfield	20	0	0	0
Total	**295**	**54**	**43**	**9**

ALLIANCE WATER

Kimley»Horn

Questions?

ALLIANCE WATER

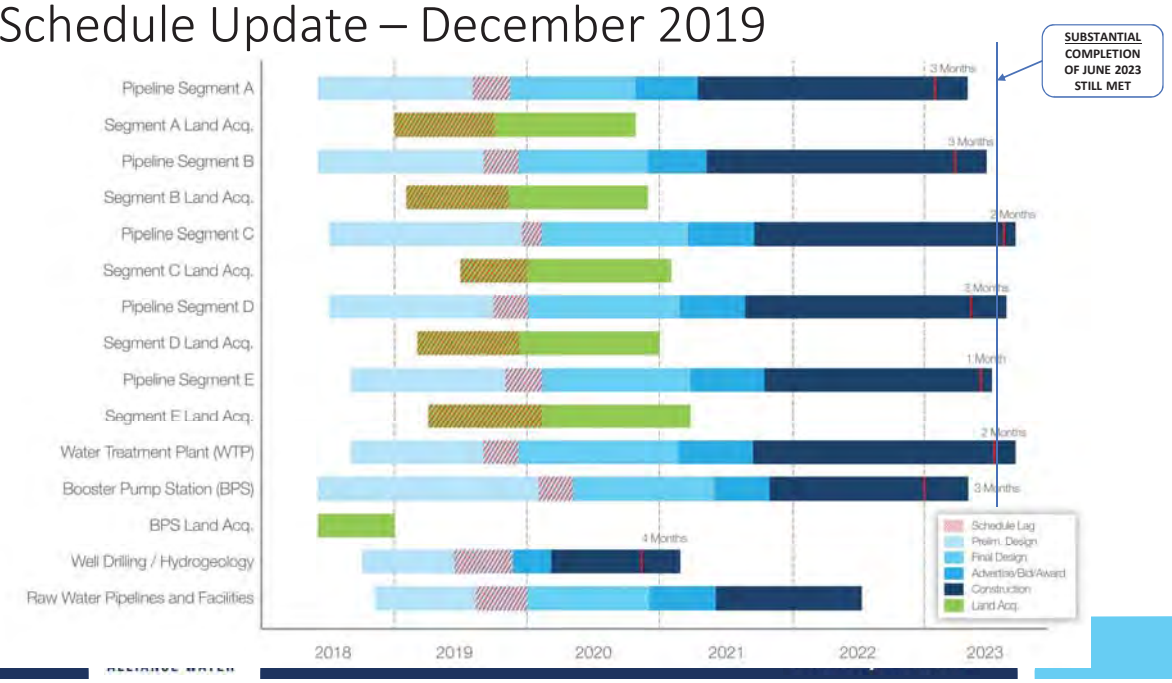
Kimley»Horn

Schedule Update

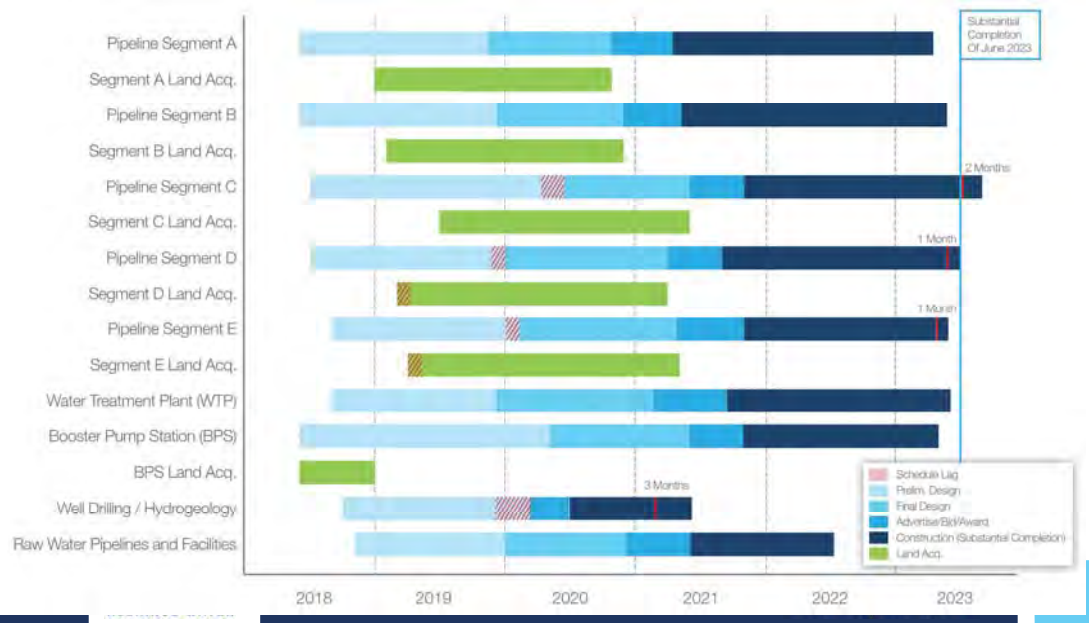
ALLIANCE WATER

Kimley»Horn

Schedule Update – December 2019



Schedule Update – March 2020



Schedule Update

Transmission Pipelines – Segments A, B

- No Change

Transmission Pipelines – Segments C, D, E

- Delay – 1 to 2 months
  - Rights of Entry / Alignment Confirmation Process
  - Segment C – Developer Coordination
- MITIGATION:
  - Accelerate Design Process where Feasible

ALLIANCE WATER

Kimley»Horn

Schedule Update

Well Drilling

- Delay – 3 months
  - TWDB Environmental Review Process
- MITIGATION: Coordination with TWDB for Future Submittals

Water Treatment Plant

- No Change

Booster Pump Station

- No Change

Raw Water Infrastructure

- No Change

ALLIANCE WATER

Kimley»Horn

Schedule Update

Next Steps

- Adjust project schedules for Commissioning
- Evaluate project schedules for Procurement

ALLIANCE WATER

Kimley»Horn

Budget Update

Budget Update

Budget Tracking

- Monthly Expenditures
  - Invoices
- Budget Updates
  - Actual Contract Amounts
  - Updated Cost Projections
- TWDB Milestones & Funding Releases

ARWA PHASE 1B COST TRACKING -- COMBINED PROGRAM

Through December 2019

PHASE 1B COMBINED PROGRAM SUMMARY	PLANNING BUDGET		2019 September	2019 December	2020 March	TOTAL
WATER TREATMENT PLANT CUMULATIVE TOTAL	$46,700,000	BUDGET	$3,373,000	$4,194,000	$4,877,296	$46,726,000
		ACTUAL	$2,840,000	$3,189,000		
BPS & GBRA METERING STATIONS CUMULATIVE TOTAL	$24,100,000	BUDGET	$1,685,000	$2,157,000	$2,612,215	$24,067,000
		ACTUAL	$1,246,000	$1,498,000		
IN-LINE EST (COMBINED PROGRAM) CUMULATIVE TOTAL	$5,200,000	BUDGET	$111,000	$179,000	$241,640	$5,239,000
		ACTUAL	$76,000	$102,000		
PIPELINE SEGMENT A CUMULATIVE TOTALS	$49,700,000	BUDGET	$3,353,000	$4,575,000	$6,188,604	$49,685,000
		ACTUAL	$1,328,000	$1,667,000		
PIPELINE SEGMENT B CUMULATIVE TOTALS	$47,400,000	BUDGET	$2,007,000	$3,637,000	$5,573,234	$47,416,000
		ACTUAL	$1,238,000	$1,455,000		
PIPELINE SEGMENT D CUMULATIVE TOTALS	$53,300,000	BUDGET	$2,690,000	$3,865,000	$5,196,091	$53,283,000
		ACTUAL	$1,497,000	$1,706,000		
PIPELINE SEGMENT E1 CUMULATIVE TOTALS	$15,500,000	BUDGET	$521,000	$620,000	$959,860	$15,505,000
		ACTUAL	$441,000	$509,000		
PROGRAM CUMULATIVE TOTALS WITHOUT CONTINGENCY	$241,900,000	BUDGET	$13,740,000	$19,227,000	$25,648,941	**$241,920,000**
		ACTUAL	$8,666,000	$10,126,000		
ACCUMULATED PROGRAM CONTINGENCY	$64,200,000	BUDGET	$2,073,000	$2,856,000	$3,946,189	$64,268,000
ARWA AND GBRA CASH FLOW FORECASTS						
ARWA CUMULATIVE CASH FLOW	$145,300,000	BUDGET	$6,791,000	$9,535,000	$12,755,028	$145,388,000
		ACTUAL	$4,332,805	$5,063,078		
GBRA CUMULATIVE CASH FLOW	$96,500,000	BUDGET	$6,791,000	$9,535,000	$12,755,000	$96,532,000
		ACTUAL	$4,289,000	$4,967,847		
ARWA AND GBRA CONTINGENCY ACCUMULATION FORECASTS						
ARWA CUMULATIVE CONTINGENCY ACCUMULATION	$39,500,000	BUDGET	$1,036,000	$1,428,000	$1,972,866	$39,462,000
GBRA CUMULATIVE CONTINGENCY ACCUMULATION	$24,800,000	BUDGET	$1,036,000	$1,428,000	$1,972,866	$24,806,000

ARWA PHASE 1B COST TRACKING -- ARWA PHASE 1B PROGRAM SUMMARY

Through December 2019

PHASE 1B ARWA PROGRAM SUMMARY	PLANNING BUDGET		2019 September	2019 December	2020 March	TOTAL
ARWA-ONLY PROJECTS						
[illegible] CUMULATIVE TOTAL	[illegible]	PLANNED	[illegible]	[illegible]	[illegible]	[illegible]
		ACTUAL	[illegible]	[illegible]		
KAW WATER INFRASTRUCTURE CUMULATIVE TOTAL	[illegible]	PLANNED	[illegible]	[illegible]	[illegible]	[illegible]
		ACTUAL	[illegible]	[illegible]		
ARWA-ONLY WATER TREATMENT PLANT CUMULATIVE TOTAL	[illegible]	PLANNED	[illegible]	[illegible]	[illegible]	[illegible]
		ACTUAL	[illegible]	[illegible]		
BPS Seg E & ARWA DELIVERY POINTS CUMULATIVE TOTAL	[illegible]	PLANNED	[illegible]	[illegible]	[illegible]	[illegible]
		ACTUAL	[illegible]	[illegible]		
INLINE EST SEG C CUMULATIVE TOTAL	[illegible]	PLANNED	[illegible]	[illegible]	[illegible]	[illegible]
		ACTUAL	[illegible]	[illegible]		
ADMIN & OPS CENTER CUMULATIVE TOTAL	[illegible]	PLANNED	[illegible]	[illegible]	[illegible]	[illegible]
		ACTUAL	[illegible]	[illegible]		
PIPELINE SEGMENT C CUMULATIVE TOTALS	[illegible]	PLANNED	[illegible]	[illegible]	[illegible]	[illegible]
		ACTUAL	[illegible]	[illegible]		
PIPELINE SEGMENT E2 CUMULATIVE TOTALS	[illegible]	PLANNED	[illegible]	[illegible]	[illegible]	[illegible]
		ACTUAL	[illegible]	[illegible]		
ARWA CUMULATIVE CASH FLOW -- ARWA-ONLY PROGRAM	[illegible]	PLANNED	[illegible]	[illegible]	[illegible]	[illegible]
		ACTUAL	[illegible]	[illegible]		
COMBINED PROGRAM PROJECTS						
WATER TREATMENT PLANT CUMULATIVE TOTAL	[illegible]	BUDGET	[illegible]	[illegible]	[illegible]	[illegible]
		ACTUAL	[illegible]	[illegible]		
BPS & GBRA METERING STATIONS CUMULATIVE TOTAL	[illegible]	BUDGET	[illegible]	[illegible]	[illegible]	[illegible]
		ACTUAL	[illegible]	[illegible]		
IN-LINE EST (COMBINED PROGRAM) CUMULATIVE TOTAL	[illegible]	BUDGET	[illegible]	[illegible]	[illegible]	[illegible]
		ACTUAL	[illegible]	[illegible]		
PIPELINE SEGMENT A CUMULATIVE TOTALS	[illegible]	BUDGET	[illegible]	[illegible]	[illegible]	[illegible]
		ACTUAL	[illegible]	[illegible]		
PIPELINE SEGMENT B CUMULATIVE TOTALS	[illegible]	BUDGET	[illegible]	[illegible]	[illegible]	[illegible]
		ACTUAL	[illegible]	[illegible]		
PIPELINE SEGMENT D CUMULATIVE TOTALS	[illegible]	BUDGET	[illegible]	[illegible]	[illegible]	[illegible]
		ACTUAL	[illegible]	[illegible]		
PIPELINE SEGMENT E1 CUMULATIVE TOTALS	[illegible]	BUDGET	[illegible]	[illegible]	[illegible]	[illegible]
		ACTUAL	[illegible]	[illegible]		
ARWA CUMULATIVE CASH FLOW -- COMBINED PROGRAM	[illegible]	PLANNED	[illegible]	[illegible]	[illegible]	[illegible]
		ACTUAL	[illegible]	[illegible]		
ARWA PHASE1B CUMULATIVE CASH FLOW W/O CONTINGENCY	**$250,200,000**	PLANNED	**$14,969,000**	**$19,513,000**	**$26,024,471**	**$250,288,000**
		ACTUAL	**$9,833,000**	**$11,263,078**		
ARWA CUMULATIVE CONTINGENCY ACCUMULATION	[illegible]	PLANNED	[illegible]	[illegible]	[illegible]	[illegible]

ALLIANCE WATER

Horn

Budget Update

Next Steps

- Update for Program Cost Directives
- Update with 30% Cost Projections

ALLIANCE WATER

Kimley»Horn

Questions?

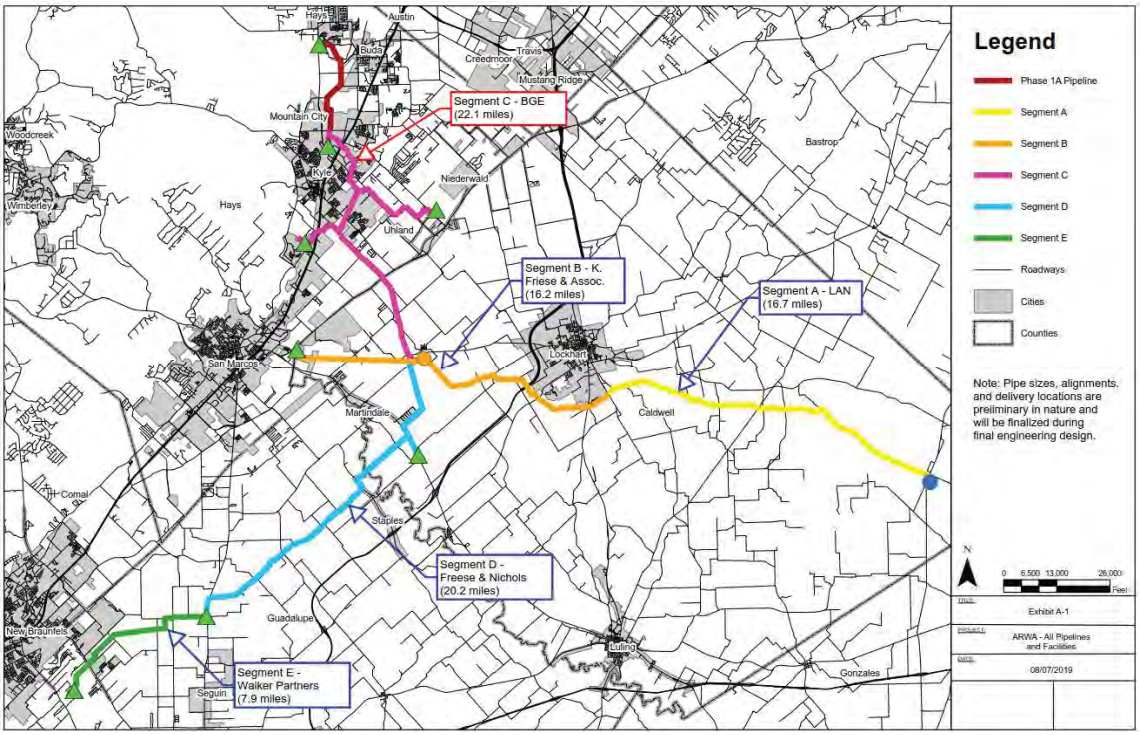
ALLIANCE WATER

Kimley»Horn

Consulting Services

ALLIANCE WATER

Kimley»Horn



Phase 1B Transmission Pipeline Design Services

Final Design Phase Pipeline Proposal status update

- Segment A and B approved at the August meeting
- Segment D approved at the November meeting
- Segment E on the March agenda
- Segment C on the April agenda

Scope through final design phase, to include:

- 60%, 90%, and 100% Design
- Procurement
- Geotechnical, SUE, and Survey Services
- Does not include Construction Phase Services

ALLIANCE WATER

Kimley»Horn

Phase 1B Transmission Pipeline Design Services

Supplemental Services:

- Additional Survey, SUE, and Geotechnical Services
- General Engineering Design
- Eminent Domain Support (Up to 10% of Parcels Assumed)
- Additional Meetings

ALLIANCE WATER

Kimley»Horn

Phase 1B Transmission Pipeline Design Services

Project	Selected Consultant	Basic Services	Supplemental Services	Total Proposal
A	LAN, Inc.	$ 1,903,077.00	$ 232,949.00	$ 2,136,026.00
B	K Friese + Assoc.	$ 1,830,994.00	$ 421,051.00	$ 2,252,045.00
D	Freese & Nichols	$ 1,999,464.00	$ 251,427.00	$ 2,250,891.00
E	Walker Partners	$ 1,190,421.00	$ 376,066.00	$ 1,566,487.00

ALLIANCE WATER

Kimley»Horn

Phase 1B Transmission Pipeline Design Services

Project	Anticipated Construction Cost (Draft Engineering Feasibility Report)	Anticipated Engineering Basic Services Fee through Construction (7%-8%)*		Preliminary + Final Design Engineering Services (Basic Services)*	Preliminary + Final Design Engineering Fee as a % of Total Construction Cost
A	$ 44,000,000.00	$ 3,080,000.00	$ 3,520,000.00	$ 1,997,649.00	4.5%
B	$ 43,400,000.00	$ 3,038,000.00	$ 3,472,000.00	$ 1,795,055.00	4.1%
D	$ 50,200,000.00	$ 3,514,000.00	$ 4,016,000.00	$ 2,039,279.00	4.1%
E	$ 29,000,000.00	$ 2,030,000.00	$ 2,320,000.00	$ 1,330,388.00	4.6%

*Does not include survey, geotechincal, environmental, subsurface utility engineering (potholing)

ALLIANCE WATER

Kimley»Horn

Questions?

March 06, 2020

Project Monthly Summary

February 2020 Tasks Performed:

- Task 2 – Stakeholder Coordination
  - Coordination and/or meetings with entities including: Caldwell County, Guadalupe County, Bluebonnet Electric Coop, TxDOT, TCEQ, and TWDB.
  - Continued weekly task coordination with Alliance Water.
  - Prepared and presented Technical Committee Meeting Update.
  - Prepared and presented Board Meeting Update.
  - Prepared and presented Project Advisory Committee Meeting Update.
  - Prepared for and held Monthly Status Meeting with Alliance Water.
  - Prepared for and attended Fiber Coordination Meeting with ARWA and GBRA.

- Task 3 – Budgeting
  - Prepared Program Quarterly Update for the Technical Committee and Board Meetings.
  - Continued updates to Budget Workbook to include monthly tracking of actual costs for ARWA review.

- Task 4 – Schedule
  - Prepared Program Quarterly Update for the for the Technical Committee and Board Meetings.
  - Coordinated with Program team to integrate each monthly project schedule update into overall Program schedule.

- Task 6 – Data Management
  - Integrated process for identifying easement acquisition status within GIS.
  - Ongoing maintenance of Microsoft SharePoint Online program.
  - Continued updating of web-based GIS for right-of-entry process and alignment changes.

- Task 7 – Environmental Management
  - Attended Phase II Field Work Coordination Meeting for Segment A.
  - Coordinated with the Program Environmental Consultant regarding additional hazmat studies for Segment A.
  - Continued review of Segment A environmental reports prepared by the Program Environmental Consultant.
  - Performed coordination between Program Environmental Consultant and Land Acquisition Consultant to clarify environmental field work to be done on properties as part of right-of-entry process.

  - Monthly progress meeting and ongoing coordination with Program Environmental Consultant.
  - Continued coordination between Program Environmental Consultant and Design Engineers.
  - Reviewed Program Environmental invoices, schedule, and risk log.

- Task 8 – Land Acquisition Management
  - Coordinated the appraisal process for Segment A and Segment B parcels.
  - Coordinated with Program Survey Consultant, Program Environmental Consultant, and Land Acquisition team to address questions that arise as part of the field work coordination process.
  - Performed weekly QC of parcel files in SharePoint, provided comments to Land Acquisition team.
  - Weekly coordination meeting with land agents to discuss status of rights-of-entry and to provide Program clarification on any questions/requests that have come from landowners.
  - Reviewed Program Land Acquisition team, Program Legal, and Program Survey invoices.
  - Continued field work coordination to notify landowners of upcoming field work by consultants.

- Task 9 – Texas Water Development Board Management
  - Submitted the WTP EFR to the TWDB for review.
  - Coordinated with TWDB for Well Drilling procurement process.
  - Continue coordination with TWDB Staff to track all EFRs, environmental reports, and bid documents currently under review.

- Task 10 – Design Standards
  - Began compiling comments from the Manufacturer review of the Pipeline Construction Standards.
  - Finalized Draft Cathodic Protection Program Standards for review by the PAC and Design Consultants.
  - Attended PAC Meeting to present overview of Draft Cathodic Protection Program Standards.
  - Finalized Draft Security Standards for review by the PAC and Design Consultants.
  - Continued development of Draft Fiber Standards.
  - Prepared for and attended Fiber Discussion meeting with the Design Consultants.

- Task 11 – Engineering Design Management
  - Pipelines:
    - Segment A
      - Continued coordination with Design Consultant for final design.

- Coordinated with Design Consultant to finalize EFR.
- Segment B
  - Continued coordination with Design Consultant for final design.
  - Coordinated with Design Consultant to finalize EFR.
- Segment C
  - Continued coordination with Design Consultant regarding ongoing field work and pipeline alignment considerations as part of right-of-entry process and EFR development.
  - Continued coordination and review of scope and fee for final design phase.
- Segment D
  - Continued coordination with Design Consultant for final design.
- Segment E
  - Continued coordination with Design Consultant regarding ongoing field work as part of right-of-entry process and EFR development.
  - Continued coordination and review of scope and fee for final design phase.

- Wellfield:
  - Finalized Contract Documents and continued coordination regarding procurement of the construction contract for Wells 6-9.
- Raw Water Infrastructure:
  - Reviewed and commented on 30% Engineering Feasibility Report.
  - Continued coordination with Design Consultant for 30% design development.
- Water Treatment Plant:
  - Coordinated with the Design Consultant to finalize and submit the 30% Engineering Feasibility Report to the TWDB.
  - Continued coordination with Design Consultant for final design.
- Booster Pump Station:
  - Reviewed and commented 30% Engineering Feasibility Report submitted by the Design Consultant.
  - Continue coordination and review of scope and fee for final design phase.
- Inline Elevated Storage Tanks:
  - Continued coordination with Design Consultant for 30% design development.
  - Coordinated with the Design Consultant to finalize the 30% Design Report.
- Other:
  - Monthly progress meetings with all Design Consultants (pipelines, water treatment plant, raw water infrastructure, wellfield, booster pump station).

  - Review invoices, schedules, and risk logs for consultants.

- Task 13 – Electrical Power Planning
  - Continued coordinated with ARWA concerning emergency power needs and service options for the water treatment plant and wellfield.
  - Continued coordination with GVEC regarding electric service to the WTP and wellfield.

- Task 14 – Permit Coordination/Tracking
  - Continued Permit coordination with Pipeline Consultants.
  - Continued coordination with Caldwell County concerning variance request for the Site Development Permit.
  - Continued General Coordination with TxDOT.
  - Continued General Coordination with GVEC and BBEC.
  - On-going Permit Tracking Log Updates.

- Task 16 – Other Services
  - Commissioning Planning
    - Continued evaluating the commissioning of the Phase 1B Program infrastructure and finalized a draft presentation.
  - Finalized solar feasibility memorandum and submitted to ARWA.

March 2020 Projection:

- Task 2 – Stakeholder Coordination
  - Coordination and/or meetings with entities including: Caldwell County, Guadalupe County, GVEC, Bluebonnet Electric Coop, TxDOT, TCEQ, and TWDB.
  - Continue weekly task coordination with Alliance Water.
  - Prepare and present Project Advisory Committee Meeting Update.
  - Prepare and present Technical Committee Meeting Update.
  - Prepare and present Board Meeting Update.
  - Prepare for and hold Monthly Status Meeting with Alliance Water.

- Task 3 – Budgeting
  - Continue updates to Budget Workbook to include monthly tracking of actual costs for ARWA review.
  - Finalize Program Quarterly Update for the Technical Committee and Board Meetings.

- Task 4 – Schedule
  - Coordinate with Program team to integrate each project schedule into overall Program schedule.

  - Finalize Program Quarterly Update for the for the Technical Committee and Board Meetings.

- Task 6 – Data Management
  - Ongoing maintenance of Microsoft SharePoint Online program.
  - Continued updating of web-based GIS for right-of-entry process and alignment changes.

- Task 7 – Environmental Management
  - Continued coordination with the Program Environmental Consultant regarding additional hazmat studies for Segment A.
  - Continued review of Segment A environmental reports prepared by the Program Environmental Consultant.
  - Coordinate with Environmental Consultant to develop proposal for additional hazmat studies for Segments B and D.
  - Perform coordination between Program Environmental Consultant and Land Acquisition Consultant to clarify environmental field work to be done on properties as part of right-of-entry process.
  - Monthly progress meeting and ongoing coordination with Program Environmental Consultant.
  - Continue coordination between Program Environmental Consultant and Design Engineers.
  - Review Program Environmental invoices, schedule, and risk log.

- Task 8 – Land Acquisition Management
  - Coordinate the appraisal process for Segment A and Segment B parcels.
  - Coordinate with Program Survey Consultant, Program Environmental Consultant, and Land Acquisition team to address questions that arise as part of the field work coordination process.
  - Perform weekly QC of parcel files in SharePoint, provide comments to Land Acquisition team.
  - Weekly coordination meeting with land agents to discuss status of rights-of-entry and to provide Program clarification on any questions/requests that have come from landowners.
  - Review Program Land Acquisition team, Program Legal, and Program Survey invoices.
  - Continue field work coordination to notify landowners of upcoming field work by consultants.

- Task 9 – Texas Water Development Board Management
  - Submit EFRs for Booster Pump Station and Raw Water Infrastructure.
  - Continue coordination with TWDB Staff to track all EFRs, environmental reports, and bid documents currently under review.
  - Begin preparations for reimbursement funding release.

- Task 10 – Design Standards
  - Compile and address comments from the Manufacturer review of the Pipeline Construction Standards.
  - Revise the Cathodic Protection Program Standards given feedback from the PAC and Design Consultants.
  - Revise the Security Standards given feedback from the PAC and Design Consultants.
  - Finalize Draft Fiber Standards for review by the PAC and Design Consultants.

- Task 11 – Engineering Design Management
  - Pipelines:
    - Segment A
      - Continue coordination with Design Consultant for final design.
    - Segment B
      - Continue coordination with Design Consultant to finalize EFR.
      - Continue coordination with Design Consultant regarding for final design.
    - Segment C
      - Continue coordination with Design Consultant regarding ongoing field work and pipeline alignment considerations as part of right-of-entry process and EFR development.
      - Begin review of Draft 30% Engineering Feasibility Report prepared by the Design Consultant.
      - Continue coordination and review of scope and fee for final design phase.
    - Segment D
      - Continue coordination with Design Consultant for final design.
    - Segment E
      - Continue coordination with Design Consultant regarding ongoing field work as part of right-of-entry process and EFR development.
      - Continue coordination and review of scope and fee for final design phase.
  - Wellfield:
    - Continue coordination regarding procurement of the construction contract for Wells 6-9.
    - Prepare for and attend Pre-Proposal Meeting.
  - Raw Water Infrastructure:
    - Finalize and backcheck review the Final 30% Engineering Feasibility Report.
    - Continue coordination with Design Consultant for 30% design development.

  - Water Treatment Plant:
    - Coordination with the Design Consultant to finalize value engineering cost analysis.
    - Coordination with Design Consultant for final design.
  - Booster Pump Station:
    - Coordination with the Design Consultant to finalize and submit the 30% Design Report to the TWDB.
    - Coordination with Design Consultant for final design.
  - Inline Elevated Storage Tanks:
    - Coordination with Design Consultant for 30% design development.
  - Other:
    - Monthly progress meetings with all Design Consultants (pipelines, water treatment plant, raw water infrastructure, wellfield).
    - Review invoices, schedules, and risk logs for consultants

- Task 13 – Electrical Power Planning
  - Continue coordination with ARWA concerning emergency power needs and service options for the water treatment plant and wellfield.
  - Continue coordination with GVEC regarding electric service to the WTP and wellfield.

- Task 14 – Permit Coordination/Tracking
  - Continue Permit coordination with Pipeline consultants
  - Continue Coordination with Caldwell County for variance request for the Site Development Permit.
  - Coordinate with Hays County concerning the Site Development Permit.
  - General Coordination with TxDOT
  - General Coordination with GVEC and BBEC
  - Permit Tracking Log Updates

- Task 16 – Other Services
  - Commissioning Planning
    - Continue evaluating the commissioning of the Phase 1B infrastructure and finalize presentation.
  - Finalize and submit the City of San Marcos Watershed Protection Plan for the Booster Pump Station Plat.
  - Prepare a presentation summarizing the solar feasibility memorandum findings.

Scope Elements Added/Removed:

None at this time.

Outstanding Issues/Concerns:

None at this time.

REGULAR MEETING
Alliance Regional Water Authority Technical Committee

COMMITTEE MEMBER PACKETS
Wednesday, March 11th, 2020 at 3:00 P.M.
520 E. RR 150, Kyle, TX 78640

F.3 Discussion and possible recommendation to the Board to approve a work order with Walker Partners, LLC for Final Design and Procurement Services for the Authority's Phase 1B Segment E project. ~ *Ryan Sowa, P.E., Kimley-Horn & Associates*

Background/Information

Alliance Water entered into a Work Order in August 2018 with Walker Partners, LLC to provide preliminary engineering services for the Phase 1B Segment project. The preliminary design is almost complete and in order to maintain progress, Staff has negotiated a scope and fee with Walker Partners to provide final design and procurement services for the Segment E project. Construction phase services will be negotiated at a later date and will be authorized via a separate work order.

Below are some of the key facts regarding the Phase 1B Segment E proposal:

Firm: Walker Partners, LLC
Fee: $1,566,487
Work Order Type: Lump Sum
Anticipated Duration: 16 months
Project Manager: Joe Jenkins, P.E.
Key Subconsultants: Schnabel Engineering (Trenchless), Holt Engineering (Geotechnical), Rios Group (SUE), Elk Engineering (Cathodic Design) & DAS (Survey)

Staff is requesting that the Committee recommend Board approval of a Work Order with a fee for the basic services of $1,190,421 and a fee for supplemental effort in an amount not-to-exceed $376,066 for a total fee of $1,566,487. The Executive Director will be given the discretion to authorize the supplemental effort if needed.

Attachment(s)

- Proposal for Design and Procurement for Phase 1B Segment E Project dated March 6, 2020.

Executive Director Recommendation(s)

- The Executive Director recommends approval of the work order with Walker Partners, LLC.

REGULAR MEETING
Alliance Regional Water Authority Technical Committee

COMMITTEE MEMBER PACKETS
Wednesday, March 11th, 2020 at 3:00 P.M.
520 E. RR 150, Kyle, TX 78640

Technical Committee Decision Needed:

- Possible recommendation to the Board to approve a work order with Walker Partners, LLC for Design and Procurement Phase Services for the Authority's Phase 1B Segment E project.

Walker Partners
engineers ★ surveyors

804 Las Cimas Pkwy., Suite 150
Austin, Texas 78746

March 6, 2020

Graham Moore, PE
Executive Director
Alliance Regional Water Authority
630 E. Hopkins
San Marcos, TX 78666

Re: Phase 1B – Treated Pipeline Segment E – Proposal for Final Design and Procurement Services

Dear Mr. Moore:

Walker Partners, LLC (Engineer) appreciates this opportunity to submit this Proposal to provide professional surveying and engineering services to Alliance Regional Water Authority (Owner) in connection with the Phase 1B – Treated Pipeline Segment E (Project).

The scope of services, schedule, assumptions and exclusions are outlined in the attached Scope. The associated lump sum fees that Walker Partners proposes to provide for Engineering Basic Services are based on the assumptions in the Scope and the level of effort estimated in the Detail Cost Breakdown (see attached). Table 1, below, includes an itemized breakdown of proposed task fees for an overall lump sum fee for Engineering Basic Services:

Table 1: Task Fee Breakdown for Lump Sum Basic Engineering Services

Task	Description	Lump Sum Fee
1	Project Management	70,769
2	Review of Final Pipeline Construction Standards	17,630
3	Environmental Coordination	11,532
4	Land Acquisition Coordination	34,417
5	Entity/Agency Coordination	39,108
6	Public and Private Utility Coordination	88,949
7	Design Consultant Coordination	13,533
8	Design Survey	133,102
9	Subsurface Investigations	162,660
10	60% Design Phase	277,013
11	90% Design Phase	185,435
12	100% Design Phase	112,728
13	Procurement (RFCSP)	43,545
TOTAL BASIC SERVICES LUMP SUM FEE		**1,190,421**

We understand that Walker Partners may also provide Supplemental Services for this Project as shown on Table 2, below, and described in the attached scope document. The estimated budgets in Table 2 and the Detail Cost Breakdown are budgetary placeholders for the final design Work Order Supplemental Services. These proposed services will be negotiated and authorized on a case-by-case basis.

Table 2: Estimated Supplemental Services Budget

Task	Description	
14.1	Survey	43,945
14.2	General Engineering Design	22,522
14.3	Land Acquisition Support	27,378
14.4	Environmental Coordination	2,290
14.5	Attend Public Meetings (2 meetings)	7,281
14.6	Attend Additional Meetings in the Project Vicinity	11,418
14.7	Additional SUE Investigations	26,406
14.8	Additional Geotechnical Borings & Piezometers	155,153
14.9	Program Coordination for Combined Construction Packages	20,215
14.10	Up to six (6) additional coordination meetings with impacted utilities	6,075
14.11	Corrosivity Alignment Investigation (i.e., Induced AC Study)	53,383
TOTAL ESTIMATED SUPPLEMENTAL SERVICES BUDGET		**376,066**

Our team looks forward to developing this project to the next phase – final design and procurement of a construction contractor. Please let us know if the proposal review team has any questions or comments.

Sincerely,

George E. "Jed" Walker, Jr., P.E.
Project Principal

Attachments

Alliance Regional Water Authority – Phase 1B Final Design and Procurement of a Construction Contractor for the Treated Pipeline Segment E Project Scope

Appendices
Appendix A – Total Fee Breakdown
Appendix B – Project Scope Exhibits
Subconsultant Proposals
Attachment 1 – Schnabel Engineering
Attachment 2 – Holt Engineering
Attachment 3 – The Rios Group
Attachment 4 – Elk Engineering
Attachment 5 – DAS
Attachment 6 – Davey

Alliance Regional Water Authority – Phase 1B
Final Design Pipeline Segment E Scope

1. Project Management (see attached proposal from Schnabel Engineering, also)
   - 1.1. Prepare Monthly Summary Reports/Invoicing as identified in the ARWA Phase 1B Program Management Plan
   - 1.2. Schedule Development and monthly updates; schedule shall cover preliminary design phase through construction. Project Schedule also to include applicable permits, permit submittal dates, review period, addressing comments and resubmit for approval. Monthly updates will also be included with the 60%, 90% and 100% design phase deliverables or updates from the design phase deliverable will be included in the monthly invoice package.
     - 1.2.1. Schedule shall be in Microsoft Project format
   - 1.3. Risk Register development and monthly updates. Monthly updates will also be included with the 60%, 90% and 100% design phase deliverables or updates from the design phase deliverable will be included in the monthly invoice package.
     - 1.3.1. Risk Register shall be in Microsoft Excel format
   - 1.4. Update Project Management Plan
   - 1.5. Ongoing coordination and communications for Project Management
   - 1.6. Meetings
     - 1.6.1. Conduct Progress Meetings with Owner's Representative (16 meetings) over the phone or internet conference (Assume 2 Walker Partners "WP" attendees for all meetings and 1 Schnabel attendee at 3 meetings)
     - 1.6.2. Conduct half-day coordination workshops (2 workshops) (Assume 2 WP attendees)
     - 1.6.3. Prepare and distribute meeting notes
     - 1.6.4. Quality Control Audit (1 workshop) (Assume 2 WP attendees)

2. Review of Final Pipeline Construction Standards
   - 2.1. Review and provide comments on Updates to Pipeline Construction Standards prepared by Owner's Representative (see attached proposal from Schnabel Engineering, also)
   - 2.2. Meetings
     - 2.2.1. Attend one half-day workshop to discuss comments on Final Pipeline Construction Standards (Assumes 2 WP attendees)
   - 2.3. Deliverables
     - 2.3.1. Comments on Updates to Pipeline Construction Standards in Adobe PDF format

3. Environmental Coordination
   - 3.1. Review Final Environmental Document provided by Owner's Representative for applicable project and develop Construction Documents based on findings.
   - 3.2. Incorporate recommendations from Environmental into Contract Documents
   - 3.3. Ongoing coordination and communications for Environmental Coordination
   - 3.4. Meetings
     - 3.4.1. Conduct coordination meeting with Environmental Consultant to discuss the Final Environmental Report and incorporation of recommended items into contract documents for Pipeline Segment E. (Assume 3 WP attendees)
     - 3.4.2. Prepare and distribute meeting notes

4. Land Acquisition Coordination
    4.1. Provide Program with right-of-entry needs for final design phase
    4.2. Easement Development (see attached proposal from Schnabel Engineering, also)
        4.2.1. Review and comment on draft and final easement exhibits to verify that the exhibit reflects the intent of the Design.
        4.2.2. Update Parcel Data Forms and easement exhibits, including environmental findings
            4.2.2.1. Include deed sketch exhibit provided by Owner's Representative for each parcel.
    4.3. Meetings
        4.3.1. Coordination with Land Acquisition team to address easement items
            4.3.1.1. Basic questions regarding the easement, such as where the pipeline will be located in the easement, will there be any aboveground appurtenances, etc. (Assume 24 of 30 easements) (Assume 2 WP attendees) (Assume phone conferences only)
            4.3.1.2. Issues such as requests for a fence barrier during construction to protect cattle and minor alignment adjustments within a parcel that do not require additional field studies. (Assume 6 of 30 easements) (Assume phone conferences only)

5. Entity/Agency Coordination
    5.1. Update and maintain permit tracking log
    5.2. Develop and submit the following applicable permits (assumes design plans will be used for all permit applications and no additional exhibits will be drafted for permit applications, except the exhibit created by the Program Surveyor for the GLO Miscellaneous Easement application)
        5.2.1. City of New Braunfels Public Infrastructure Permit coordination during design phase
            5.2.1.1. Coordination with the City during 60% Design Phase
            5.2.1.2. Permit Preparation during 90% Design Phase milestone
            5.2.1.3. Submittal of Permit during 90% Design Phase milestone
            5.2.1.4. Address Comments and Resubmit Permit during 100% Design Phase milestone
            5.2.1.5. Conduct up to two (2) coordination meetings with City (Assume 2 WP attendees)
        5.2.2. Guadalupe County Floodplain Permit coordination during design phase
            5.2.2.1. Coordination with the County during 60% Design Phase
            5.2.2.2. Permit Preparation during 90% Design Phase milestone
            5.2.2.3. Submittal of Permit during 90% Design Phase milestone
            5.2.2.4. Address Comments and Resubmit Permit during 100% Design Phase milestone
            5.2.2.5. Conduct up to two (2) coordination meetings with Guadalupe County for all Guadalupe County permits (Assume 2 WP attendees)
        5.2.3. Guadalupe County Road Crossing Permit coordination during design phase
            5.2.3.1. Coordination with the County during 60% Design Phase
            5.2.3.2. Permit Preparation during 90% Design Phase milestone
            5.2.3.3. Submittal of Permit during 90% Design Phase milestone
            5.2.3.4. Address Comments and Resubmit Permit during 100% Design Phase milestone

5.2.4. Guadalupe County Culvert /Access Permit (temporary construction driveway) coordination during design phase
- 5.2.4.1. Coordination with the County during 60% Design Phase
- 5.2.4.2. Permit Preparation during 90% Design Phase milestone
- 5.2.4.3. Submittal of Permit during 90% Design Phase milestone
- 5.2.4.4. Address Comments and Resubmit Permit during 100% Design Phase milestone

5.2.5. TXDOT Utility Installation in Right-of-Way for San Antonio District (Owner's Representative to provide direct coordination with TXDOT)
- 5.2.5.1. Coordination with TXDOT during 60% Design Phase
- 5.2.5.2. Permit Preparation during 90% Design Phase milestone
- 5.2.5.3. Submittal of Permit during 90% Design Phase milestone
- 5.2.5.4. Address Comments and Resubmit Permit during 100% Design Phase milestone
- 5.2.5.5. Conduct up to two (2) coordination meetings with TXDOT for all TXDOT permits (Assume 2 WP attendees)
- 5.2.5.6. Assume the Owner's Representative will assist with submitting and coordinating with TXDOT.

5.2.6. TXDOT Temporary Driveway Permit for San Antonio District (Owner's Representative to provide direct coordination with TXDOT)
- 5.2.6.1. Coordination with TXDOT during 60% Design Phase
- 5.2.6.2. Permit Preparation during 90% Design Phase milestone
- 5.2.6.3. Submittal of Permit during 90% Design Phase milestone
- 5.2.6.4. Address Comments and Resubmit Permit during 100% Design Phase milestone
- 5.2.6.5. Assume the Owner's Representative will assist with submitting and coordinating with TXDOT.

5.2.7. General Land Office (GLO) coordination and preparation of Miscellaneous Easement Documents
- 5.2.7.1. Coordinate with GLO during 60% Design Phase
- 5.2.7.2. Complete Miscellaneous Easement application and append exhibit prepared by Program Surveyor to application during 90% Design Phase milestone
- 5.2.7.3. Submittal of Permit during 90% Design Phase milestone
- 5.2.7.4. Address Comments and Resubmit Permit during 100% Design Phase milestone
- 5.2.7.5. Assume no meetings are required with GLO and all comments are addressed through correspondence

5.3. Texas Commission on Environmental Quality (TCEQ) Exceptions and Variance Development and Coordination. Assume Owner's Representative will compile submittal and coordinate with the TCEQ. Design Consultant shall provide exhibits, calculations, and technical support data for each exception request

5.3.1. Minimum Pressure Variance - TCEQ 290.44 (d)

5.3.2. Stream Crossing Exception – TCEQ 290.44 (f) (2)

5.3.3. Sampling Frequency Variance - TCEQ 290.44 (f) (3)

5.3.4. Assume the following per each exception/variance:

5.3.4.1. One (1) draft submittal of exhibits, calculations, and technical support data to Owner's Representative for review and comment.

5.3.4.2. One (1) review meeting with Owner's Representative by phone or internet conference to review draft submittal and resolve comments (Assume 2 WP attendees).

5.3.4.3. One (1) final submittal to Owner's Representative to address Owner's Representative comments.

5.3.4.4. One (1) review meeting with Owner's Representative by phone or internet conference to review and resolve TCEQ comments (Assume 2 WP attendees).

5.3.4.5. One (1) re-submittal to address TCEQ comments.

6. Public and Private Utility Coordination (see attached proposal from The Rios Group)
   - 6.1. Provide thirteen (13) Quality Level (QL) "A" SUE test holes to identify the location and depth of existing utilities, as shown on Exhibit A.
   - 6.2. Provide 430 linear feet of Quality Level "B" locating, as shown on Exhibit A.
   - 6.3. Provide Quality Level "C" and "D" SUE services to identify the horizontal location of existing utilities.
     - 6.3.1. GIS files, Record Drawings, Utility Block Maps, and Other methods
   - 6.4. Coordinate with Owner's Representative on available GIS data collected
     - 6.4.1. Coordinate with entities for additional data needs
   - 6.5. Update and maintain utility coordination log
   - 6.6. Coordinate Design Reviews at 60%, 90% and 100% Design Milestones
     - 6.6.1. Lower Colorado River Authority (LCRA)
     - 6.6.2. Canyon Regional Water Authority (CRWA)
     - 6.6.3. New Braunfels Utility (NBU)
     - 6.6.4. Green Valley Special Utility District (SUD)
   - 6.7. Coordinate Encroachment Agreements at 60%, 90% and 100% Design Milestones
     - 6.7.1. Crystal Clear Special Utility District
     - 6.7.2. Energy Transfer Company
     - 6.7.3. Guadalupe Blanco River Authority
     - 6.7.4. Central Texas Regional Water Supply Corporation
   - 6.8. Coordinate Courtesy Plan Reviews at 60%, 90% and 100% Design Milestones
     - 6.8.1. Springs Hill WSC
     - 6.8.2. Guadalupe Valley Electric Cooperative
     - 6.8.3. AT&T
     - 6.8.4. Charter/Spectrum/Time Warner Cable
     - 6.8.5. Fiberlight
   - 6.9. Meetings
     - 6.9.1. Conduct up to eight (8) coordination meetings with impacted utilities (Assume 2 WP attendees)
     - 6.9.2. Prepare agendas and distribute meeting notes (Assume up to 8 meetings)

7. Design Consultant Coordination
    7.1. BPS/Delivery Point Design Consultant
        7.1.1. Coordinate to confirm tie-in locations to GBRA and CRWA delivery points
        7.1.2. Coordinate to confirm hydraulics, surge, pipe diameter, and pressure class
        7.1.3. Review transient analysis model and results provided by BPS Design Consultant
    7.2. Other Transmission Main Design Consultants
        7.2.1. Coordinate to confirm tie-in location to Pipeline Segment D

8. Design Survey
    8.1. Horizontal and Vertical survey based on NAD 83 coordinates (State Plane Texas South Central/Feet) and NAVD 88, respectively.
        8.1.1. Aerial survey performed by DAS Geospatial (see attached proposal) will identify all visible features such as roads, bridges, houses, buildings, creeks, rivers, lakes, ponds, railroads, transmission lines, power poles, fences, and group tree outlines within a 400-foot-wide corridor centered on the proposed waterline easement. Aerial surveyor will also utilize LiDAR in the support of generating one (1) foot contours.
        8.1.2. Topographic survey will be provided in areas with dense vegetation where LiDAR cannot be used to generate one (1) foot contours, to establish wastewater flowlines, and locate drainage structures and drainage features as shown on Exhibit B.
        8.1.3. Provide forty (40) ground control points for aerial survey.
        8.1.4. Provide twenty-two (22) LIDAR verification points for aerial survey.
        8.1.5. Locate twenty-eight (28) geotechnical bores.
        8.1.6. Locate thirteen (13) QL “A” SUE test holes and QL “B” markings for QL “A” SUE test holes.
        8.1.7. Locate 430 linear feet of QL “B” SUE markings.
        8.1.8. Perform a tree inventory in accordance with local entities
            8.1.8.1. 8-inch diameter and greater per City of New Braunfels’ requirements
            8.1.8.2. Certified Arborist or Forester to confirm species
        8.1.9. Verify control points provided by Owner’s Representative

9. Subsurface Investigations
    9.1. Geotechnical Investigation (see attached proposal from Schnabel Engineering, also)
        9.1.1. Provide geotechnical investigation services to the extent necessary to characterize the subsurface soils for the areas affected by this project. A preliminary geotechnical investigations map is included as Exhibit C and a detailed proposal from Holt Engineering is attached. The geotechnical investigation generally assumes the following.
            9.1.1.1. Geotechnical bore spacing not to exceed ±2,000 linear feet.
            9.1.1.2. Twelve (12) 20-foot-deep, eight (8) 40-foot-deep, three (3) 45-foot-deep, and one (1) 50-foot deep, one (1) 100-foot-deep, and one (1) 115-foot-deep geotechnical bores.
            9.1.1.3. Geotechnical bores at potential trenchless/tunnel locations are at least thirty (30) feet below the conflict to be avoided (assumes a 5-foot-diameter trenchless/tunnel zone, with a clearance of three (3) trenchless/tunnel diameters from conflict and ten (10) feet below trenchless/tunnel zone. See Exhibit C for depth of conflict.

9.2. Soil Corrosivity Investigation and Testing

9.2.1. Provide soil corrosivity investigation and testing per ARWA's Corrosivity Investigation and Cathodic Protection Design Standards. Tests to include ASTM G57 Resistivities, EPA 9045C pH, SW 9056 Chlorides and Sulfates, SM 2320B Bicarbonates. See attached proposal from Elk Engineering for further details.

9.2.1.1. Wenner 4-pi testing ASTM G57 every 2,000 feet.

9.2.1.2. Holt Engineering to obtain soil sample from approximate pipeline depth at least every 4,000 feet and deliver to Elk Engineering for testing

9.2.1.2.1. Minimum of 1-quart soil sample

9.2.1.3. One (1) Walker Partners escort to coordinate access to properties and accompany Elk Engineering during field investigation for up to five (5) days.

10. 60% Design Phase (see attached proposal from Schnabel Engineering, also)

10.1. Perform site visits, right-of-entry requests, and field checklists as needed for 60% design (Assume 5 visits with 3 WP attendees)

10.2. Construction Drawings

10.2.1. Perform analyses

10.2.1.1. Cathodic Protection analysis, calculations, and design of a cathodic protection system per ARWA's Corrosivity Investigation and Cathodic Protection Design Standards.

10.2.1.2. Joint Restraint (the pipe material that requires the longest restrained length shall be used to be conservative)

10.2.1.3. Trenchless Engineering and Calculations, which may include settlement analyses, feasibility-level shaft designs, feasibility-level tunnel ground support designs, input to instrumentation plans, casing thickness structural design, ground loading criteria determination, etc. The results of each will be summarized in a draft basis of design technical memorandum (see attached proposal from Schnabel Engineering).

10.2.1.4. Embedment

10.2.1.5. Backfill

10.2.1.6. Scour

10.2.1.7. Buoyancy

10.2.1.8. Pipe Deflection

10.2.1.9. Combination Air Vacuum and Air Release Valve (size and location)

10.2.1.10. Blow-off Valve (size)

10.2.2. Develop 60% Plan Set (in accordance with the ARWA Phase 1B Program Design Standards)

10.2.2.1. General Sheets (Cover, Project Layout, General Notes, Quantities, etc.)

10.2.2.2. Overall Dimensional Control Plan

10.2.2.3. Survey Control sheets

10.2.2.4. Contractor access sheets (including permanent access driveways, low water crossings, etc.)

10.2.2.5. Plan and Profile sheets Identify scale of P&P sheets: 1"=50' H, 1"=5' V (22"x34" sheet); 1"=100' H, 1"=10'V (11"x17" sheet) (Quantity boxes to be included on all design and plan and profile sheets)
10.2.2.6. Erosion Control Sheets
10.2.2.7. Cathodic Protection sheets
10.2.2.8. Standard Details (Provided by the Owner's Representative)
10.2.2.9. Cathodic Protection detail sheets
10.2.2.10. Project Specific Details (as developed by the Design Consultant)

10.3. Preparation of Project Manual

10.3.1. Provide Table of Contents and draft project specific technical specifications

10.3.1.1. Table of Contents to include list of all ARWA Phase 1B Program standard specifications, provided by the Owner's Representative, and project specific technical specifications written by the Walker Partners' design team.

10.3.1.2. Provide draft project specific technical specifications written by the Walker Partners' design team.

10.4. 60% Opinions of Probable Construction Cost

10.5. Perform internal QC and address QC comments.

10.6. 60% Design Workshop

10.6.1. Conduct 60% Design workshop to review the 60% Design Submittal (Assume 1 Schnabel and 3 WP attendees)

10.6.2. Prepare agenda and distribute meeting notes

10.7. Address comments provided by the Owner and Owner's Representative

10.8. 60% Design Phase Deliverables

10.8.1. 60% Design Deliverables (plans and specifications)
10.8.2. Draft Geotechnical Report
10.8.3. Draft Geotechnical Baseline Report (Guadalupe River crossing only)
10.8.4. Draft Basis of Design for Tunneling Methodologies completed in Task 10.2.1.3
10.8.5. Updated list of permits required for the project
10.8.6. Updated utility coordination log
10.8.7. Updated Risk Register
10.8.8. SUE Deliverables
10.8.9. Updated Project Schedule
10.8.10. Cathodic Protection Report
10.8.11. 60% Opinion of Probable Construction Cost (OPCC)

11. 90% Design Phase (see attached proposal from Schnabel Engineering, also)

11.1. Perform site visits, right-of-entry requests, and field checklists as needed for 90% design (Assume 1 site visit and 2 WP attendees)

11.2. Construction Drawings

11.2.1. Develop 90% Plan Set (in accordance with the ARWA Phase 1B Program Design Standards)

11.2.1.1. Further Development of 60% Plan Set sheets

11.2.1.1.1. General Sheets (Cover, Project Layout, General Notes, Quantities, etc.)
11.2.1.1.2. Overall Dimensional Control Plan
11.2.1.1.3. Survey Control Sheets

11.2.1.1.4. Contractor Access Sheets (including permanent access driveways, low water crossings, etc)
11.2.1.1.5. Plan and Profile Sheets
11.2.1.1.6. Erosion Control Sheets
11.2.1.1.7. Cathodic Protection Sheets
11.2.1.1.8. Standard Details (Provided by the Owner's Representative_
11.2.1.1.9. Cathodic Protection detail sheets
11.2.1.1.10. Project Specific Details (as developed by the Design Consultant)
11.2.1.2. Temporary Traffic Control Plan
11.2.1.3. Tree Preservation Plan
11.2.1.4. Pond Adjustment Plan (Parcels E008G and E029G)
11.2.1.5. Demolition and Water Well Abandonment Plan (Parcels E005G and E023G)

11.3. Draft Project Manual
- 11.3.1. Include all front-end documents and applicable specifications, both provided by the Owner's Representative
- 11.3.2. Complete front-end documents provided by Owner's Representative with project specific information
- 11.3.3. Update project specific technical specifications written by the Walker Partners' design team.

11.4. 90% Opinions of Probable Construction Cost
11.5. Perform internal QC, address QC comments, and provide documentation to Program
11.6. 90% Design Workshop
- 11.6.1. Conduct 90% Design workshop to review the 90% Design Submittal (Assume 1 Schnabel and 3 WP attendees)
- 11.6.2. Prepare agenda and distribute meeting minutes

11.7. Address comments provided by Owner and Owner's Representative
11.8. 90% Design Phase Deliverables
- 11.8.1. 90% Design Deliverables (plans and specifications)
- 11.8.2. Final Geotechnical Report
- 11.8.3. Final Geotechnical Baseline Report
- 11.8.4. Final Basis of Design for Tunneling Methodologies (drafted in Task 10.2.1.3)
- 11.8.5. Updated list of permits required for the project
- 11.8.6. Updated utility coordination log
- 11.8.7. Updated Risk Register
- 11.8.8. Updated Project Schedule
- 11.8.9. 90% Opinion of Probable Construction Cost (OPCC)
- 11.8.10. QA/QC Documentation

12. 100% Design Phase (see attached proposal from Schnabel Engineering, also)

12.0 100% Design Letter
- 12.0.1 Documenting conformance to applicable AWWA and TCEQ standards, conformance to ARWA standards, and documentation of any exceptions to these standards.

12.1. Perform site visits, right-of-entry requests, and field checklists as needed for 100% design (Assume 2 visits and 3 WP attendees)

12.2. Construction Drawings
    12.2.1. Develop 100% Plan Set (in accordance with the ARWA Phase 1B Program Design Standards)
        12.2.1.1. Further Development of 90% Plan Set sheets
12.3. Final Project Manual (signed and sealed)
    12.3.1. Contract Documents to include language from Owner's Representative for Request for Competitive Sealed Proposals (RFCSP)
    12.3.2. Update and/or finalize all applicable specifications
12.4. 100% Opinions of Probable Construction Cost
12.5. Perform internal QC, address QC comments, and provide documentation to Program
12.6. 100% Design Workshop
    12.6.1. Conduct 100% Design workshop to review the 100% Design Submittal (Assume 1 Schnabel and 3 WP attendees)
    12.6.2. Prepare agenda and distribute meeting notes
12.7. Address comments provided by the Owner and Owner's Representative
12.8. Agency Review of 100% Plan Set
    12.8.1. Prepare packet for submission of 100% construction documents (plans and specifications) to the following agencies
        12.8.1.1. TWDB
        12.8.1.2. TCEQ
    12.8.2. Address comments provided by TWDB and TCEQ
12.9. 100% Design Phase Deliverables
    12.9.1. 100% Design Deliverables (plans and specifications)
    12.9.2. Updated list of permits required for the project
    12.9.3. Updated utility coordination log
    12.9.4. Updated Risk Register
    12.9.5. Updated Project Schedule
    12.9.6. 100% Opinion of Probable Construction Cost (OPCC)
    12.9.7. 100% Design Letter
    12.9.8. QA/QC Documentation

13. Procurement (Request for Competitive Sealed Proposal (RFCSP)) (see attached proposal from Schnabel Engineering, also)
    13.1. Submit Final Documents for Advertisement
    13.2. Attend Pre-Proposal Conference (Assume 1 Schnabel and 1 WP attendee)
    13.3. Prepare Addenda and Clarifications (Assume 2 addenda)
    13.4. Attend Proposal Opening (Assume 1 WP attendee)
    13.5. Review Contractor Proposals (Assume 3 proposal reviews)
        13.5.1. Perform Contractor References Check
        13.5.2. Confirm Contractor Experience
        13.5.3. Prepare Recommendation for Award (Assume 1 draft and 1 final letter)
    13.6. Prepare Conformed Contract Documents

14. Supplemental
    14.1. Survey
        14.1.1. Verify/Reset horizontal and vertical controls points for construction purposes
        14.1.2. Additional topographic survey to supplement gaps or deficient data in aerial survey due to collection of data during leaf-on and/or dense crop conditions. See Exhibit B for assumed locations where topographic survey could be necessary to supplement aerial survey where aerial survey equipment may not penetrate dense vegetation or tree canopies during the growing season.
    14.2. General Engineering Design
        14.2.1. At the direction of ARWA, the Consultant may be required to perform additional engineering design that would be authorized as supplemental services to this scope of work.
    14.3. Land Acquisition
        14.3.1. Attend up to three (3) Eminent domain hearings (Assume 2 WP attendees)
        14.3.2. Provide support documents and exhibits for Eminent domain hearings
        14.3.3. Attend meetings with Owner's Representative to prepare for eminent domain hearings (Assume 2 WP attendees)
    14.4. Environmental Coordination based on necessary additional environmental investigations
        14.4.1. At the direction of ARWA, the Consultant may be required to perform additional environmental coordination that would be authorized as supplemental services to this scope of work.
    14.5. Attend Public Meetings (2 meetings) (Assume 2 WP attendees)
    14.6. Attend additional meetings in the vicinity of the project (5 meetings) (see attached proposal from Schnabel Engineering, also) (Assume 2 WP attendees at each meeting and 1 Schnabel attendee at 2 meetings)
    14.7. Additional SUE Investigations (see attached proposal from the Rios Group)
        14.7.1. At the direction of ARWA, the Consultant may be required to perform up to five (5) additional Level A SUE potholes beyond those scoped for the project, and conduct surveying as required to locate additional potholes.
        14.7.2. At the direction of ARWA, the Consultant may be required to perform up to 500 linear feet of additional Level B SUE locates beyond those scoped for the project, and conduct surveying as required to locate additional Level B SUE designations.
    14.8. Additional Geotechnical Borings & Piezometers (see attached proposals from Holt Engineering and Schnabel Engineering)
        14.8.1. At the direction of ARWA the Consultant may be required to perform additional geotechnical borings up to five (5) bores to a depth of 45 vertical feet and two (2) bores to a depth of 60 vertical feet, for a total of 345 vertical feet beyond those scoped for the project, and conduct surveying as required to locate borings.
        14.8.2. At the direction of ARWA the Consultant may be required to install and monitor up to seven (7) piezometers for the project, as well as conduct surveying to locate piezometers. See Exhibit C for assumed locations for four (4) of the seven (7) piezometers; the remaining three (3) piezometers are included as a contingency.
        14.8.3. One (1) geotechnical bore (no deeper than 100 feet to approximately to a depth of 480 ft-msl) to be collected from a barge at the deepest point of Lake Dunlap, as determined

by bathymetric survey. Also includes survey support to place the barge at the correct location.

14.9. Program Coordination to prepare additional procurement package for combined construction packages. (see attached proposal from Schnabel Engineering)

14.10. Conduct up to six (6) coordination meetings with impacted utilities (Assume 2 WP attendees)

14.11. Corrosivity Alignment Investigation (i.e., Induced AC Study)

14.11.1. Provide a desktop and visual alignment investigation of potential sources of stray AC and DC current per ARWA's Corrosivity Investigation and Cathodic Protection Design Standards.

Assumptions

1) Segment E will begin at the connection point with Segment D and end at the CRWA water treatment plant fence/property line. System integration will be the responsibility of others.
2) Segment E alignment changes from the 30% drawings will require additional services.
3) Final Design Phase is assumed to be a maximum 10 months in length, per Program schedule.
4) Procurement Phase is assumed to be a maximum 6 months in length, per Program schedule.
5) Construction Phase services are excluded from this scope of work.
6) All meetings are to be held in the immediate vicinity of the Project (Travis, Hays, or Guadalupe Counties).
7) Permitting and review fees are not included.
8) Advertisement fees are not included.
9) Overall system hydraulics are being completed by Freese and Nichols at the Program level.
10) Any investigation and remediation of possible hazardous waste, asbestos, lead paint, or other types of contamination, will be conducted as a separate contract by others. Mitigation requirements (if any) to be incorporated into contract documents by Walker Partners.
11) Complete demolition of barns on Parcel E005G will be accomplished as part of this contract. It is assumed that no drawings for this facility are available and that the demolition will only be noted on the plans. No salvaging or relocation of materials and equipment is required.
12) An allowance for plugging and abandoning existing water wells on Parcels E005G and E0023G will be included in the Project Documents, in case the landowners have not plugged and abandoned the existing water wells prior to construction of the pipeline. Plug and abandonment will also include demolition and removal of water pumping systems and appurtenances. No salvaging or relocation of materials and equipment is required.
13) It is assumed all deliverables will be in electronic format. No hard copy submittals are required.
14) Cost estimates to be prepared for guidance in project evaluation and implementation from the information available at the time of the estimate. The final costs of the project will depend on actual labor and material costs, competitive market conditions, final project costs, implementation schedule and other variable factors. As a result, the final project costs will vary from the estimates presented.
15) Program Surveyor will establish all horizontal and vertical control necessary for design and construction.
16) Program Surveyor will identify right-of-way, property lines, and existing easements based on available information.

17) No easement preparation.
18) No utility relocation designs or drawings.
19) Detailed design of pits, shafts, or other support of excavation, etc are excluded. Feasibility level design may be appropriate for some of the shafts, but generally the final and detailed design of the pits and shafts will be the contractor's responsibility. (see attached proposal from Schnabel Engineering, also)
20) Assessment of settlements related to or impacts to adjacent properties are excluded. (see attached proposal from Schnabel Engineering, also)
21) Owner's Representative will be the primary contact with TWDB and will facilitate all submittals and coordination.
22) Owner's Representative will post or otherwise distribute RFCSP addenda and clarifications.
23) Owner's Representative will conduct Pre-bid meeting, including developing agenda, and WP will participate at the meeting as requested.
24) Owner's Representative will receive and distribute all Contractor questions during procurement process.
25) Owner's Representative will coordinate TWDB procurement approvals and construction contract execution.
26) The Owner will provide the following information to the Engineer:
    a. Right-of-Entry to all parcels impacted by the alignment
    b. Boundary survey to all parcels impacted by the alignment
    c. Control points set by ARWA near the alignment.

Appendix A

Total Fee Breakdown

Alliance Water Phase 1B Program
Pipeline Consultant
3/5/2020
Detailed Overall Walker Partners Cost Breakdown

Project Fee Summary	
Basic Effort	$ 1,190,421
Supplemental	$ 376,066
Total Effort	$ 1,566,487

Task	Employee	J. Walker	J. Jenkins G. Graham A. Petrasek	C. Gauer D. Smith	E. Nelson	H. Finley	M. Castelli	R. Cuellar	E. Condit	L. Simpson	3-Man Crew	J. Montemayor W. Harmon	Total Hours	Total Labor Effort	Total Expense Effort	Schnabel Engineering	Holt Engineering	The Rios Group	Elk Engineering	DAS	Davey	Total Sub Effort	Total Effort	Assumptions
	Project Role	Managing Principal	Manager III	Senior Engineer II	Senior Project Manager	Project Engineer I	Technician XI	Technician VII	Support Staff III	Survey Manager	Survey	Technician V												
	Hourly Bill Rate	$330.00	$298.70	$231.75	$175.05	$116.70	$160.00	$115.00	$84.87	$205.00	$165.00	$105.00												
	Basic Services																							
	Task 1 - Project Management	0	82	0	162	0	0	0	4	0	0	0	248	$ 53,191	$ 130	$ 17,446	$ -	$ -	$ -	$ -	$ -	$ 17,446	$ 70,769	
1.1	Prepare Monthly Summary Reports/Invoicing		16		32								48	$ 10,381		$ 4,080	$ -	$ -	$ -	$ -	$ -	$ 4,080	$ 14,461	16 invoices
1.2	Schedule Development and Monthly Updates		10		20								30	$ 6,488		$ 3,840	$ -	$ -	$ -	$ -	$ -	$ 3,840	$ 10,328	10 months
1.3	Risk Register Development and Monthly Updates				20								20	$ 3,501		$ 1,840	$ -	$ -	$ -	$ -	$ -	$ 1,840	$ 5,341	10 months
1.4	Update Project Management Plan		2		8								10	$ 1,998		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,998	1 update
1.5	Ongoing coordination and communications for Project Management				20								20	$ 3,501		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,501	10 months
1.6	Meetings												0	$ -		$ 6,100	$ -	$ -	$ -	$ -	$ -	$ 6,100	$ 6,100	
1.6.1	Prepare for and conduct Progress Meetings with Owner's Representative		32		32								64	$ 15,160		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 15,160	16 phone conferences & 2 WP attendees
1.6.2	Prepare for and conduct half-day coordination workshops		6		6								12	$ 2,843	$ 130	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,973	2 workshops & 2 WP attendees
1.6.3	Prepare meeting notes		8		16								24	$ 5,190		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 5,191	16 meetings
1.6.4	Quality Control Audit		8		8	0		0	4				20	$ 4,129		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 4,130	1 workshop & 2 WP attendees
	Subconsultant 10% Mark-up															$ 1,586	$ -	$ -	$ -	$ -	$ -	$ 1,586	$ 1,586	
	Task 2 - Review of Final Pipeline Construction Standards	0	38	0	12	0	0	0	0	0	0	0	50	$ 13,451	$ 130	$ 4,048	$ -	$ -	$ -	$ -	$ -	$ 4,048	$ 17,630	
2.1	Review and provide comments on updates to pipeline design standards prepared by Owner's Representative		24		4								28	$ 7,869		$ 3,680	$ -	$ -	$ -	$ -	$ -	$ 3,680	$ 11,549	
2.2	Meetings																							
2.2.1	Attend one workshop to discuss comments on final Pipeline Construction Standards		6		6								12	$ 2,843	$ 130	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,973	1 workshop & 2 WP attendees
2.3	Deliverables																							
2.3.1	Comments on updates to Pipeline Construction Standards in Adobe PDF format		8		2								10	$ 2,740		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,740	
	Subconsultant 10% Mark-up															$ 368	$ -	$ -	$ -	$ -	$ -	$ 368	$ 368	
	Task 3 - Environmental Coordination	0	5	0	28	44	0	0	0	0	0	0	77	$ 11,530	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 11,532	
3.1	Review final Environmental Document provided by Owner's Representative for Segment E and develop Construction Documents based on findings		1		8	16		0					25	$ 3,566		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,567	
3.2	Incorporate recommendations from Environmental into Contract Documents		1		8	16		0					25	$ 3,566		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,567	
3.3	Ongoing coordination and communications for Environmental Coordination				9	9							18	$ 2,626		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,626	
3.4	Meetings																							
3.4.1	Conduct one coordination meeting with Environmental Consultant		2		2	2							6	$ 1,181		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,181	3 WP attendees
3.4.2	Prepare meeting agenda and meeting notes		1		1	1							3	$ 590		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 591	
	Subconsultant 10% Mark-up															$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
	Task 4 - Land Acquisition Coordination	0	8	0	74	112	0	30	0	0	0	0	224	$ 31,864	$ -	$ 2,552	$ -	$ -	$ -	$ -	$ -	$ 2,552	$ 34,417	
4.1	Provide Program with right-of-entry needs for final design		2		8	16							26	$ 3,865		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,865	
4.2	Easement Development												0	$ -		$ 2,320	$ -	$ -	$ -	$ -	$ -	$ 2,320	$ 2,320	
4.2.1	Review and comment on draft and final easement exhibits to verify exhibits reflect intent of Design				15	30		30					75	$ 9,577		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 9,577	30 parcels
4.2.2	Update Parcel Data Forms and easement exhibits, including environmental findings				15	30							45	$ 6,127		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 6,127	30 parcels
4.3	Meetings																							
4.3.1.1	Conduct coordination meetings with Land Acquisition Consultant Team to address basic information questions per 4.3.1.1				24	24							48	$ 7,002	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 7,002	24 phone conferences & 2 WP attendees
4.3.1.2	Conduct coordination meetings with Land Acquisition Consultant Team to address design issues per 4.3.1.2		6		12	12							30	$ 5,293	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 5,294	6 phone conferences & 2 WP attendees
	Subconsultant 10% Mark-up															$ 232	$ -	$ -	$ -	$ -	$ -	$ 232	$ 232	
	Task 5 - Entity/Agency Coordination	0	6	0	88	128	0	40	14	0	0	0	276	$ 37,922	$ 1,180	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 39,108	
5.1	Update and maintain permit tracking log				12	12							24	$ 3,501		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,501	
5.2	Develop and submit the following permits																							
5.2.1	City of New Braunfels Public Infrastructure Permit																							
5.2.1.1	Coordination during 60% Design Phase				2	4		0					6	$ 817	$ 65	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 882	
5.2.1.2	Permit Preparation during 90% Design Phase milestone				2	4		0					6	$ 817		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 817	
5.2.1.3	Submittal of Permit during 90% Design Phase milestone				2				2				4	$ 520		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 520	
5.2.1.4	Address Comments and Resubmit Permit during 100% Design Phase milestone				2	4		8					14	$ 1,737		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,737	
5.2.1.5	Conduct up to two (2) coordination meetings				4	4							8	$ 1,167	$ 130	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,297	2 WP attendees
5.2.2	Guadalupe County Floodplain Permit																							
5.2.2.1	Coordination during 60% Design Phase				2	4		0					6	$ 817	$ 65	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 882	
5.2.2.2	Permit Preparation during 90% Design Phase milestone				2	4		0					6	$ 817		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 817	
5.2.2.3	Submittal of Permit during 90% Design Phase milestone				2				2				4	$ 520		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 520	
5.2.2.4	Address Comments and Resubmit Permit during 100% Design Phase milestone				2	4		4					10	$ 1,277		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,277	
5.2.2.5	Conduct up to two (2) coordination meetings				4	4							8	$ 1,167	$ 150	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,317	2 WP attendees
5.2.3	Guadalupe County Road Crossing Permit																							
5.2.3.1	Coordination during 60% Design Phase				2	4		0					6	$ 817	$ 75	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 892	
5.2.3.2	Permit Preparation during 90% Design Phase milestone				2	4		0					6	$ 817		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 817	
5.2.3.3	Submittal of Permit during 90% Design Phase milestone				2				2				4	$ 520		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 520	

Alliance Water Phase 1B Program
Pipeline Consultant
3/5/2020
Detailed Overall Walker Partners Cost Breakdown

Project Fee Summary		
Basic Effort	$	1,190,421
Supplemental	$	376,066
Total Effort	$	1,566,487

Task	Employee	J. Walker	J. Jenkins G. Graham A. Petrasek	C. Gauer D. Smith	E. Nelson	H. Finley	M. Castelli	R. Cuellar	E. Condit	L. Simpson	3-Man Crew	J. Montemayor W. Harmon	Total Hours	Total Labor Effort	Total Expense Effort	Schnabel Engineering	Holt Engineering	The Rios Group	Elk Engineering	DAS	Davey	Total Sub Effort	Total Effort	Assumptions
	Project Role	Managing Principal	Manager III	Senior Engineer II	Senior Project Manager	Project Engineer I	Technician XI	Technician VII	Support Staff III	Survey Manager	Survey	Technician V												
	Hourly Bill Rate	$330.00	$298.70	$231.75	$175.05	$116.70	$160.00	$115.00	$84.87	$205.00	$165.00	$105.00												
5.2.3.4	Address Comments and Resubmit Permit during 100% Design Phase milestone				2	4		4					10	$ 1,277		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,277	
5.2.4	Guadalupe County Culvert/Access Permit																							
5.2.4.1	Coordination during 60% Design Phase				2	4		0					6	$ 817	$ 65	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 882	
5.2.4.2	Permit Preparation during 90% Design Phase milestone				2	4		0					6	$ 817		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 817	
5.2.4.3	Submittal of Permit during 90% Design Phase milestone				2				2				4	$ 520		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 520	
5.2.4.4	Address Comments and Resubmit Permit during 100% Design Phase milestone				2	4		4					10	$ 1,277		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,277	
5.2.5	TXDOT Utility Installation in Right-of-Way																							
5.2.5.1	Coordination during 60% Design Phase				2	4		0					6	$ 817	$ 65	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 882	
5.2.5.2	Permit Preparation during 90% Design Phase milestone				2	8		0					10	$ 1,284		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,284	
5.2.5.3	Submittal of Permit during 90% Design Phase milestone				2				2				4	$ 520		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 520	
5.2.5.4	Address Comments and Resubmit Permit during 100% Design Phase milestone				2	8		4					14	$ 1,744		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,744	
5.2.5.5	Conduct up to two (2) coordination meetings				4	4							8	$ 1,167	$ 200	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,367	2 WP attendees
5.2.6	TXDOT Temporary Driveway Permit																							
5.2.6.1	Coordination during 60% Design Phase				2	4		0					6	$ 817	$ 65	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 882	
5.2.6.2	Permit Preparation during 90% Design Phase milestone				2	4		0					6	$ 817		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 817	
5.2.6.3	Submittal of Permit during 90% Design Phase milestone				2				2				4	$ 520		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 520	
5.2.6.4	Address Comments and Resubmit Permit during 100% Design Phase milestone				2	4		4					10	$ 1,277		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,277	
5.2.7	General Land Office Miscellaneous Easement (Permit) Documents																							
5.2.7.1	Coordination during 60% Design Phase				1	4		0					5	$ 642		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 642	
5.2.7.2	Permit Preparation during 90% Design Phase milestone				1	4		0					5	$ 642		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 642	
5.2.7.3	Submittal of Permit during 90% Design Phase milestone				1				2				3	$ 345		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 345	
5.2.7.4	Address Comments and Resubmit Permit during 100% Design Phase milestone				1	4		0					5	$ 642		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 642	
5.3	TCEQ Exceptions and Variance Development Coordination																							
5.3.1	Minimum Pressure Variance		2		4	4		4					14	$ 2,224	$ 100	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,325	
5.3.2	Stream Crossing Exception		2		4	4		4					14	$ 2,224	$ 100	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,325	
5.3.3	Sampling Frequency Variance		2		4	4		4					14	$ 2,224	$ 100	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,325	
	Subconsultant 10% Mark-up															$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
	Task 6 - Public and Private Utility Coordination	0	16	0	120	176	16	44	0	0	0	0	372	$ 53,944	$ 1,365	$ -	$ -	$ 33,638	$ -	$ -	$ -	$ 33,638	$ 88,949	
6.1	Provide thirteen (13) Quality Level "A" SUE test holes				4	4		4					12	$ 1,627		$ -	$ -	$ 30,580	$ -	$ -	$ -	$ 30,580	$ 32,207	Includes all basic SUE services
6.2	Provide 430 linear feet of Quality Level "B" SUE locating				4	4		4					12	$ 1,627		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,627	
6.3	Provide Quality Level "C" and "D" SUE services				4	4		4					12	$ 1,627		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,627	
6.4	Coordinate with Owner's Representative on GIS data collected				8	8	8						24	$ 3,614		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,614	
6.4.1	Coordinate with entities for additional data needs				8	8	8						24	$ 3,614		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,614	
6.5	Update and maintain utility coordination log				5	10							15	$ 2,042		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,043	
6.6	Coordinate Design Reviews at 60%, 90%, and 100% Design Milestones with four (4) entities		4		24	48		0					76	$ 10,998	$ 260	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 11,258	
6.7	Coordinate Encroachment Agreements at 60%, 90%, and 100% Design Milestones with four (4) entities		0		24	48		32					104	$ 13,483	$ 260	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 13,743	
6.8	Coordinate Courtesy Plan Reviews at 60%, 90%, and 100% Design Milestones with five (5) entities				15	30		0					45	$ 6,127	$ 325	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 6,452	
6.9	Meetings																							
6.9.1	Conduct up to eight (8) coordination meetings with impacted utilities		8		16	8							32	$ 6,124	$ 520	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 6,644	2 WP attendees
6.9.2	Prepare agendas and meeting notes		4		8	4							16	$ 3,062		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,062	8 meetings
	Subconsultant 10% Mark-up															$ -	$ -	$ 3,058	$ -	$ -	$ -	$ 3,058	$ 3,058	
	Task 7 - Design Consultant Coordination	0	14	0	38	22	0	0	0	0	0	0	74	$ 13,401	$ 130	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 13,533	
7.1	Coordinate with BPS/Delivery Point Consultant																							
7.1.1	Tie-in locations to GBRA and CRWA		4		8	8		0					20	$ 3,529	$ 65	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,594	
7.1.2	Hydraulics, surge, pipe diameter, and pressure class		0		10	10							20	$ 2,918		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,918	
7.1.3	Review of transient analysis model and results provided by BPS Design Consultant		8		16								24	$ 5,190		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 5,191	
7.2	Coordinate with Other Transmission Main Design Consultants																							
7.2.1	Tie-in location with Segment D		2		4	4		0					10	$ 1,764	$ 65	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,830	
	Subconsultant 10% Mark-up															$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	

Alliance Water Phase 1B Program
Pipeline Consultant
3/5/2020
Detailed Overall Walker Partners Cost Breakdown

Project Fee Summary	
Basic Effort	$ 1,190,421
Supplemental	$ 376,066
Total Effort	$ 1,566,487

Task	Employee	J. Walker	J. Jenkins G. Graham A. Petrasek	C. Gauer D. Smith	E. Nelson	H. Finley	M. Castelli	R. Cuellar	E. Condit	L. Simpson	3-Man Crew	J. Montemayor W. Harmon	Total Hours	Total Labor Effort	Total Expense Effort	Schnabel Engineering	Holt Engineering	The Rios Group	Elk Engineering	DAS	Davey	Total Sub Effort	Total Effort	Assumptions
	Project Role	Managing Principal	Manager III	Senior Engineer II	Senior Project Manager	Project Engineer I	Technician XI	Technician VII	Support Staff III	Survey Manager	Survey	Technician V												
	Hourly Bill Rate	$330.00	$298.70	$231.75	$175.05	$116.70	$160.00	$115.00	$84.87	$205.00	$165.00	$105.00												
	Task 8 - Design Survey	0	5	0	38	34	2	34	0	55	260	156	584	$ 86,898	$ -	$ -	$ -	$ -	$ -	$ 39,600	$ 6,600	$ 46,200	$ 133,102	
8.1.1	Aerial survey performed by DAS Geospatial		2		8	8	2	8					28	$ 4,171		$ -	$ -	$ -	$ -	$ 36,000	$ -	$ 36,000	$ 40,172	
8.1.2	Topographic survey to supplement LiDAR		2		8	8		8		10	40	30	106	$ 15,651		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 15,652	
8.1.3	Provide forty (40) ground control points for aerial surveyor				2					8	40	20	70	$ 10,690		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 10,691	
8.1.4	Provide twenty (22) LiDAR verification points for aerial surveyor				2					4	20	6	32	$ 5,100		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 5,101	
8.1.5	Locate twenty-eight (28) geotechnical bores				4	4		4		8	40	20	80	$ 11,967		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 11,967	
8.1.6	Locate thirteen (13) QL "A" test holes and the QL "B" markings for test holes				4	4		4		8	30	20	70	$ 10,317		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 10,317	
8.1.7	Locate 430 linear feet of QL "B" markings				4	4		4		6	30	20	68	$ 9,907		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 9,907	
8.1.8	Perform a tree inventory in accordance with local entities				4	4		4		8	40	30	90	$ 13,017		$ -	$ -	$ -	$ -	$ -	$ 6,000	$ 6,000	$ 19,017	8-inch diameter or greater
8.1.9	Verify control points provided by Owner's Representative		1		2	2		2		3	20	10	40	$ 6,077		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 6,078	25 control points
	Subconsultant 10% Mark-up															$ -	$ -	$ -	$ -	$ 3,600	$ 600	$ 4,200	$ 4,200	
	Task 9 - Subsurface Investigations	0	4	0	24	56	0	0	0	0	0	0	84	$ 11,931	$ 245	$ 2,552	$ 131,431	$ -	$ 16,500	$ -	$ -	$ 150,483	$ 162,660	
9.1	Geotechnical Investigation		2		12	16		0					30	$ 4,565	$ 65	$ 2,320	$ 119,482	$ -	$ -	$ -	$ -	$ 121,802	$ 126,433	
9.2	Soil Corrosivity Investigation and Testing		2		12	40		0					54	$ 7,366	$ 180	$ -	$ -	$ -	$ 15,000	$ -	$ -	$ 15,000	$ 22,546	1 WP escort for 5 days
	Subconsultant 10% Mark-up															$ 232	$ 11,949	$ -	$ 1,500	$ -	$ -	$ 13,681	$ 13,681	
	Task 10 - 60% Design Phase	2	76	24	209	509	0	538	28	0	0	0	1,386	$ 189,155	$ 700	$ 70,642	$ -	$ -	$ 16,500	$ -	$ -	$ 87,142	$ 277,013	
10.1	Perform site visits, right-of-entry requests, and field checklists		8		32	40		16					96	$ 14,499	$ 700	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 15,200	5 site visits & 3 WP attendees
10.2	Construction Drawings																							
10.2.1	Perform analyses																							
10.2.1.1	Cathodic Protection												0	$ -		$ -	$ -	$ -	$ 15,000	$ -	$ -	$ 15,000	$ 15,000	Includes all 60% cathodic design phase
10.2.1.2	Joint Restraint		2		8	16							26	$ 3,865		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,865	
10.2.1.3	Trenchless Engineering and Calculations and Draft Basis of Design Memo		2		4	8							14	$ 2,231		$ 18,400	$ -	$ -	$ -	$ -	$ -	$ 18,400	$ 20,632	
10.2.1.4	Embedment		2		4	8							14	$ 2,231		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,232	
10.2.1.5	Backfill		2		4	8							14	$ 2,231		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,232	
10.2.1.6	Scour		2	8		16							26	$ 4,319		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 4,319	
10.2.1.7	Buoyancy		2	8		16							26	$ 4,319		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 4,319	
10.2.1.8	Pipe Deflection		2		4	8							14	$ 2,231		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,232	
10.2.1.9	Air Valves		2		8	16							26	$ 3,865		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,865	
10.2.1.10	Blow-off Valve		2		8	16							26	$ 3,865		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,865	
10.2.2	Develop Plan Set																							
10.2.2.1	General Sheets				4	4		8					16	$ 2,087		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,087	10 sheets
10.2.2.2	Overall Dimensional Control Plan				4	4		8					16	$ 2,087		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,087	5 sheets
10.2.2.3	Survey Control Sheets				4	4		8					16	$ 2,087		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,087	5 sheets
10.2.2.4	Contractor Access Sheets				8	16		32					56	$ 6,948		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 6,948	10 sheets
10.2.2.5	Plan and Profile Sheets		8		24	138		230					400	$ 49,145		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 49,146	46 sheets
10.2.2.6	Erosion Control Sheets				4	46		92					142	$ 16,648		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 16,649	23 sheets
10.2.2.7	Cathodic Protection Sheets							16					16	$ 1,840		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,840	
10.2.2.8	Standard Details				4	4		8					16	$ 2,087		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,087	10 sheets
10.2.2.9	Cathodic Protection Details							8					8	$ 920		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 920	
10.2.2.10	Project Specific Details				4	8		16					28	$ 3,474		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,474	5 sheets
10.3	Preparation of Project Manual																							
10.3.1	Prepare Table of Contents		2		4	8			2				16	$ 2,401		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,401	
10.3.2	Provide draft project specific technical specifications written by Walker Partners' design team		2		8	16			8				34	$ 4,544		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 4,544	
10.4	Opinion of Probable Construction Cost		2		8	16		8	2				36	$ 4,955		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 4,955	
10.5	Perform internal QC and address QC comments	2	22	4	18	40		40	8				134	$ 21,256		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 21,257	
10.6	Design Workshop												0	$ -		$ 3,780	$ -	$ -	$ -	$ -	$ -	$ 3,780	$ 3,780	
10.6.1	Conduct Design Workshop		4		4	4							12	$ 2,362		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,362	1 Schnabel & 3 WP attendees
10.6.2	Prepare agenda and meeting minutes				1	1							2	$ 292		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 292	
10.7	Address comments provided by Owner and Owner's Representative		8	4	16	40		40	8				116	$ 16,064		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 16,065	
10.8	Deliverables																							
10.8.1	Design Deliverables (plans and specifications)				2			8					10	$ 1,270		$ 10,640	$ -	$ -	$ -	$ -	$ -	$ 10,640	$ 11,911	
10.8.2	Draft Geotechnical Report				2								2	$ 350		$ 1,840	$ -	$ -	$ -	$ -	$ -	$ 1,840	$ 2,191	
10.8.3	Draft Geotechnical Baseline Report				2								2	$ 350		$ 12,560	$ -	$ -	$ -	$ -	$ -	$ 12,560	$ 12,911	
10.8.4	Draft Basis of Design for Tunneling Methodologies				0								0	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	provided with Task 10.2.1.3
10.8.5	Updated list of permits required for the project				2	4							6	$ 817		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 817	
10.8.6	Updated utility coordination log				2	4							6	$ 817		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 817	
10.8.7	Updated Risk Register				4								4	$ 700		$ 1,840	$ -	$ -	$ -	$ -	$ -	$ 1,840	$ 2,541	
10.8.8	SUE Deliverables				2								2	$ 350		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 351	
10.8.9	Updated Project Schedule				2								2	$ 350		$ 3,840	$ -	$ -	$ -	$ -	$ -	$ 3,840	$ 4,191	
10.8.10	Cathodic Protection Report				2								2	$ 350		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 351	
10.8.11	Opinion of Probable Construction Cost		2		2								4	$ 948		$ 11,320	$ -	$ -	$ -	$ -	$ -	$ 11,320	$ 12,268	
	Subconsultant 10% Mark-up															$ 6,422	$ -	$ -	$ 1,500	$ -	$ -	$ 7,922	$ 7,922	

Alliance Water Phase 1B Program
Pipeline Consultant
3/5/2020
Detailed Overall Walker Partners Cost Breakdown

Project Fee Summary	
Basic Effort	$ 1,190,421
Supplemental	$ 376,066
Total Effort	$ 1,566,487

Task	Employee	J. Walker	J. Jenkins G. Graham A. Petrasek	C. Gauer D. Smith	E. Nelson	H. Finley	M. Castelli	R. Cuellar	E. Condit	L. Simpson	3-Man Crew	J. Montemayor W. Harmon	Total Hours	Total Labor Effort	Total Expense Effort	Schnabel Engineering	Holt Engineering	The Rios Group	Elk Engineering	DAS	Davey	Total Sub Effort	Total Effort	Assumptions
	Project Role	Managing Principal	Manager III	Senior Engineer II	Senior Project Manager	Project Engineer I	Technician XI	Technician VII	Support Staff III	Survey Manager	Survey	Technician V												
	Hourly Bill Rate	$330.00	$298.70	$231.75	$175.05	$116.70	$160.00	$115.00	$84.87	$205.00	$165.00	$105.00												
	Task 11 - 90% Design Phase	2	68	16	167	350	0	394	42	0	0	0	1,039	$ 143,632	$ 560	$ 38,478	$ -	$ -	$ 2,750	$ -	$ -	$ 41,228	$ 185,435	
11.1	Perform site visits, right-of-entry requests, and field checklists		8		16	32		8					64	$ 9,845	$ 560	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 10,405	4 site visits & 3 WP attendees
11.2	Construction Drawings																							
11.2.1	Further Development of Plan Set																							
11.2.1.1	General Sheets				2	2		4					8	$ 1,044		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,044	10 sheets
11.2.1.2	Overall Dimensional Control Plan				2	2		4					8	$ 1,044		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,044	5 sheets
11.2.1.3	Survey Control Sheets				2	2		4					8	$ 1,044		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,044	5 sheets
11.2.1.4	Contractor Access Sheets				2	4		8					14	$ 1,737		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,737	10 sheets
11.2.1.5	Plan and Profile Sheets		8		8	46		92					154	$ 19,738		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 19,739	46 sheets
11.2.1.6	Erosion Control Sheets				2	23		46					71	$ 8,324		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 8,325	23 sheets
11.2.1.7	Cathodic Protection Sheets							16					16	$ 1,840		$ -	$ -	$ -	$ 2,500	$ -	$ -	$ 2,500	$ 4,340	includes all 90% cathodic design phase
11.2.1.8	Standard Details				2	2		4					8	$ 1,044		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,044	10 sheets
11.2.1.9	Cathodic Protection Details							8					8	$ 920		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 920	
11.2.1.10	Project Specific Details				2	4		8					14	$ 1,737		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,737	5 sheets
11.2.1.2	Temporary Traffic Control Plan				8	16		32					56	$ 6,948		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 6,948	10 sheets
11.2.1.3	Tree Preservation Plan				4	8		16					28	$ 3,474		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,474	23 sheets
11.2.1.4	Pond Adjustment Plan			8	2	24		40					74	$ 9,605		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 9,605	4 sheets (Parcels E008G and E029G)
11.2.1.5	Demolition and Water Well Abandonment Plan				4	4		8					16	$ 2,087		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,087	1 sheet (Parcels E005G and E0236G)
11.3	Draft Project Manual																							
11.3.1	Update Table of Contents and include all front-end documents and applicable specifications provided by Owner's Representative		2		4	16			8				30	$ 3,844		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,844	
11.3.2	Complete front-end documents with project specific information		4		8	16			8				36	$ 5,141		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 5,142	
11.3.3	Update project specific technical specifications written by Walker Partners' design team		8		32	40			8				88	$ 13,338		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 13,339	
11.4	Opinion of Probable Construction Cost		2		8	16		8	2				36	$ 4,955		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 4,955	
11.5	Perform internal QC and address QC comments	2	22	4	18	40		40	8				134	$ 21,256		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 21,257	
11.6	Design Workshop												0	$ -		$ 3,780	$ -	$ -	$ -	$ -	$ -	$ 3,780	$ 3,780	
11.6.1	Conduct Design Workshop		4		4	4							12	$ 2,362		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,362	1 Schnabel & 3 WP attendees
11.6.2	Prepare agenda and meeting minutes				1	1							2	$ 292		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 292	
11.7	Address comments provided by Owner and Owner's Representative		8	4	16	40		40	8				116	$ 16,064		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 16,065	
11.8	Deliverables																							
11.8.1	Design Deliverables (plans and specifications)				2			8					10	$ 1,270		$ 5,320	$ -	$ -	$ -	$ -	$ -	$ 5,320	$ 6,591	
11.8.2	Final Geotechnical Report				2								2	$ 350		$ 1,160	$ -	$ -	$ -	$ -	$ -	$ 1,160	$ 1,511	
11.8.3	Final Geotechnical Baseline Report				2								2	$ 350		$ 8,200	$ -	$ -	$ -	$ -	$ -	$ 8,200	$ 8,551	
11.8.4	Final Basis of Design for Tunneling Methodologies				2								2	$ 350		$ 6,000	$ -	$ -	$ -	$ -	$ -	$ 6,000	$ 6,351	
11.8.5	Updated list of permits required for the project				2	4							6	$ 817		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 817	
11.8.6	Updated utility coordination log				2	4							6	$ 817		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 817	
11.8.7	Updated Risk Register				4								4	$ 700		$ 1,160	$ -	$ -	$ -	$ -	$ -	$ 1,160	$ 1,861	
11.8.8	Updated Project Schedule				2								2	$ 350		$ 2,160	$ -	$ -	$ -	$ -	$ -	$ 2,160	$ 2,511	
11.8.9	Opinion of Probable Construction Cost		2		2								4	$ 948		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 948	
11.8.10	QA/QC Documentation		0		0				0				0	$ -		$ 7,200	$ -	$ -	$ -	$ -	$ -	$ 7,200	$ 7,200	
	Subconsultant 10% Mark-up												0	$ -		$ 3,498	$ -	$ -	$ 250	$ -	$ -	$ 3,748	$ 3,748	
	Task 12 - 100% Design Phase	3	54	12	103	207	0	228	43	0	0	0	650	$ 91,957	$ 280	$ 17,732	$ -	$ -	$ 2,750	$ -	$ -	$ 20,482	$ 112,728	
12.0	100% Design Letter	1	2						1				4	$ 1,012		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,013	
12.1	Perform site visits, right-of-entry requests, and field checklists				8	8							16	$ 2,334	$ 280	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,614	1 site visit & 2 WP attendees
12.2	Construction Drawings																							
12.2.1	Develop 100% Plan Set		8	8	20	80		120					236	$ 30,881		$ -	$ -	$ -	$ 2,500	$ -	$ -	$ 2,500	$ 33,381	180 sheets (including 100% cathodic design)
12.3	Final Project Manual																							
12.3.1	Include language for Request for Competitive Sealed Proposals		4		4								8	$ 1,895		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,895	
12.3.2	Updated and/or finalize all applicable specifications		4		16	20			4				44	$ 6,669		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 6,670	
12.4	Opinion of Probable Construction Cost		2		4	8		4	2				20	$ 2,861		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,861	
12.5	Perform internal QC and address QC comments	2	12	2	10	20		20	8				74	$ 11,771		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 11,772	
12.6	Design Workshop												0	$ -		$ 3,780	$ -	$ -	$ -	$ -	$ -	$ 3,780	$ 3,780	
12.6.1	Conduct Design Workshop		4		4	4							12	$ 2,362		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,362	1 Schnabel & 3 WP attendees
12.6.2	Prepare agenda and meeting minutes				1	1							2	$ 292		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 292	
12.7	Address comments provided by Owner and Owner's Representative		8	2	8	20		20	8				66	$ 9,566		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 9,567	
12.8	Agency Review of 100% Plan Set																							
12.8.1.1	Prepare packet for submission to TWDB		2		4	8		8	8				30	$ 3,830		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,831	
12.8.1.2	Prepare packet for submission to TCEQ		2		4	8		8	8				30	$ 3,830		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,831	
12.8.2	Address comments provided by TWDB and TCEQ		4		8	20		40	4				76	$ 9,869		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 9,869	
12.9	Deliverables																							
12.9.1	Design Deliverables (plans and specifications)					2		8					10	$ 1,153		$ 3,680	$ -	$ -	$ -	$ -	$ -	$ 3,680	$ 4,834	
12.9.2	Updated list of permits required for the project				2	4							6	$ 817		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 817	
12.9.3	Updated utility coordination log				2	4							6	$ 817		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 817	
12.9.4	Updated Risk Register				4								4	$ 700		$ 1,160	$ -	$ -	$ -	$ -	$ -	$ 1,160	$ 1,861	
12.9.5	Updated Project Schedule				2								2	$ 350		$ 1,660	$ -	$ -	$ -	$ -	$ -	$ 1,660	$ 2,011	
12.9.6	Opinion of Probable Construction Cost		2		2								4	$ 948		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 948	
12.9.7	Design Letter	0							0				0	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
12.9.8	QA/QC Documentation		0		0				0				0	$ -		$ 5,840	$ -	$ -	$ -	$ -	$ -	$ 5,840	$ 5,840	
	Subconsultant 10% Mark-up															$ 1,612	$ -	$ -	$ 250	$ -	$ -	$ 1,862	$ 1,862	

Alliance Water Phase 1B Program
Pipeline Consultant
3/5/2020
Detailed Overall Walker Partners Cost Breakdown

Project Fee Summary	
Basic Effort	$ 1,190,421
Supplemental	$ 376,066
Total Effort	$ 1,566,487

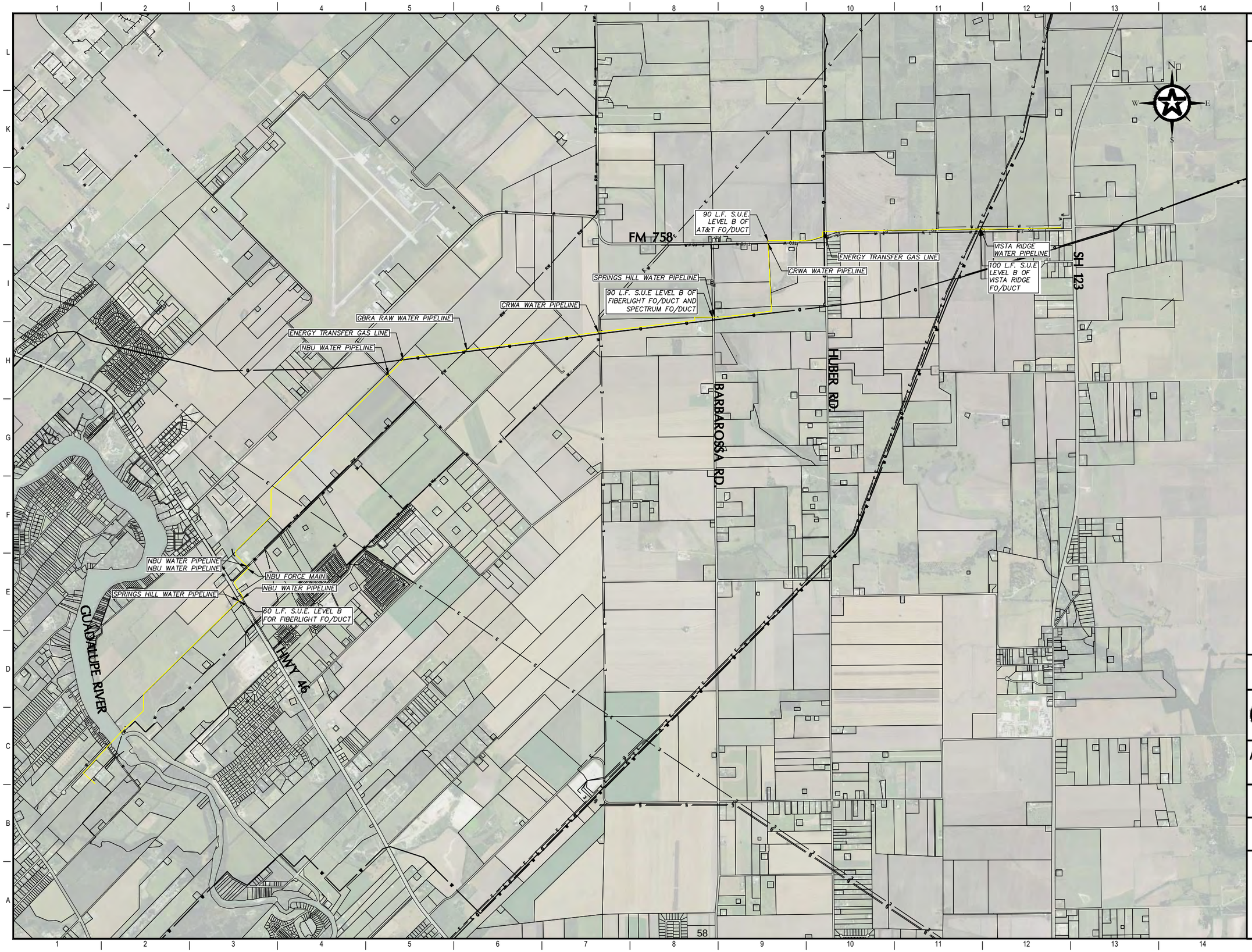
Task	Employee	J. Walker	J. Jenkins G. Graham A. Petrasek	C. Gauer D. Smith	E. Nelson	H. Finley	M. Castelli	R. Cuellar	E. Condit	L. Simpson	3-Man Crew	J. Montemayor W. Harmon	Total Hours	Total Labor Effort	Total Expense Effort	Schnabel Engineering	Holt Engineering	The Rios Group	Elk Engineering	DAS	Davey	Total Sub Effort	Total Effort	Assumptions
	Project Role	Managing Principal	Manager III	Senior Engineer II	Senior Project Manager	Project Engineer I	Technician XI	Technician VII	Support Staff III	Survey Manager	Survey	Technician V												
	Hourly Bill Rate	$330.00	$298.70	$231.75	$175.05	$116.70	$160.00	$115.00	$84.87	$205.00	$165.00	$105.00												
	Task 13 - Procurement	0	16	0	56	70	0	24	24	0	0	0	190	$ 27,548	$ 130	$ 15,862	$ -	$ -	$ -	$ -	$ -	$ 15,862	$ 43,545	
13.1	Submit Final Documents for Advertisement		2		4	8		8	8				30	$ 3,830		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,831	
13.2	Attend Pre-Proposal Conference		0		4								4	$ 700	$ 65	$ 3,780	$ -	$ -	$ -	$ -	$ -	$ 3,780	$ 4,546	1 Schnabel & 1 WP attendee
13.3	Prepare Addenda and Clarifications		4		24	32		8	8				76	$ 10,729		$ 6,000	$ -	$ -	$ -	$ -	$ -	$ 6,000	$ 16,730	
13.4	Attend Proposal Opening		0		4								4	$ 700	$ 65	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 766	1 WP attendee
13.5	Review Contractor Proposals												0	$ -		$ 4,640	$ -	$ -	$ -	$ -	$ -	$ 4,640	$ 4,640	
13.5.1	Perform Contractor Reference Check		3		6	9							18	$ 2,997		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,997	3 proposal reviews
13.5.2	Confirm Contractor Experience		3		6	9							18	$ 2,997		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,997	3 proposal reviews
13.5.3	Prepare Recommendation for Award		2		4	4							10	$ 1,764		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,765	1 draft and 1 final letter
13.6	Prepare Conformed Contract Documents		2		4	8		8	8				30	$ 3,830		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,831	
	Subconsultant 10% Mark-up															$ 1,442	$ -	$ -	$ -	$ -	$ -	$ 1,442	$ 1,442	
	Supplemental Services																							
	Supplemental Services	0	87	8	136	156	0	180	24	43	246	113	993	$ 153,860	$ 1,580	$ 13,860	$ 136,458	$ 16,918	$ 53,383	$ -	$ -	$ 220,619	$ 376,066	
14.1	Survey																							
14.1.1	Verify/Reset horizontal and vertical control points for construction purposes		1		2	2		2		3	20	10	40	$ 6,077		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 6,078	25 control points
14.1.2	Additional topographic survey to supplement aerial survey gaps				4	4		4		24	144	72	252	$ 37,867		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 37,867	28,900 linear feet maximum
14.2	General Engineering Design		8	8	20	40		80	8				164	$ 22,292	$ 230	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 22,522	
14.3	Land Acquisition																							
14.3.1	Attend up to three (3) eminent domain hearings		24		24								48	$ 11,370	$ 375	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 11,745	2 WP attendees
14.3.2	Provide support documents and exhibits for eminent domain hearings		6		6	40		40	8				100	$ 12,789		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 12,790	
14.3.3	Attend meetings with Owner's Representative to prepare for eminent domain hearings		6		6	0							12	$ 2,843		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,843	2 WP attendees
14.4	Environmental Coordination		2		4	4		4					14	$ 2,224	$ 65	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,290	
14.5	Attend Public Meetings		12		12	12							36	$ 7,085	$ 195	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 7,281	2 meetings and 3 WP attendees
14.6	Attend additional meetings in vicinity of the project		8		12	20							40	$ 6,824	$ 325	$ 4,268	$ -	$ -	$ -	$ -	$ -	$ 4,268	$ 11,418	5 meetings and 2 WP attendees includes 10% subconsultant mark-up
14.7	Additional SUE Investigations															$ -	$ -	$ 16,918	$ -	$ -	$ -	$ 16,918	$ 16,918	includes 10% subconsultant mark-up
14.7.1	Provide up to five (5) Quality Level "A" SUE test holes and surveying required to locate additional potholes				2	2		2		3	20	8	37	$ 5,569		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 5,569	
14.7.2	Provide up to 500 linear feet of Quality Level "B" SUE locating and surveying required to locate additional bores				2	2		2		3	10	8	27	$ 3,919		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,919	
14.8	Additional Geotechnical Borings & Piezometers												0	$ -		$ 4,048	$ -	$ -	$ -	$ -	$ -	$ 4,048	$ 4,048	includes 10% subconsultant mark-up
14.8.1	Provide up to five (5) geotechnical bores to a depth of forty-five (45) vertical feet and two (2) sixty (60) vertical feet for a total of 345 vertical feet and surveying required to locate additional bores				2	2		2		3	16	8	33	$ 4,909		$ -	$ 30,419	$ -	$ -	$ -	$ -	$ 30,419	$ 35,328	includes 10% subconsultant mark-up
14.8.2	Provide up to seven (7) piezometers to a depth of sixty (60) vertical feet for a total of 420 vertical feet and surveying required to locate piezometers				2	2		2		3	20	4	33	$ 5,149		$ -	$ 39,412	$ -	$ -	$ -	$ -	$ 39,412	$ 44,561	includes 10% subconsultant mark-up
14.8.3	Provide one (1) geotechnical bore from a barge and surveying required to locate additional bore				2	2		2		4	16	3	29	$ 4,589		$ -	$ 66,627	$ -	$ -	$ -	$ -	$ 66,627	$ 71,216	includes 10% subconsultant mark-up
14.9	Program Coordination to prepare additional procurement package for combined construction packages		8		24	24		40	8				104	$ 14,671		$ 5,544	$ -	$ -	$ -	$ -	$ -	$ 5,544	$ 20,215	includes 10% subconsultant mark-up
14.10	Conduct up to six (6) additional coordination meetings for Task 6.9.1		12		12	0							24	$ 5,685	$ 390	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 6,075	2 WP attendees
14.11	Corrosivity Alignment Investigation (i.e., Induced AC Study)												0	$ -		$ -	$ -	$ -	$ 53,383	$ -	$ -	$ 53,383	$ 53,383	2 WP attendees

Task	Employee	J. Walker	J. Jenkins G. Graham A. Petrasek	C. Gauer D. Smith	E. Nelson	H. Finley	M. Castelli	R. Cuellar	E. Condit	L. Simpson	3-Man Crew	J. Montemayor W. Harmon	Total Hours	Total Labor Effort	Total Expense Effort	Schnabel Engineering	Holt Engineering	The Rios Group	Elk Engineering	DAS	Davey	Total Sub Effort	Total Effort	Assumptions
	Project Role	Managing Principal	Manager III	Senior Engineer II	Senior Project Manager	Project Engineer I	Technician XI	Technician VII	Support Staff III	Survey Manager	Survey	Technician V												
	Hourly Bill Rate	$330.00	$298.70	$231.75	$175.05	$116.70	$160.00	$115.00	$84.87	$205.00	$165.00	$105.00												
	Basic Services Totals	7	392	52	1,119	1,708	18	1,332	155	55	260	156	5,254	$ 766,426	$ 4,850	$ 169,312	$ 131,431	$ 33,638	$ 38,500	$ 39,600	$ 6,600	$ 419,081	$ 1,190,421	
	Supplemental Services Totals	0	87	8	136	156	0	180	24	43	246	113	993	$ 153,860	$ 1,580	$ 13,860	$ 136,458	$ 16,918	$ 53,383	$ -	$ -	$ 220,619	$ 376,066	
	Grand Totals	7	479	60	1,255	1,864	18	1,512	179	98	506	269	6,247	$ 920,286	$ 6,430	$ 183,172	$ 267,889	$ 50,556	$ 91,883	$ 39,600	$ 6,600	$ 639,700	$ 1,566,487	

Base Scope	
Basic Engineering Services	$ 832,300
Cathodic Protection Services	$ 47,886
Survey, Geotech, SUE Services	$ 310,235
Total	$ 1,190,421
Supplemental Scope	
Basic Engineering Services	$ 97,179
Cathodic Protection Services	$ 53,383
Survey, Geotech, SUE Services	$ 225,504
Total	$ 376,066

Appendix B

Project Scope Exhibits



KEY MAP

PROPOSED ROUTE

0 750 1500 3000

GRAPHIC SCALE (FEET)

Walker Partners engineers ★ surveyors

T.B.P.E. Registration No. 8053

ALLIANCE REGIONAL WATER AUTHORITY

ARWA PIPELINE PHASE 1B SEGMENT E

SUE LEVELS A & B

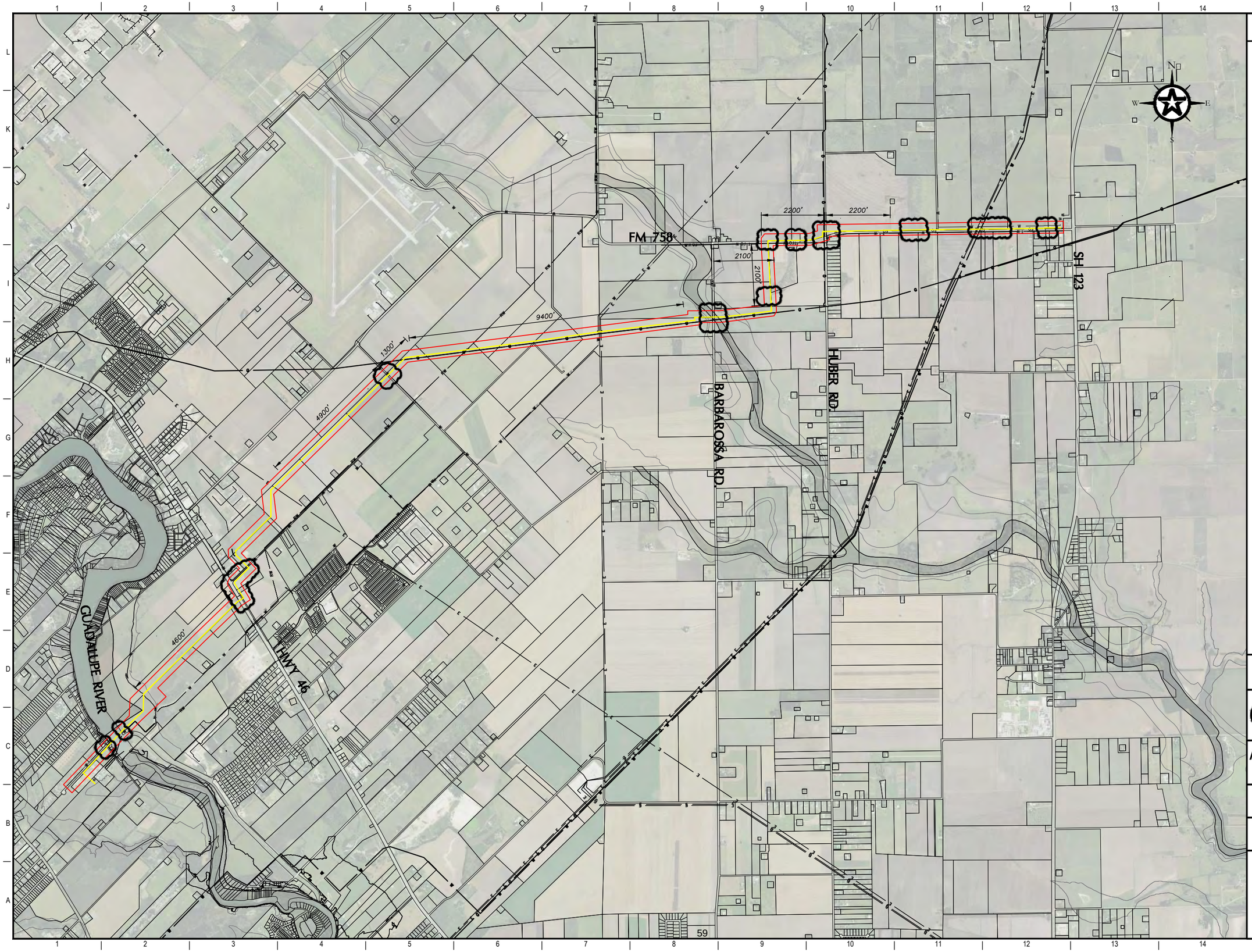
THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF PROFESSIONAL ENGINEER ERIC LEE NELSON #114449 ON THE DATE SHOWN ON THE DATE STAMP. IT IS NOT TO BE USED FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES.

PM	JWJ
DESIGNED	ELN
DRAFTED	HAF
CHECKED	GCG
PROJECT NO.	3-00666

EXHIBIT

A

G:\PROJECTS\3-00666\2 DESIGN\2.0 CAD\EXHIBITS\SUE A & B\SUE_AB.DWG, SUE LEVELS A&B, 1/9/2020 11:00:01 AM, hfinley



KEY MAP

- PROPOSED ROUTE
- TOPOGRAPHIC SURVEY (BASIC)
- XX' CULTIVATED AREAS (SUPPLEMENTAL)
- 400-WIDE AERIAL SURVEY CORRIDOR

0 750 1500 3000

GRAPHIC SCALE (FEET)

Walker Partners
engineers ★ surveyors
T.B.P.E. Registration No. 9053

ALLIANCE REGIONAL WATER AUTHORITY

ARWA PIPELINE PHASE 1B SEGMENT E

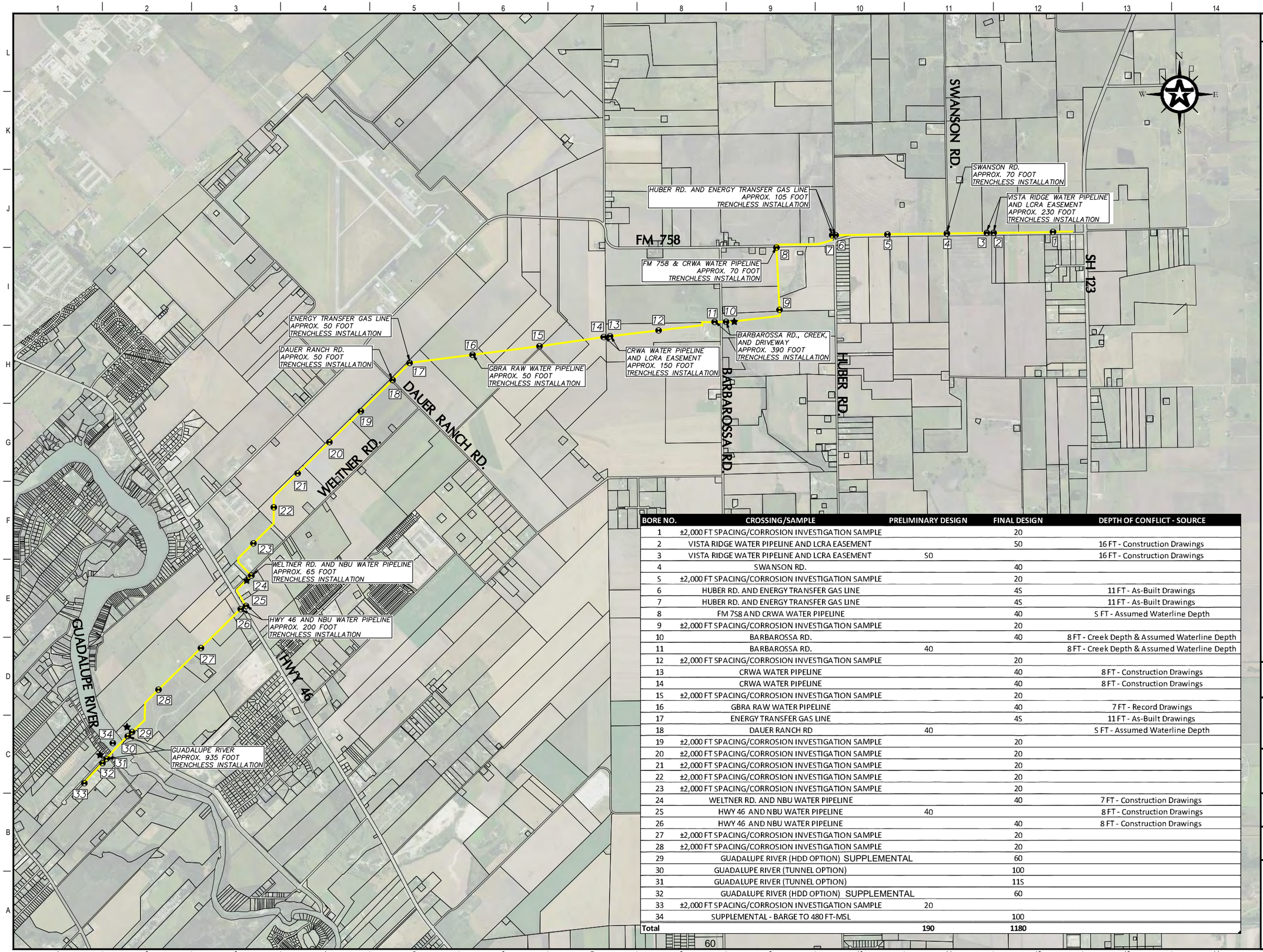
SURVEY LOCATIONS

THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF PROFESSIONAL ENGINEER ERIC LEE NELSON #114449 ON THE DATE SHOWN ON THE DATE STAMP. IT IS NOT TO BE USED FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES.

PM	JWJ
DESIGNED	ELN
DRAFTED	HAF
CHECKED	GCG
PROJECT NO.	3-00666

EXHIBIT B

G:\PROJECTS\3-00666\2 DESIGN\2.0 CAD\EXHIBITS\SURVEY LOCATIONS\SURVEY MAP.DWG, SUE LEVELS A&B, 1/14/2020 4:32:50 PM, hfinley



KEY MAP

- PROPOSED GEOTECH BORE
- PROPOSED PIEZOMETER
- PROPOSED ROUTE

BORE NO.	CROSSING/SAMPLE	PRELIMINARY DESIGN	FINAL DESIGN	DEPTH OF CONFLICT - SOURCE
1	±2,000 FT SPACING/CORROSION INVESTIGATION SAMPLE		20	
2	VISTA RIDGE WATER PIPELINE AND LCRA EASEMENT		50	16 FT - Construction Drawings
3	VISTA RIDGE WATER PIPELINE AND LCRA EASEMENT	50		16 FT - Construction Drawings
4	SWANSON RD.		40	
5	±2,000 FT SPACING/CORROSION INVESTIGATION SAMPLE		20	
6	HUBER RD. AND ENERGY TRANSFER GAS LINE		45	11 FT - As-Built Drawings
7	HUBER RD. AND ENERGY TRANSFER GAS LINE		45	11 FT - As-Built Drawings
8	FM 758 AND CRWA WATER PIPELINE		40	5 FT - Assumed Waterline Depth
9	±2,000 FT SPACING/CORROSION INVESTIGATION SAMPLE		20	
10	BARBAROSSA RD.		40	8 FT - Creek Depth & Assumed Waterline Depth
11	BARBAROSSA RD.	40		8 FT - Creek Depth & Assumed Waterline Depth
12	±2,000 FT SPACING/CORROSION INVESTIGATION SAMPLE		20	
13	CRWA WATER PIPELINE		40	8 FT - Construction Drawings
14	CRWA WATER PIPELINE		40	8 FT - Construction Drawings
15	±2,000 FT SPACING/CORROSION INVESTIGATION SAMPLE		20	
16	GBRA RAW WATER PIPELINE		40	7 FT - Record Drawings
17	ENERGY TRANSFER GAS LINE		45	11 FT - As-Built Drawings
18	DAUER RANCH RD	40		5 FT - Assumed Waterline Depth
19	±2,000 FT SPACING/CORROSION INVESTIGATION SAMPLE		20	
20	±2,000 FT SPACING/CORROSION INVESTIGATION SAMPLE		20	
21	±2,000 FT SPACING/CORROSION INVESTIGATION SAMPLE		20	
22	±2,000 FT SPACING/CORROSION INVESTIGATION SAMPLE		20	
23	±2,000 FT SPACING/CORROSION INVESTIGATION SAMPLE		20	
24	WELTNER RD. AND NBU WATER PIPELINE		40	7 FT - Construction Drawings
25	HWY 46 AND NBU WATER PIPELINE	40		8 FT - Construction Drawings
26	HWY 46 AND NBU WATER PIPELINE		40	8 FT - Construction Drawings
27	±2,000 FT SPACING/CORROSION INVESTIGATION SAMPLE		20	
28	±2,000 FT SPACING/CORROSION INVESTIGATION SAMPLE		20	
29	GUADALUPE RIVER (HDD OPTION) SUPPLEMENTAL		60	
30	GUADALUPE RIVER (TUNNEL OPTION)		100	
31	GUADALUPE RIVER (TUNNEL OPTION)		115	
32	GUADALUPE RIVER (HDD OPTION) SUPPLEMENTAL		60	
33	±2,000 FT SPACING/CORROSION INVESTIGATION SAMPLE	20		
34	SUPPLEMENTAL - BARGE TO 480 FT-MSL		100	
Total		190	1180	

0 750 1500 3000
GRAPHIC SCALE (FEET)

Walker Partners
engineers ★ surveyors
T.B.P.E. Registration No. 8053

ALLIANCE REGIONAL WATER AUTHORITY

ARWA PIPELINE PHASE 1B SEGMENT E

GEOTECHNICAL INVESTIGATIONS MAP

THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF PROFESSIONAL ENGINEER ERIC LEE NELSON #114449 ON THE DATE SHOWN ON THE DATE STAMP. IT IS NOT TO BE USED FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES.

PM	JWJ
DESIGNED	ELN
DRAFTED	HAF
CHECKED	GCG
PROJECT NO.	3-00666

EXHIBIT C

G:\PROJECTS\3-00666\2 DESIGN\2.0 CAD\EXHIBITS\GEOTECH INVESTIGATIONS MAP\BORE MAP.DWG, FINAL, 1/14/2020 2:40:07 PM, hfinley

Attachment 1

Scope and Fee for Schnabel Engineering

March 2, 2020

Transmitted via email: enelson@walkerpartners.com

Mr. Eric Nelson
Walker Partners
804 Las Cimas Pkwy., Suite 150
Austin, Texas 78746

Subject: **19P64039.00: Alliance Regional Water Authority (ARWA)**
Treated Pipeline Project Phase 1B – Segment E
Final Design and Procurement Services
New Braunfels, TX
Trenchless and Tunnel Engineering Services

Dear Mr. Nelson:

SCHNABEL ENGINEERING, LLC (Schnabel) is pleased to submit this proposal to provide trenchless and tunneling consulting and final design services for the ARWA Treated Pipeline Projects Phase 1B Segment E project. We prepared this proposal in response to your request on December 10, 2019.

PROJECT DESCRIPTION

Our understanding of the overall project is based upon information Walker Partners sent with the request for our proposal. We understand that Segment E consists of design and construction of approximately 8 miles of 36 inch diameter treated water line using open cut methods in conjunction with trenchless and tunneling methods at required crossings. Based on an initial review of the proposed alignment, it appears that there are potentially 9 trenchless or tunnel crossings of state or county roads, creeks, gas pipelines, and a crossing under the Guadalupe River as identified on the project plan provided by Walker Partners. The crossing under the Guadalupe River is in the vicinity of a Guadalupe-Blanco River Authority owned dam. It is understood that during the design development, it may be possible that some of these trenchless or tunnel crossings could be determined to be feasible as open cut installations.

schnabel-eng.com
T/ 972-250-3322 F/ 972-250-3325
12720 Hillcrest Road, Suite 585 / Dallas, TX / 75230

SCOPE OF SERVICES

Based on conversations with Walker Partners and our understanding of the project, we have outlined and organized our proposed services in accordance with the outline provided by ARWA.

Task 1 – Project Management

1.1 – Prepare Monthly Summary Reports/Invoicing

Schnabel will prepare monthly Lump Sum invoices based on the estimated percent of work completed to date, accompanied by a brief narrative summary of work performed.

1.2 – Schedule Development

Schnabel will provide estimates of construction durations for the trenchless and tunneling work to be incorporated into the overall schedule. This will be developed once as part of this task. Separate schedule updates will include updated construction durations for trenchless and tunneling work at each design phase milestone, and are included separately below.

1.3 – Risk Register Development and Monthly Updates

We understand that the project risk register will be updated during monthly meetings with both design team members and with ARWA based on the status of the design and other project developments. Schnabel will provide input to the risk register once as part of this task. Separate updates to the risk register for each design phase are included separately below.

1.6 – Meetings

Schnabel will prepare for and attend Progress Meetings with the Owner's Representative. We have assumed a total of three progress meetings (two conference calls and one in-person) that will require attendance by Schnabel (outside of 60%, 90%, & 100% phase meetings).

Task 2 – Review of Final Pipeline Construction Standards

2.1 – Review and provide comments on Updates to Pipeline Construction Standards prepared by Owner's Representative

Schnabel will review and provide comments on applicable shaft, pit, trenchless, and/or tunneling sections of the Pipeline Construction Standards.

Task 4 – Land Acquisition Coordination

4.2 – Easement Development and Support

Schnabel will provide input to the size of staging and construction areas necessary at each tunnel alignment based on the appropriate or expected tunnel methodologies to be utilized and provide support to and coordination with the Land Acquisition team as required.

Task 9 – Subsurface Investigations

9.1 – Geotechnical Investigation

Schnabel will review the Preliminary Geotechnical Investigation and update input for recommended subsurface investigation and laboratory testing at the tunnel and trenchless crossings as needed.

Task 10 – 60% Design

10.2.1.3 – Trenchless Engineering and Calculations
Schnabel will provide analyses, feasibility-level designs, and calculations related to the development of the design documents and appropriate tunnel methodologies. This may include settlement analyses, feasibility-level shaft designs, feasibility-level tunnel ground support designs, input to instrumentation plans, casing thickness structural design, ground loading criteria determination, etc. The results of each will be summarized in a basis of design technical memorandum.

10.6 – 60% Design Workshop
Schnabel will send one representative to attend the 60% Design Workshop. This task includes time for preparation, travel attendance, and follow-up items/tasks.

10.8.1 – 60% Design Deliverables (plans and specifications)
Schnabel will provide redlines and comments relating to tunnel and shaft plans, profiles, dimensions, notes, and details for your use in developing/drafting the plans.
Schnabel will also prepare applicable specifications related to tunnels and shafts. We envision this will include 10-12 specification sections (e.g. pit construction, different tunneling methodologies, shaft construction, instrumentation and monitoring, carrier pipe installation/grouting).

10.8.2 – Draft Geotechnical Report
Schnabel will provide review and comments on the 60% Draft Geotechnical Report as it relates to the tunnels and shafts.

10.8.3 – Draft Geotechnical Baseline Report (GBR)
Schnabel will prepare the 60% Draft GBR for the Guadalupe River tunnel crossing. The purpose of a GBR is to present an interpretative summary of the results of the geotechnical investigation completed for the tunnel and shaft components of this project. A GBR is a contract document and, in conjunction with the other contract documents, is intended to: assist prospective bidders in evaluating requirements for excavating, shoring, dewatering, and other activities relating to the construction of the tunnel and associated shafts; assist the Contractor in planning the work and designing temporary facilities; and assist the Engineer, Owner, and Construction Manager in reviewing and monitoring the Contractor's submittals and operations. This GBR will include discussions of the soil and groundwater conditions and what would be (in our opinion) the most appropriate tunnel method(s) for the Guadalupe River crossing.

10.8.7 – Updated Risk Register
Schnabel will provide input and updates to tunnel and shaft related risks at the 60% Design Phase.

10.8.9 – Updated Project Schedule
Schnabel will provide updates to the estimates of construction durations for the trenchless and tunneling work at the 60% Design Phase.

10.8.11 – 60% Opinions of Probable Construction Costs
Schnabel will provide an opinion of the probable construction costs of each crossing based on the results of the borings and testing program, the proposed location and depth of each crossing, and other assumptions in the 60% design.

Task 11 – 90% Design Phase

11.6 – 90% Design Workshop
Schnabel will send one representative to attend the 90% Design Workshop. This task includes time for preparation, travel attendance, and follow-up items/tasks.

11.8.1 – 90% Design Deliverables (plans and specifications)
Schnabel will provide updated redlines and comments relating to tunnel and shaft plans, profiles, dimensions, notes, and details for your use in continuing the development of the plans.
Schnabel will also continue to develop applicable specifications related to tunnels and shafts.

11.8.2 – Final Geotechnical Report
Schnabel will provide review and comments on the Geotechnical Report as it relates to the tunnels and shafts to assist in its finalization.

11.8.3 – Final Geotechnical Baseline Report (GBR)
Schnabel will finalize the GBR for the Guadalupe River tunnel crossing.

11.8.4 – Final Basis of Design Technical Memorandum
Schnabel will finalize the Basis of Design Technical Memorandum drafted in Task 10.2.1.3.

11.8.7 – Updated Risk Register
Schnabel will provide input and updates to tunnel and shaft related risks at the 90% Design Phase.

11.8.8 – Updated Project Schedule
Schnabel will provide updates to the estimates of construction durations for the trenchless and tunneling work at the 90% Design Phase.

11.8.9 – 90% Opinions of Probable Construction Costs
Schnabel will provide an update to the opinion of the probable construction costs of each crossing based on general assumptions in the 90% Design.

Task 12 – 100% Design

12.6 – 100% Design Workshop
Schnabel will send one representative to attend the 100% Design Workshop. This task includes time for preparation, travel attendance, and follow-up items/tasks.

12.9.1 – 100% Design Deliverables (plans and specifications)
Schnabel will provide updated redlines and comments relating to tunnel and shaft plans, profiles, dimensions, notes, and details for completion of plans.
Schnabel will also finalize applicable specifications related to tunnels and shafts.

12.9.4 – Updated Risk Register
Schnabel will provide input and updates to tunnel and shaft related risks at 100% Design.

12.9.5 – Updated Project Schedule
Schnabel will provide updates to the estimates of construction durations for the trenchless and tunneling work at 100% Design.

12.9.6 – 100% Opinions of Probable Construction Costs
Schnabel will provide an update to the opinion of the probable construction costs of each crossing based on general assumptions in the 100% design.

Task 13 – Procurement (Request for Competitive Sealed Proposal (RFCSP))

13.2 – Attend Pre-Proposal Conference
Schnabel will send one representative to attend the Pre-Proposal Conference. This task includes time for preparation, travel attendance, and follow-up items/tasks.

13.3 – Prepare Addenda and Clarifications
Schnabel with assist in preparation of addenda and answering contractor questions related to tunnel and trenchless crossings.

13.5 – Review Contractor Proposals
Schnabel will assist in the review of contractor proposals as they relate to tunnel and trenchless crossings (e.g. previous tunnel experience, work plans, references).

SUPPLEMENTAL SERVICES

14.6 – Attend additional meetings in the vicinity of the project
As described above, we have assumed attendance at seven meetings total (three general Progress Meetings, three design phase workshops, and the Pre-Proposal Conference). For the purposes of estimating this task, we have assumed that we will attend two additional meetings (e.g. design review meetings, public meetings, additional progress meetings).

14.8 – Additional Geotechnical Borings & Piezometers
We understand that at the direction of ARWA, Walker Partners, Schnabel, or other design team members additional borings or piezometers may be required. If related to tunnel or shaft locations, Schnabel will provide recommendations on boring locations and depths, sampling requirements, groundwater observations, backfill requirements, screening depths, and in-situ or laboratory testing. For the purposes of estimating this task, we have assumed that one occurrence of approximately 2-3 supplemental borings or piezometers are requested.

14.9. – Assistance with Combined Construction Packages
Program Coordination to prepare additional procurement package for combined construction packages.

ESTIMATED FEE

The estimated lump sum fee for the required scope of services based on the outline provided by ARWA is **$153,920**. A breakdown of this estimate is provided in Table 1.

Table 1. Summary of lump sum fees for services

Task	Fee
Task 1 – Project Management	
Task 1.1 – Prepare Monthly Summary Reports/Invoicing	$4,080
Task 1.2 – Schedule Development	$3,840
Task 1.3 – Risk Register Development and Monthly Updates	$1,840
Task 1.6 – Meetings	$6,100
Task 2 – Review of Final Pipeline Construction Standards	
Task 2.1 – Review and provide comments on Updates to Pipeline Construction Standards prepared by Owner's Representative	$3,680
Task 4 – Land Acquisition Coordination	
Task 4.2 – Easement Development and Support	$2,320
Task 9 – Subsurface Investigations	$0
Task 9.1 – Geotechnical Investigation	$2,320
Task 10 – 60% Design	
10.2.1.3 – Trenchless Engineering and Calculations	$18,400
10.6 – 60% Design Workshop	$3,780
10.8.1 – 60% Design Deliverables (plans and specifications)	$10,640
10.8.2 – Draft Geotechnical Report	$1,840
10.8.3 – Draft Geotechnical Baseline Report (GBR)	$12,560
10.8.7 – Updated Risk Register	$1,840
10.8.9 – Updated Project Schedule	$3,840
10.8.11 – 60% Opinions of Probable Construction Costs	$11,320
Task 11 – 90% Design Phase	
11.6 – 90% Design Workshop	$3,780
11.8.1 – 90% Design Deliverables (plans and specifications)	$5,320
11.8.2 – Final Geotechnical Report	$1,160
11.8.3 – Final Geotechnical Baseline Report (GBR)	$8,200
11.8.4 – Final Basis of Design Technical Memorandum	$6,000
11.8.7 – Updated Risk Register	$1,160
11.8.8 – Updated Project Schedule	$2,160
11.8.9 – 90% Opinions of Probable Construction Costs	$7,200
Task 12 – 100% Design	
12.6 – 100% Design Workshop	$3,780
12.9.1 – 100% Design Deliverables (plans and specifications)	$3,680
12.9.4 – Updated Risk Register	$1,160
12.9.5 – Updated Project Schedule	$1,660
12.9.6 – 100% Opinions of Probable Construction Costs	$5,840
Task 13 – Procurement (Request for Competitive Sealed Proposal (RFCSP))	
13.2 – Attend Pre-Proposal Conference	$3,780
13.3 – Prepare Addenda and Clarifications	$6,000
13.5 – Review Contractor Proposals	$4,640
Total Fee:	**$153,920**

The breakdown of the estimated fee for supplemental services based on the outline provided by ARWA is provided in Table 2. These services will be billed for actual time and expenses incurred at the billing rates contained in the attached Schedule of Personnel Fees. A rough estimate for these services is **$12,600**.

Table 2. Summary of fee estimate for supplemental services

Task	Fee
14.6 – Attend additional meetings in the vicinity of the project	$3,880
14.8 – Additional Geotechnical Borings & Piezometers	$3,680
14.9. – Assistance with Combined Construction Packages	$5,040
Total Estimated Fee:	**$12,600**

ASSUMPTIONS AND EXCLUSIONS

Services not specifically identified above are not included in the scope of services under this agreement. The following services are not included in our proposed scope, but can be provided upon request:

- Detailed design of pits, shafts, or other support of excavation, etc. Feasibility level design may be appropriate for some of the shafts, but generally the final and detailed design of the pits and shafts will be the contractor's responsibility.
- Assessment of settlements related to or impacts to adjacent properties.
- Detailed drawings or CAD work.
- Environmental studies or coordination.
- Coordination with Land Owners for easement acquisition other than provided recommended access and square footage.
- Permit coordination.
- Public or Private Utility Coordination.
- Subsurface investigation or geotechnical reporting. Schnabel will provide input to the investigation program as indicated above, but will not provide inspection or oversight of the investigation program or prepare boring logs or a geotechnical data report.
- Preparation of meeting minutes or summaries. It is assumed that meeting minutes or summaries of workshops will be prepared by others.

GENERAL

The Standard Contract Terms and Conditions of Attachment 2 will apply to services to be provided under this proposed agreement. Consultation after submission of our report will be provided at your request at our standard hourly rates in effect at the time. Our 2020 hourly rates are included as Attachment 1.

Please sign and return one copy of this proposal to our office to form our agreement. You may transmit your acceptance of this agreement electronically with the understanding that the signature on the electronic document will be considered an original signature. This proposal is valid for 90 days from the date shown.

We appreciate the opportunity to submit our proposal for these services and are looking forward to working with you on this project. Please contact us if you have any questions regarding this proposal.

Sincerely,

SCHNABEL ENGINEERING, LLC

Glen Frank
Senior Associate

Matt Koziol, PE
Senior Engineer

MKK:GF

Attachments:

(1) Schedule of Personnel Fees
(2) Standard Contract Terms and Conditions (2 Sheets)

The terms and conditions of this proposal, including the attached Standard Contract Terms and Conditions are:

ACCEPTED BY: Walker Partners

SIGNATURE: _____

PRINTED NAME: _____

TITLE: _____ **DATE:** _____

Attachment 2

Scope and Fee for Holt Engineering

Revised: 2 March 2020
16 January 2020

Walker Partners
804 Las Cimas Parkway, Suite 150
Austin, Texas 78746

Attn: Mr. Eric Nelson, P.E.

Re: Proposal for Geotechnical Engineering Services
Alliance Waterline Segment E
Caldwell County, Texas

Dear Mr. Nelson:

As per your request, Holt Engineering, Inc. (Holt) is pleased to provide a cost proposal for performing a geotechnical investigation at the above referenced project site. The purpose of the investigation is to determine subsurface soil and rock conditions at the site in order to provide geotechnical data to the engineering for utility construction. The scope of work presented in this proposal is based on your email dated 15 January 2020 and in accordance with the Alliance Regional Water Authority – Phase 1B, Segment E Basic Services. This project is in the 30% design phase at this time.

It is our understanding the project will consist of installing approximately 7.85 miles of new waterline from the Guadalupe River near Lake Dunlap Dam to Highway 123. Holt will perform borings at locations suggested by the client, along the alignment. Holt understands the line will be installed by typical cutting and trenching except where the line crosses some roads, rivers and existing utilities. In these locations, which will be determined during the design phase, trenchless construction methods will be used.

GEOTECHNICAL SCOPE OF SERVICES

1. Laying out soil borings in the field and coordinating utilities (electrical, water, wastewater, sewer, telephone, and gas) with line locators. Borings will be laid out along the alignment on approximately 2,000-foot centers except at creek/river crossings and street crossings. One boring is planned in the Guadalupe River and will be drilled on a barge.

2. Obtain street cut permits, if necessary, for drilling in City of New Braunfels' right-of-way.

3. Provide all necessary manpower, equipment and materials for drilling, logging and sampling 24 soil borings to depths of approximately 15 feet to 60 feet each and two borings to depths of approximately 100 feet to 115 feet each. Borings along the alignment will be drilled approximately 5 feet below flow depths except where HDD/trenchless/tunneling is planned. In these areas we plan to drill approximately 10 feet to 30 feet below the tunnel zone. All bore holes will be sampled using Shelby tubes or split-spoon samplers as appropriate. Grab samples of coarse sand and gravel will be obtained for grain size analysis. A Christianson wireline core barrel will be used to core selected rock/shale samples for strength testing. All borings relating to trenchless crossings and those near and in the river shall be continuously sampled.

4. Soil samples for soil corrosion investigation will be collected from the approximate pipeline depth at least every 4,000 feet along the pipeline alignment and delivered to Elk Engineering at 8950 Forum Way, Fort Worth, TX 76140. The minimum soil sample volume should be 1 quart.

5. Providing an engineering letter report including monitor well reports, groundwater levels and recommendations for special compaction needs, interceptor drains and underdrains.

6. Field logging to include visual classifications, percent core recovery, RQD and pocket penetrometer tests. Pictures of all cores will be provided.

7. Plugging all bore holes upon completion of the drilling operations.

8. In-house logging of the cores by the geotechnical engineer.

9. Laboratory testing of selected samples for Atterberg limits, moisture contents, unconfined compression tests, minus 200 mesh sieves and unit weights. Sieve analyses and hydrometers will be run in cohesionless soils encountered within the pipe zone as necessary. Specialty lab testing including Brazilian Tensile Strength, Cerchar Abrasivity, and Slake Durability will be run on samples in the tunnel zone at the direction the tunnel engineer. Samples will be stored on site for a duration of approximately 2 years. Corrosion tests will also be run on selected samples and will collected by Holt and tested by an outside lab.

10. Geotechnical Data Reports (GDRs, preliminary and final) which will include a generalized boring location plan, logs of borings with geologic formations, laboratory test results, description of drilling operations and groundwater conditions. In house QA/QC reviews will be conducted during all phases of the work and on all our deliverables provided. A senior geotechnical engineer or principal engineer will conduct the review on each submittal.

11. Geotechnical Design Memorandum (GDM) which will include construction considerations and recommendations for backfill compaction, pipe bedding, etc. for the open cut portion of the line. Recommendations will also be provided for any structures and pavement thickness recommendations at open cut street crossings. In house QA/QC reviews will be conducted during all phases of the work and on all our deliverables provided. A senior geotechnical engineer or principal engineer will conduct the review on each submittal.

ASSUMPTIONS

The following assumptions were made in developing the scope and fee for this project:

- All right of entry will be obtained by others;
- Surveying of the boreholes will be done by others;
- All spoils from the job site will be left onsite and will not be containerized to dispose of offsite.

Attached is an itemized cost estimate based on the project scope outlined above. We are providing an itemized cost estimate for the initial scope including only 28 borings. The not-to-exceed cost for this work will be on the order of **$119,481.49**. We expect the costs provided in the individual items listed in the cost estimate may be moved between the various scope elements to accommodate the overall geotechnical services estimate.

We are also providing additional costs for three supplemental items as listed below:

- **Supplement #1**: 7 Additional borings to a depth of 45 feet to 60 feet each, including laying the holes out, locating utilities, drilling, logging, and sampling, lab testing, and any updates to the GDR. The not-to-exceed cost is **$27,652.07.**

- **Supplement #2**: 7 piezometers as a stand-alone effort. This includes laying the holes out, locating utilities, drilling the holes, and installing five temporary piezometers to depths of 20 feet to 60 feet each and two temporary piezometers to depths of 100 feet to 115 feet. Wells

will be completed with steel risers and locking caps. Water levels will be monitored on intervals of 24 hours, 48 hours, 7 days, 14 days, 30 days, 3 months, 6 months, 9 months, 12 months, and 24 months or until a static groundwater level has been measured. Plugging all wells in the future at the request of the Project Manager. Submitting State Well Reports and Plugging Reports and updating GDR – The not-to-exceed cost is **$35,828.82.**

- **Supplement #3**: At the direction of ARWA, barge rental and crane service for mobilization and demobilization shall be included to collect one soil boring no deeper than 100 feet to an approximate depth of 480 ft-msl. This will include an anchoring system to hold the barge in place, proper lighting of barge at night. Security will be provided for the barge when unoccupied by drilling crew, i.e. at night and 24-hour security over week-ends or holidays. Safety boat for drill crew during drilling to provide emergency shore access. Includes updates to the GDR - The not-to-exceed cost is **$60,569.76**.

We appreciate the opportunity to offer our services. If we can answer any questions concerning the above, please do not hesitate to call.

Sincerely,

Travis H. Bryant, P.E.
Project Engineer

Holt Engineering, Inc.
TBPE Firm Registration No. F-430

Enclosures:
Cost estimate for Base Estimate for 24 Borings
Cost Estimate for Supplement #1
Cost Estimate for Supplement #2
Cost Estimate for Supplement #3

Project Name: **Alliance Waterline Segment E**
Base Estimate for 24 Borings

Date: **Revised 2 March 2020; 1/16/2020**

GEOTECHNICAL ENGINEERING SERVICES IN GENERAL ACCORDANCE WITH ALLIANCE GEOTECHNICAL SCOPE

Rig Mobilization			No.												Total	Price Total
Caldwell County	$700.00	Ea.	2												2	$1,400.00
	SUBTOTAL															$1,400.00

Layout Borings/Locate Utilities, Etc.			Hrs.												Total	Price Total
EIT 1	$105.73	Hr.	33												33	$3,489.09
	SUBTOTAL															$3,489.09

Drilling, Logging and Sampling: 24 borings @ 15-60 Ft. Ea. - 745 LF; 2 borings @ 100 and 115 Ft. Ea. - 215 LF; (Total 960 L.F.)

			Unit												Total	Price Totals
Auger Drilling 0 - 25 Ft.	$22.50	Ft.	590												590	$13,275.00
Auger Drilling 25 - 45 Ft.	$25.00	Ft.	240												240	$6,000.00
Rock Coring 45 - 75 Ft.	$39.00	Ft.	65												65	$2,535.00
Rock Coring 75 - 100 Ft.	$45.00	Ft.	50												50	$2,250.00
Rock Coring 100 - 120 Ft.	$51.00	Ft.	15												15	$765.00
Plug Borings with Benotnite Chips	$5.00	Ft.	960												960	$4,800.00
TCP/Split Spoon/Shelby Tubes:	$25.50	Ea.	375												375	$9,562.50
Core Boxes	$25.00	Ea.	14												14	$350.00
Core Photos (EIT 1 Time)	$105.73	Hr.	16												16	$1,691.68
Water Truck (Used When Coring)	$255.00	Day	6												6	$1,530.00
Support Truck (When Rig is Left Onsite)	$148.00	Day	12												12	$1,776.00
Soil Resistivity (2 Man Crew/8 Hr Day)	$1,000.00	Day	2												2	$2,000.00
	SUBTOTAL		960												590	$46,535.18

Project Coordination:			No.												Total	Price Total
Principal Engineer	$355.33	Hr.	2												2	$710.66
Supervisory Engineer VI	$238.96	Hr.	25												25	$5,974.00
Professional Engineer II	$122.20	Hr.	32												32	$3,910.40
EIT 1	$105.73	Hr.	40												40	$4,229.20
	SUBTOTAL															$14,113.60

Project Name: **Alliance Waterline Segment E**

In-House Laboratory Testing:			No.												Total	Price Totals
Atterberg Limits	$80.00	Ea.	92												92	$7,360.00
Moisture Contents	$30.00	Ea.	92												92	$2,760.00
Minus 200 Mesh Sieve	$49.00	Ea.	92												92	$4,508.00
Particle Gradation Incl #200 Sieve	$82.00	Ea.	13												13	$1,066.00
Moisture Content + Dry Density	$46.00	Ea.	76												76	$3,496.00
Unconfined Compression Tests	$77.00	Ea.	76												76	$5,852.00
Specialty Clayshale/Rock Testing	$5,000.00	Ea.	1												1	$5,000.00
Sulfate/Sulfite Testing	$100.00	Ea.	18												18	$1,800.00
Eng Tech VI for Prep Specialty Samples	$113.75	Hr.	10												10	$1,137.50
Corrosion Tests	$125.00	Ea.	15												15	$1,875.00
	SUBTOTAL															$34,854.50

Engineering Data Report															Total	Price Total
Principal Engineer (QA/QC)	$355.33	Hr.	6												6	$2,131.98
Supervisory Engineer VI	$238.96	Hr.	20												20	$4,779.20
Professional Engineer II	$122.20	Hr.	30												30	$3,666.00
Adminstrative	$91.89	Hr.	24												24	$2,205.36
	SUBTOTAL															$12,782.54

Engineering Design Memorandums															Total	Price Total
Principal Engineer (QA/QC)	$355.33	Hr.	4												4	$1,421.32
Supervisory Engineer VI	$238.96	Hr.	12												12	$2,867.52
Professional Engineer II	$122.20	Hr.	12												12	$1,466.40
Adminstrative	$91.89	Hr.	6												6	$551.34
	SUBTOTAL															$6,306.58

TOTAL ESTIMATED COST **$119,481.49**

Project Name: **Alliance Waterline Segment E**
Supplement #1 - Drilling 7 Additional Bore Holes at 45 Ft. to 60 Ft. Each.

Date: **Revised: 2 March 2020; 1/16/2020**

GEOTECHNICAL ENGINEERING SERVICES IN GENERAL ACCORDANCE WITH ALLIANCE GEOTECHNICAL SCOPE

Rig Mobilization			No.												Total	Price Total
Caldwell County	$700.00	Ea.	1												1	$700.00
SUBTOTAL																$700.00

Layout Borings/Locate Utilities, Etc.			Hrs.												Total	Price Total
EIT 1 (2 Man Crew)	$105.73	Hr.	10												10	$1,057.30
SUBTOTAL																$1,057.30

Drilling, Logging and Sampling: 7 borings @ 45-60 Ft. Ea.-345 LF

			Unit												Total	Price Totals
Auger Drilling 0 - 25 Ft.	$22.50	Ft.	175												175	$3,937.50
Auger Drilling 25 - 45 Ft.	$25.00	Ft.	140												140	$3,500.00
Rock Coring 45 - 75 Ft.	$39.00	Ft.	30												30	$1,170.00
Rock Coring 75 - 100 Ft.	$45.00	Ft.													0	$0.00
Rock Coring 100 - 120 Ft.	$51.00	Ft.													0	$0.00
Plug Borings with Benotnite Chips	$5.00	Ft.	345												345	$1,725.00
TCP/Split Spoon/Shelby Tubes:	$25.50	Ea.	105												105	$2,677.50
Core Boxes	$25.00	Ea.	2												2	$50.00
Core Photos (EIT 1 Time)	$105.73	Hr.	7												7	$740.11
Water Truck (Used When Coring)	$255.00	Day	1												1	$255.00
Support Truck (When Rig is Left Onsite)	$148.00	Day	5												5	$740.00
Soil Resistivity (2 Man Crew/8 Hr Day)	$1,000.00	Day													0	$0.00
SUBTOTAL			345												175	$14,795.11

Project Coordination:			No.												Total	Price Total
Principal Engineer	$355.33	Hr.													0	$0.00
Supervisory Engineer VI	$238.96	Hr.													0	$0.00
Professional Engineer II	$122.20	Hr.	4												4	$488.80
EIT 1	$105.73	Hr.	4												4	$422.92
SUBTOTAL																$911.72

Project Name: **Alliance Waterline Segment E**

In-House Laboratory Testing:			No.												Total	Price Totals
Atterberg Limits	$80.00	Ea.	23												23	$1,840.00
Moisture Contents	$30.00	Ea.	23												23	$690.00
Minus 200 Mesh Sieve	$49.00	Ea.	23												23	$1,127.00
Particle Gradation Incl #200 Sieve	$82.00	Ea.	7												7	$574.00
Moisture Content + Dry Density	$46.00	Ea.	19												19	$874.00
Unconfined Compression Tests	$77.00	Ea.	19												19	$1,463.00
Specialty Clayshale/Rock Testing	$5,000.00	Ea.													0	$0.00
Sulfate/Sulfite Testing	$100.00	Ea.	7												7	$700.00
Eng Tech VI for Prep Specialty Samples	$113.75	Hr.													0	$0.00
Corrosion Tests	$125.00	Ea.	7												7	$875.00
	SUBTOTAL															$8,143.00

Engineering Data Report															Total	Price Total
Principal Engineer (QA/QC)	$355.33	Hr.	2												2	$710.66
Supervisory Engineer VI	$238.96	Hr.	2												2	$477.92
Professional Engineer II	$122.20	Hr.	4												4	$488.80
Adminstrative	$91.89	Hr.	4												4	$367.56
	SUBTOTAL															$2,044.94

TOTAL ESTIMATED COST **$27,652.07**

Project Name: **Alliance Waterline Segment E**
Supplement #2 - Installing 7 Piezometers

Date: 1/16/20

GEOTECHNICAL ENGINEERING SERVICES IN GENERAL ACCORDANCE WITH ALLIANCE GEOTECHNICAL SCOPE

Rig Mobilization			No.												Total	Price Total
Caldwell County	$700.00	Ea.	1												1	$700.00
SUBTOTAL																$700.00

Layout Borings/Locate Utilities, Etc.			Hrs.												Total	Price Total
EIT 1	$105.73	Hr.	16												16	$1,691.68
SUBTOTAL																$1,691.68

Installing 7 Piezometers @ 60 Ft. to 115 Ft.

Monitoring Wells (Materials, Installation, Monitoring, etc.)			No.												Total	Price Total
Piezometer to depths of 20 feet to 60 feet	$2,500.00	Ea.	5												5	$12,500.00
Piezometer to depths of 100 feet to 115 feet	$5,000.00	Ea.	2												2	$10,000.00
Monitoring of Groundwater (EIT I)	$105.73	Hr.	80												80	$8,458.40
SUBTOTAL																$30,958.40

Project Coordination:			No.												Total	Price Total
Principal Engineer	$355.33	Hr.	1												1	$355.33
Supervisory Engineer VI	$238.96	Hr.													0	$0.00
Professional Engineer II	$122.20	Hr.	4												4	$488.80
EIT 1	$105.73	Hr.	4												4	$422.92
SUBTOTAL																$911.72

Engineering Data Report															Total	Price Total
Principal Engineer (QA/QC)	$355.33	Hr.	2												2	$710.66
Supervisory Engineer VI	$238.96	Hr.													0	$0.00
Professional Engineer II	$122.20	Hr.	4												4	$488.80
Adminstrative	$91.89	Hr.	4												4	$367.56
SUBTOTAL																$1,567.02

TOTAL ESTIMATED COST **$35,828.82**

Project Name: **Alliance Waterline Segment E**
Supplement #3 Barge Boring (75 to 100 Ft.)

Date: **Revised: 1/16/2020**

GEOTECHNICAL ENGINEERING SERVICES IN GENERAL ACCORDANCE WITH ALLIANCE GEOTECHNICAL SCOPE

Rig Mobilization			No.												Total	Price Total
Caldwell County	$700.00	Ea.	1												1	$700.00
SUBTOTAL																$700.00

Layout Borings/Locate Utilities, Etc.			Hrs.												Total	Price Total
EIT 1	$105.73	Hr.	16												16	$1,691.68
SUBTOTAL																$1,691.68

Drilling, Logging and Sampling: 1 boring @ 100 Ft Ea. L.F.

			Unit												Total	Price Totals
HS Lake Drilling 0 - 25 Ft.	$35.50	Ft.	25												25	$887.50
HS Lake Drilling 25 - 45 Ft.	$35.00	Ft.	10												10	$350.00
Rock Coring 35 - 75 Ft.	$39.00	Ft.	40												40	$1,560.00
Rock Coring 75 - 100 Ft.	$45.00	Ft.	25												25	$1,125.00
Rock Coring 100 - 120 Ft.	$51.00	Ft.													0	$0.00
Plug Borings with Benotnite Chips	$5.00	Ft.													0	$0.00
TCP/Split Spoon/Shelby Tubes:	$25.50	Ea.													0	$0.00
Core Boxes	$25.00	Ea.	40												40	$1,000.00
Core Photos (EIT 1 Time)	$105.73	Hr.	3												3	$317.19
Water Truck (Used When Coring)	$255.00	Day													0	$0.00
Support Truck (When Rig is Left Onsite)	$148.00	Day	3												3	$444.00
Soil Resistivity (2 Man Crew/8 Hr Day)	$1,000.00	Day													0	$0.00
SUBTOTAL			100												25	$5,683.69

Barge Rental			No.												Total	Price Total
One week with set up	$40,000.00		1												1	$40,000.00
																$40,000.00

Project Name: **Alliance Waterline Segment E**

Project Coordination:			No.												Total	Price Total
Principal Engineer	$355.33	Hr.													0	$0.00
Supervisory Engineer VI	$238.96	Hr.	15												15	$3,584.40
Professional Engineer II	$122.20	Hr.	20												20	$2,444.00
EIT 1	$105.73	Hr.	15												15	$1,585.95
	SUBTOTAL															$7,614.35

In-House Laboratory Testing:			No.												Total	Price Totals
Atterberg Limits	$80.00	Ea.	2												2	$160.00
Moisture Contents	$30.00	Ea.	2												2	$60.00
Minus 200 Mesh Sieve	$49.00	Ea.	2												2	$98.00
Particle Gradation Incl #200 Sieve	$82.00	Ea.	2												2	$164.00
Moisture Content + Dry Density	$46.00	Ea.	4												4	$184.00
Unconfined Compression Tests	$77.00	Ea.	4												4	$308.00
Specialty Clayshale/Rock Testing	$500.00	Ea.	1												1	$500.00
Sulfate/Sulfite Testing	$100.00	Ea.													0	$0.00
Eng Tech VI for Prep Specialty Samples	$113.75	Hr.	4												4	$455.00
Corrosion Tests	$125.00	Ea.													0	$0.00
	SUBTOTAL															$1,929.00

Engineering Data Report															Total	Price Total
Principal Engineer (QA/QC)	$355.33	Hr.	2												2	$710.66
Supervisory Engineer VI	$238.96	Hr.	4												4	$955.84
Professional Engineer II	$122.20	Hr.	6												6	$733.20
Adminstrative	$91.89	Hr.	6												6	$551.34
	SUBTOTAL															$2,951.04

TOTAL ESTIMATED COST **$60,569.76**

Note: The charge for an additional boring from the barge will be on the order of $8,800.00 drilled during the week of the barge rental.

Attachment 3

Scope and Fee for The Rios Group

January 13, 2020

Eric Nelson, P.E.
Project Manager
Walker Partners
804 Las Cimas Pkwy., Suite 150
Austin, Texas 78746
W: 512.382.0021
enelson@walkerpartners.com

RE: Subsurface Utility Engineering
Alliance Regional Water Authority Phase 1B Segment E

Dear Mr. Nelson:

The Rios Group, Inc. (TRG) is pleased to submit a cost proposal for Subsurface Utility Engineering (SUE) for the above referenced project. This proposal is based on information provided via email and telephone correspondence the week of January 5, 2020.

Introduction

TRG will perform SUE services for this project in general accordance with the recommended practices and procedures described in ASCE publication CI/ASCE 38-02 "Standard Guidelines for the Collection and Depiction of Existing Subsurface Utility Data." As described in the publication, four levels have been established to describe and depict the quality of subsurface utility information. The four quality levels are as follows:

- Quality Level D (QL"D") – Information obtained from existing utility records.
- Quality Level C (QL"C") – Surveyed data depicting visible above-ground features supplemented with QL"D" information.
- Quality Level B (QL"B") – Two-dimensional horizontal information obtained through the application and interpretation of non-destructive surface geophysical methods. Also known as "designating," this level incorporates QL"C" information and provides horizontal positioning of subsurface utilities to within approximately 1.0 foot.
- Quality Level A (QL"A") – Three-dimensional horizontal and vertical information obtained through non-destructive vacuum excavation equipment to expose utilities at critical points. Also known as "locating," this level incorporates QL"B" information and provides horizontal and vertical positioning of subsurface utilities to within approximately 0.05 feet.

Scope of Work

Based on information provided by Walker Partners (Client), TRG has developed a proposed scope for SUE services on this project. This scope may be modified, with Client and TRG concurrence, during the performance of work if warranted by changing or unexpected field conditions.

The scope of this proposal includes QL“A” and QL“B” SUE services for the Alliance Regional Water Authority Phase 1B Segment E pipeline project Guadalupe County, Texas. The Base Scope of this proposal includes the SUE needs called out on the attached ‘SUE Levels A &B’ exhibit. Specifically, the Base Scope includes 430 linear feet of QL“B” SUE and thirteen (13) QL“A” SUE test holes.

The Supplemental Services of the proposal includes an additional 500 linear-feet of QL“B” SUE and five (5) QL“A” SUE test holes at locations that will be provided by the Client.

The survey of SUE field markings is not included for either the Base Scope or Supplemental Services. It is assumed that the Client will provide TRG with survey data for use in preparing the final deliverables.

Any necessary Right-Of-Entry (ROE) permits, including railroad ROE, will be provided by the Client prior to the start of field work.

TRG Procedures

QL“D” and “C” – Records Research and Surface Feature Survey

It is the responsibility of the SUE provider to perform due-diligence with regard to records research and the acquisition of available utility records. The due-diligence provided for this project will consist of contacting the applicable One Call agency and associated utility owners/municipalities, visually inspecting the work area for evidence of utilities, and reviewing available utility record information. Additional utilities not identified through these efforts will be referred to as Unknown utilities.

QL“B” – Designating

Following a review of the project scope and available utility records with the project manager, TRG field personnel will begin designating the approximate horizontal position of known subsurface utilities within the project area. A suite of geophysical equipment that includes magnetic and electromagnetic induction will be used to designate conductive utilities. Where access is available, a sonde will be inserted into non-conductive utilities to provide a medium for transmission which can then be designated using geophysical equipment. Non-conductive utilities can also be designated using other proven methods, such as rodding and probing. TRG will make a reasonable attempt to designate Unknown utilities identified during field work; however, no guarantee is made that all Unknown utilities will be designated. Utilities will be marked and labeled to distinguish type and ownership. Field data depicting the designated utilities, as well as relevant surface features, will be produced to ensure accuracy and completeness of subsequent survey data. The TRG project manager will review the collected survey data, field data, and utility records for accuracy and completeness.

QL“A” – Locating

TRG will utilize non-destructive vacuum excavation equipment to excavate test holes at the requested locations. To layout the test holes, TRG will follow the *QL“B” – Designating* procedures described above. Once each utility is located, TRG will record the size, type,

material, and depth. Test holes will be uniquely marked. Excavations will be backfilled by mechanical means with the appropriate material, and the original surface will be restored. If necessary, TRG can core pavement up to a depth of 12 inches. Asphalt surfaces will be repaired with an asphalt cold patch, and concrete cores will be epoxied in place, flush with the surrounding surface. TRG assumes that flowable fill will not be required when backfilling test holes and that full-section pavement repair (including sidewalks) will not be required to restore the original pavement surface. If requested, these services can be provided at an additional cost.

TRG will establish any necessary routine traffic control measures at no additional cost. However, if non-routine traffic control measures (lane closures, traffic detours, flagpersons, etc.) are required, this service will be invoiced as a direct expense. Due to the risk of damage, TRG will not attempt to probe or excavate test holes on AC water lines unless approval is obtained from the owner in advance. Additionally, excavation in rock, or to a depth greater than 18 feet, is considered beyond the scope of this proposal.

TRG has made the following assumptions with regard to the test holes on this project:

- All test holes will be accessible to truck-mounted vacuum excavation equipment.
- Right-Of-Way (ROW) permits from Guadalupe County will be required. TRG will obtain all required County permits and ensure that coordination and compliance with the County is provided.
- Designed traffic control plans will not be required.
- Non-routine traffic control measures will be required. TRG will acquire the services of a qualified Maintenance-Of-Traffic (MOT) Subcontractor, and ensure that adequate traffic control is provided.
- The coring of pavement will not be required.

Deliverables

TRG will provide the following as a final deliverable to the Client:

- A utility file in CAD format depicting all designated and located utilities. The Client will provide TRG with any necessary background files for use in completing the final deliverables.
- A summary sheet of all test hole coordinate data and depth information.
- 8.5” x 11” Test Hole Data Forms for all test hole locations completed. These plans will be signed and sealed by a Professional Engineer and delivered to the Client in electronic PDF form.
- 11” x 17” SUE Plan Sheets depicting all designated and located utilities. These plans will be signed and sealed by a Professional Engineer and delivered to the Client in electronic PDF form.

Schedule

TRG can mobilize within three (3) weeks of receiving Notice-To-Proceed (NTP). TRG estimates that the SUE work for the Base Scope can be completed in twenty-two (22) working days, broken down as follows:

- QL“B” SUE field work – 3 days
- QL“A” SUE field work – 9 days
- Deliverable preparation – 10 days (following receipt of survey data)

TRG estimates that the SUE work for the Supplemental Services can be completed in twelve (12) working days, broken down as follows:

- QL“B” SUE field work – 2 days
- QL“A” SUE field work – 3 days
- Deliverable preparation – 7 days (following receipt of survey data)

Estimated Fee

The total estimated cost to complete the work described herein for the Base Scope is **Thirty Thousand Five Hundred Eighty Dollars and NO/100 ($30,580.00)**. An itemized breakdown of cost is provided in Exhibit A-1.

The total estimated cost to complete the work described herein for the Supplemental Services is **Fifteen Thousand Three Hundred Eighty Dollars and NO/100 ($15,380.00)**. An itemized breakdown of cost is provided in Exhibit A-2.

Please note that these pricings are based on an assumption of quantities, and that only actual quantities will be invoiced – up to the total Contract amount.

We look forward to working with you on this project. If there are any questions, please do not hesitate to call at 512.580.5440.

Respectfully,

The Rios Group, Inc.

Ryan C. Chapin, P.E.
Project Manager

Prime Provider: Walker Partners
Subprovider: The Rios Group, Inc.
ARWA Phase 1B Segment E

EXHIBIT A-1 - Base Scope
FEE SCHEDULE SUMMARY
Method of Payment: Specified Rate and Unit Cost

	Description of Work Task	Total
	SUE Office Effort	$ 5,280.00
	SUE Field Effort	$ 22,900.00
	Other Direct Expenses	$ 2,400.00
	Total Fee	$30,580.00

Total Fee **$30,580.00**

Prime Provider Walker Partners

Subprovider The Rios Group, Inc.

Alliance Regional Water Authority

Phase 1B Segment E

Exhibit A-1 - Base Scope

	BASIS SERVICES	$ 220.00	$ 180.00	$ 120.00	$ 90.00	$ 70.00					
	Task Descriptions	Project Manager	Project Engineer	Engineer In Tranining	CADD Operator	Admin		Total Hours	Total Cost	Total Sheets or # of Items	Hours per Sheet or item
	Project Management	2	10	8	20	4		44	$ 5,280.00		
	Totals	**2**	**10**	**8**	**20**	**4**	**0**	**44**	**$ 5,280.00**	**0**	

Prime Provider: Walker Partners
Subprovider: The Rios Group, Inc.
Alliance Regional Water Authority Phase 1B Segment E

Exhibit A-1 - Base Scope

Specified Rate Classification	Unit	Specified Contract Rate	Quantity	Total Cost
SUE (Quality Level C and D)				
This unit price includes personnel and equipment for records research, CADD, and mapping. Price per linear foot (including all related services)	LF	0.60	0.00	$ -
SUE (Quality Level B - Utility Designating)				
This unit price includes personnel and equipment for records research, designating, engineering, surveying, CADD, mapping and limited traffic control. Price per linear foot (including all related services)	LF	1.55	0.00	$ -
SUE (Quality Level A - Utility Locate, Test Holes) Includes labor and equipment for vacuum excavation, engineering, surveying, and CADD.				
Price per Test Hole:				
Level A: 0 to 5 ft.	EA	$ 1,100.00	5.00	$ 5,500.00
Level A: > 5 to 10 ft.	EA	$ 1,350.00	5.00	$ 6,750.00
Level A: > 10 to 15 ft.	EA	$ 1,750.00	3.00	$ 5,250.00
Level A: > 15 to 20 ft.	EA	$ 2,300.00	0.00	$ -
Level A: > 20 ft.	VF	$ 160.00	0.00	$ -
SUE Mobilization/Demobilization	mile	$ 5.00	0.00	$ -
SUE Field Services One (1) Designating Person with Equipment	Hour	$ 135.00	20.00	$ 2,700.00
SUE Field Services Two (2) Designating Person with Equipment	Hour	$ 180.00	15.00	$ 2,700.00
			TOTAL	$ 22,900.00

The unit costs shown include labor, overhead, and profit. Payment based on units completed. No partial payments.

All unit costs are negotiated costs and are not subject to change or adjustment.

Unit Cost Payment Basis: If unit costs by year are included, unit costs billed should correspond to the fiscal or calendar year, if applicable, in which the work was done.

Note: Any direct labor, unit cost, or other direct expense classification included in the contract, but not in a work authorization, is not eligible for payment under that work authorization.

Prime Provider: Walker Partners
Subprovider: The Rios Group, Inc.
Alliance Regional Water Authority Phase 1B Segment E

Exhibit A-1
Base Scope

OTHER DIRECT EXPENSE	UNIT	UNIT COST	QUANTITY	COST
Lodging/Hotel (Taxes/fees not included)	day/person	$ 141.00	0	$ -
Lodging/Hotel - Taxes and Fees	day/person	$ 30.00	0	$ -
Meals (Excluding alcohol & tips) (Overnight stay required)	day/person	$ 59.00	0	$ -
Mileage	mile	$ 0.535	0	$ -
Traffic Control	day	$ 1,200.00	2	$ 2,400.00
			Subtotal Other Direct Expense:	**$ 2,400.00**

Profit not allowed on Other Direct Expenses.

Prime Provider: Walker Partners
Subprovider: The Rios Group, Inc.
ARWA Phase 1B Segment E

EXHIBIT A-2 - Supplemental Services
FEE SCHEDULE SUMMARY
Method of Payment: Specified Rate and Unit Cost

	Description of Work Task	Total
	SUE Office Effort	$ 2,580.00
	SUE Field Effort	$ 11,600.00
	Other Direct Expenses	$ 1,200.00
	Total Fee	$15,380.00

Total Fee **$15,380.00**

Prime Provider Walker Partners

Subprovider The Rios Group, Inc.

Alliance Regional Water Authority

Phase 1B Segment E

Exhibit A-2 - Supplemental Services

	BASIS SERVICES	$ 220.00	$ 180.00	$ 120.00	$ 90.00	$ 70.00					
	Task Descriptions	Project Manager	Project Engineer	Engineer In Tranining	CADD Operator	Admin		Total Hours	Total Cost	Total Sheets or # of Items	Hours per Sheet or item
	Project Management	1	5	5	8	2		21	$ 2,580.00		
	Totals	**1**	**5**	**5**	**8**	**2**	**0**	**21**	**$ 2,580.00**	**0**	

Prime Provider: Walker Partners
Subprovider: The Rios Group, Inc.
Alliance Regional Water Authority Phase 1B Segment E

Exhibit A-2 - Supplemental Services

Specified Rate Classification	Unit	Specified Contract Rate	Quantity	Total Cost
SUE (Quality Level C and D)				
This unit price includes personnel and equipment for records research, CADD, and mapping. Price per linear foot (including all related services)	LF	0.60	0.00	$ -
SUE (Quality Level B - Utility Designating)				
This unit price includes personnel and equipment for records research, designating, engineering, surveying, CADD, mapping and limited traffic control. Price per linear foot (including all related services)	LF	1.55	0.00	$ -
SUE (Quality Level A - Utility Locate, Test Holes) Includes labor and equipment for vacuum excavation, engineering, surveying, and CADD.				
Price per Test Hole:				
Level A: 0 to 5 ft.	EA	$ 1,100.00	2.00	$ 2,200.00
Level A: > 5 to 10 ft.	EA	$ 1,350.00	2.00	$ 2,700.00
Level A: > 10 to 15 ft.	EA	$ 1,750.00	1.00	$ 1,750.00
Level A: > 15 to 20 ft.	EA	$ 2,300.00	0.00	$ -
Level A: > 20 ft.	VF	$ 160.00	0.00	$ -
SUE Mobilization/Demobilization	mile	$ 5.00	0.00	$ -
SUE Field Services One (1) Designating Person with Equipment	Hour	$ 135.00	10.00	$ 1,350.00
SUE Field Services Two (2) Designating Person with Equipment	Hour	$ 180.00	20.00	$ 3,600.00
			TOTAL	$ 11,600.00

The unit costs shown include labor, overhead, and profit. Payment based on units completed. No partial payments.

All unit costs are negotiated costs and are not subject to change or adjustment.

Unit Cost Payment Basis: If unit costs by year are included, unit costs billed should correspond to the fiscal or calendar year, if applicable, in which the work was done.

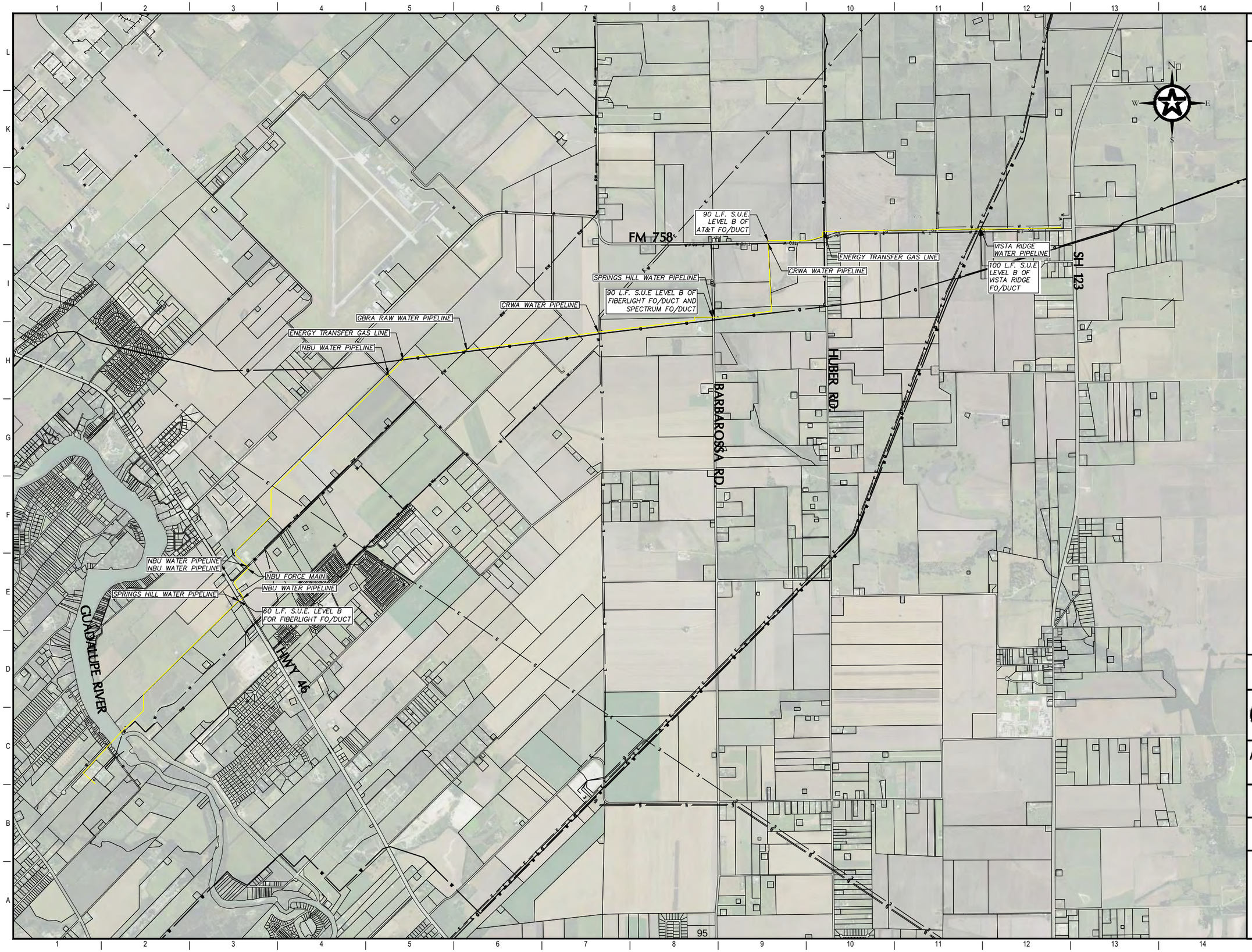
Note: Any direct labor, unit cost, or other direct expense classification included in the contract, but not in a work authorization, is not eligible for payment under that work authorization.

Prime Provider: Walker Partners
Subprovider: The Rios Group, Inc.
Alliance Regional Water Authority Phase 1B Segment E

Exhibit A-2
Supplemental Services

OTHER DIRECT EXPENSE	UNIT	UNIT COST	QUANTITY	COST
Lodging/Hotel (Taxes/fees not included)	day/person	$ 141.00	0	$ -
Lodging/Hotel - Taxes and Fees	day/person	$ 30.00	0	$ -
Meals (Excluding alcohol & tips) (Overnight stay required)	day/person	$ 59.00	0	$ -
Mileage	mile	$ 0.535	0	$ -
Traffic Control	day	$ 1,200.00	1	$ 1,200.00
			Subtotal Other Direct Expense:	**$ 1,200.00**

Profit not allowed on Other Direct Expenses.



KEY MAP

PROPOSED ROUTE

0 750 1500 3000

GRAPHIC SCALE (FEET)

Walker Partners
engineers ★ surveyors
T.B.P.E. Registration No. 8053

ALLIANCE REGIONAL WATER AUTHORITY

ARWA PIPELINE PHASE 1B SEGMENT E

SUE LEVELS A & B

THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF PROFESSIONAL ENGINEER ERIC LEE NELSON #114449 ON THE DATE SHOWN ON THE DATE STAMP. IT IS NOT TO BE USED FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES.

PM	JWJ
DESIGNED	ELN
DRAFTED	HAF
CHECKED	GCG
PROJECT NO.	3-00666

EXHIBIT

A

G:\PROJECTS\3-00666\2 DESIGN\2.0 CAD\EXHIBITS\SUE A & B\SUE_AB.DWG, SUE LEVELS A&B, 1/9/2020 11:00:01 AM, hfinley

Attachment 4

Scope and Fee for Elk Engineering

ELK ENGINEERING ASSOCIATES, INC.
8950 Forum Way, Fort Worth, Texas 76140
817.568.8585 ♦ FAX 817.568.8590
TOLL FREE 1.800.442.5641
Specializing in Corrosion Control and Cathodic Protection Services

27 February 2020

Attn: Eric L. Nelson
Walker Partners
804 Las Cimas Pkwy., Suite 150
Austin, Texas 78746

Via Email: enelson@walkerpartners.com

Re: ELK Proposal Number 19-1203 & 19-1203.01 Rev. 2
ARWA1BSE Corrosion Investigation and Design Support

Gentlemen,

ELK Engineering Associates, Inc. (ELK) is a self-certified, veteran owned small business and is not an MW/DBE firm. ELK is pleased to present our proposal for cathodic protection materials, limited construction support, and final acceptance testing to your firm on the above referenced project. Our Fee and Scope of Work are shown below.

Describe Bid Item	**Qty**	**Cost**
ARWA1BSE Corrosion Investigation and Design Support		
Subsurface Investigation/Testing	1 LS	$15,000.00
60%	1 LS	$15,000.00
90%	1 LS	$2,500.00
100%	1 LS	$2,500.00
Induced AC Study	NTE	$48,530.00

- Terms – Net 30, FOB Destination

1. Acceptance of this proposal acknowledges all the terms and qualifications stated herein and shall take precedence over Contract Specifications, Contractor Purchase Orders, or Contracts, and as such ELK shall be paid according to invoicing terms and conditions within this proposal.
2. All invoicing that exceeds **45 days** shall result in a **10%** per month interest penalty.
3. Unpaid invoices will result in delayed Testing or other Services.
4. This proposal shall be incorporated into any document authorizing the work described below.

II Work Product

1. Upon receipt of fully executed document(s) issued by Walker Partners, ELK will commence work on the project. Said documents, regardless of nomenclature (i.e., Notice -To-Proceed, Purchase Order No., Work Order No., Task Agreement No., AFE, etc.) shall bind Walker Partners to compensate ELK for all work product including but not limited to materials of construction, engineering fee's, travel, wages, burden, benefits, G&A, OH, and other related expenses.
   a. No work product of any type shall be provided by ELK without prior authorization by Walker Partners to proceed with such work.
   b. Authorization to provide work product shall include all methods of invoicing including Accounts Payable mailing address and an applicable number or charge code against which work product shall be billed.
2. Upon receipt of any request for payment, bill, or invoice prepared by ELK, the accounts payable department for Walker Partners shall take such steps as required to insure prompt and accurate payment to ELK. All of Walker Partners PO numbers shall be referenced on all ELK Invoices.
   a. Walker Partners shall pay all undisputed portions of ELK's monthly invoice within 45 business days of the date first written on said invoice. Interest will accrue at a rate of 10% per month on any unpaid invoices.
3. All documents issued to authorize this project shall include the ELK proposal number and a tax exemption certificate for our records.
   a. All sales taxes are excluded from this proposal.
   b. If sales tax is applicable, the tax will be in addition to the amounts shown above.

III Scope of Work

1. The scope of work is based upon the google earth map (kmz.), information and e-mail conversations provided to ELK Engineering.
2. All work shall be under the direction of "Corrosion Expert" that is a Texas PE with NACE International accreditation as a Corrosion and Cathodic Protection Specialist.
3. Upon completion of all testing, a 60% report containing our tabulated field data will be prepared and submitted stating our findings, conclusions, recommendations, cathodic protection drawings and specifications.
4. A 90% submittal will be provided by ELK containing report, cathodic protection drawings, details and specifications.
5. A 100% submittal will be provided by ELK along with a signed and sealed report for construction drawings and specifications.
6.

7. The scope of work is based on (2) trips to gather all soil information from the site. (1) one week for the cathodic protection and (1) one week for the Induced AC study.
8. All work shall be under the direction of "Corrosion Expert" that is a Texas PE with NACE International accreditation as a Corrosion and Cathodic Protection Specialist

IV Testing Services

1. Testing shall include: Approximately (24) Twenty Four tests using the Wenner 4-pin test method in accordance with ASTM G57-06 "Standard Test method for Field Measurement of Soil Resistivity Using the Wenner Four-Electrode Method" in conjunction with a prefabricated cable set and an AC ratio ohmmeter to measure SR to depths of typically 2.5, 5, 10, 15, and 20 feet.
2. In-situ (Surface) pH will be measured at each soil resistivity location using an approved method. ELK proposes to use an antimony reference electrode, copper/copper sulphate reference electrode (CSE), and a high impedance voltmeter such as a Fluke 87. The reference electrodes will be placed side by side in contact with the soil approximately one-foot below grade. The voltage drop between the two references will be read and converted to pH using the chart provided on the antimony electrode.
3. The AC stray current interference investigation shall Include identification of any overhead electric transmission facilities within 2,000 feet of the project alignment which have a circuit loading of 69kV or higher. The limits of collocation with the project pipeline shall be identified by stationing.
4. Photos including the electric tower construction with wire phase arrangement should be provided. The overhead electric facility owner/operator shall be identified.
5. The DC stray current interference investigation shall include a comprehensive review and identification of existing metallic foreign pipelines or structures that cross the project pipeline or are within 1,000 feet of the project alignment easement.
6. The location of existing foreign pipeline rectifiers and deep anode wells shall be noted. At a minimum, the Texas Railroad Commission Public Viewer Map shall be used in addition to a site alignment walk to identify all pipelines/structures. Each potential DC interference source shall be identified by owner, project location stationing, and description of the pipeline/structure.
7. Pipe to soil potential testing of available existing structures identified during the alignment investigation shall be performed.
8. Upon completion of all testing, a report containing our tabulated field data will be prepared and submitted stating our findings, conclusions, recommendations, and acceptance of work if warranted.

V Conditions

1. Invoicing – Net 30, FOB Destination
   a. All invoicing that exceeds **45 days** shall result in a **10%** per month interest penalty.
   b. Unpaid invoices will result in delayed Testing or other services.
2. This quotation is firm for sixty (60) days from the date first written above. After that date, ELK reserves the right to revise this quotation.
3. Any purchase order issued for this project shall include the ELK proposal number, a tax exemption certificate, and copies of payment bonds for our records. If sales tax is applicable, the tax will be in addition to the amount shown above.
4. All invoicing shall be monthly and shall be billed in accordance with the Agreement Documents or Purchase Order unless stated elsewhere in this proposal.
5. This quotation is based upon the following insurance limits. Insurance limits greater than or different from these limits shall be either waived, carried under the contractor's insurance, or shall be billed in addition to this quotation.: CGL = $2MM, Auto Combined Single Limit = $1MM, Professional Liability = $2MM, Pollution Liability = $2MM, Excess Umbrella Liability Aggregate = $4MM, WC = $1MM. Any other insurance form other than a standard ACORD form may result in changes to the contract amount.
6. Retention may not be withheld from any ELK invoices.

VI Qualifications and Exclusions

1. This proposal is based upon the google earth map (kmz.), information and e-mail conversations provided to ELK Engineering. All bid, performance, and payment bonds are specifically excluded from this proposal.
2. All as-built drawings are excluded from this proposal.
3. ELK excludes all on-site construction meetings from this proposal.
   a. If requested ELK will attend construction meetings via teleconference set up by the general contractor.
4. All invoicing by ELK shall be monthly based upon a percentage completion for Tests.
5. Walker Partner **must** guarantee Right of Way (ROW) access along with providing an escort with knowledge and lay schedule of said ROW.
6. Walker Partner **must** notify all landowners informing them that ELK will be conducting testing 1 week prior to ELK entering the ROW.
7. Collection of soil sample from approximate pipeline depth every 4,000 feet are excluded from this scope of work. Walker Partners Geotech company shall collect the soil samples and send to ELK engineering for testing.

Walker Partners acceptance of this proposal acknowledges all the terms and qualifications stated above and shall take precedence over Contract Specifications, Contractor Purchase Orders, or other Contracts.

When a provision of this Proposal is inconsistent with the Prime Contract, Purchase Order, or Agreement, the provisions of this Proposal shall prevail.

We appreciate the opportunity to submit a proposal for this project and look forward to a favorable response.

Sincerely,

Taylor Leon
President/CEO

File: Z:\BIDS\BIDS\FY 2019 BIDS\1912 BIDS\19-1203 WALKER PARTNERS\WALKER PARTNERS 19-1203 & 1203.01 PROPOSAL LETTER REV.1.DOC

Attachment 5

Scope and Fee for DAS Geospatial

January 14, 2020

Mr. Eric L. Nelson, P.E.
Walker Partners
804 Las Cimas Pkwy., Suite 150
Austin, Texas 78746

RE: Aerial Survey of the ARWA Pipeline - Segment E in Guadalupe County, Texas

Dear Mr. Nelson:

DAS is pleased to submit this Proposed Scope of Work for providing aerial survey services. The location and area to be mapped is as outlined on the map you provided on December 4, 2019 with a 200-foot buffer (400-foot wide corridor). Please see Appendix A.

Aerial Imagery
New color aerial imagery will be taken with a digital camera. This digital aerial camera has a current calibration report. DAS shall determine a flight plan that will show the number, spacing and length of flight lines over the project area and the spacing of the photographs along the flight lines. We will fly at an altitude sufficient to acquire imagery at 5cm GSD to support National Map Accuracy Standards for 1"=50' planimetric mapping and one (1)-foot contours.

LiDAR Data Collection
LiDAR will be flown with the Riegl VUX-1 LR Sensor. In areas covered by trees, DAS will collect points through the tree canopy, however, areas of heavy vegetation and especially dense underbrush may cause the accuracy of these obscured areas to diminish, and in some instances may leave void areas. It is recommended in these areas that field survey crews provide supplemental on-the-ground survey shots along with a report of the conditions. The LiDAR will support the generation of one (1)-foot contours. DAS will collect at 30 ppsm (points per square meter).

Airborne GPS/IMU
Airborne GPS (ABGPS) will be collected during the flight. This reduces the number of GPS points required in the field. Camera drift inputs to the mount are sent via the Flight Management System in conjunction with accurate measurements supplied by the Airborne Global Positioning System Applanix POS-AV with IMU. The ABGPS/IMU components are used to record accurate rotations and accelerations which are applied to the imagery during post processing. The stabilized mount, working with the IMU, allows for the acquisition of NADIR imagery.

Survey Services
Walker Partners will provide all ground control surveys that are necessary to determine the elevation and horizontal position of all control points required. Horizontal and vertical control shall be established by either conventional or GPS. Control shall comply with National Map Accuracy Standards. Upon completion of ground control responsibilities, please furnish DAS with a diagram of control locations, along with a list of coordinates in ASCII format, as follows: Pt# X Y Z. DAS will require a total of forty (40) control points. Additionally, DAS will require twenty-two (22) ground truthing points to QC the LIDAR data and digital terrain model.

Analytical Aerotriangulation
Prior to the photogrammetric map compilation, it will be necessary to expand the network of control points obtained in the field. This will be accomplished through an aerotriangulation adjustment of the aerial imagery. This will provide sufficient supplemental control for setting individual stereo-models in our softcopy photogrammetric workstations.

Map Compilation
Planimetric features to be shown will include all visible features such as roads, bridges, houses, buildings, creeks, rivers, lakes, ponds, railroads, transmission lines, power poles, fences, and group tree outlines.

RE: Aerial Survey of the ARWA Pipeline - Segment E in Guadalupe County, Texas

Contours
A digital terrain model (DTM) will be provided in 3D, consisting of LiDAR bare earth ground points and break lines. Contours will be generated from the resulting surfaces and intervals will be shown as solid lines with index contours indicated by a heavier line weight and labeled. In obscured areas contours shall be shown as dashed lines. Contours will be provided at one (1)-foot intervals.

Digital Orthophotography
The photographic images will be ortho-rectified to produce digital imagery. Each image will be processed using the generated DTM. The result will be a corrected photographic image. The Imagery will be produced at **three (3)-inch (0.25')** ground resolution.

Deliverables
- 1"=50' Scale 2D planimetric mapping in an AutoCAD DWG format.
- One (1)-foot contour data in an AutoCAD DWG format.
- 3D DTM data in an AutoCAD DWG format.
- 0.25-foot ground resolution digital orthophotography in ECW format or JP2 format.
- LiDAR bare earth data in .las format.

Schedule
DAS anticipates the aerial data acquisition to be collected within two (2) to three (3) weeks of the aerial panels being set. However, this is dependent on the weather conditions.

Production time will require approximately six (6) weeks following receipt of imagery and acceptable ground control. If your schedule requires a more expedited delivery, please call to discuss.

Lump Sum Fee $36,000

DAS, Inc. shall invoice 25% of the Lump Sum Fee upon completion of the flight/s.

The remaining amount shall be invoiced upon delivery. Our terms for payment are Net 30 days. Please make arrangements to invoice your client for this portion of the job upon receipt of products from DAS. If your firm decides to seek bankruptcy relief, is purchased by another individual or firm, or ceases operation for any reason, said client is still responsible for balance owed for this contract.

We appreciate the opportunity to present this proposal. If you have any questions, please do not hesitate to give us a call. If all items and terms are acceptable, please sign below and fax to us, which will serve as our authorization to proceed. We look forward to working with you on this project.

Sincerely,

Kim Johnson

Kim Johnson
President
DAS, Inc.

KJ/cs

_____
Authorized Signature

_____
Type/Print Name

_____
Title Date

HUB
Certified WBENC Women's Business Enterprise

RE: Aerial Survey of the ARWA Pipeline - Segment E in Guadalupe County, Texas

Appendix A

Mapping Limits

Blue Polygon = Mapping Limits (427.18-acres)

Attachment 6

Scope and Fee for Davey

The Davey Tree Expert Company
9224 Research Blvd
Austin, TX 78758-6802
Phone: (512) 451-4986 Fax: (512) 451-6482
Email: Heath.Gober@davey.com

Client	Service Location	1/10/2020
Eric Nelson 804 Las Cimas Pkwy Ste 150 Austin, TX 78746-5972	New Braunfels/hwy 46 Project Attn: Eric Nelson 2049 S TX-46 New Braunfels, TX 78130	Proposal #: 20054587-1578677807 Account #: Work: (512) 382-0021 Mobile: (512) 221-9048

	Tree Care	Service Period	Price	Tax	Total
☐	Land Clearing		$6,000.00		$6,000.00

CONSULTING

-4 day budgetary allowance to inspect designated trees and confirm species, provide summary report, and excel spreadsheet.

-CG will be responsible for coordinating with land owners to access all designated areas.

-Work will be billed at an hourly rate of $150/hr (port to port)

*This would allow for 2 full days of field work and 2 full days of office work, supplemental reports, interfacing with municipalities, etc. *

Sales tax will be added per local jurisdiction unless tax exempt form is on file.

☐ Yes, please schedule the services marked above.

No Deposit may be required upon acceptance

$ _____ Deposit Required / $ _____ Deposit Received

Upon completion of work, please charge balance to credit card ____Yes ____No

Deposit payment options we accept are check or credit card

To pay by check mail to

The Davey Tree Expert Company
9224 Research Blvd
Austin, TX 78758-6802

To pay by credit card call

(512) 451-4986

ACCEPTANCE OF PROPOSAL: The above prices and conditions are hereby accepted. You are authorized to do this work as specified. I am familiar with and agree to the terms and conditions appended to this form. All deletions have been noted. I understand that once accepted, this proposal constitutes a binding contract. This proposal may be withdrawn if not accepted within 30 days.

Heath Gober

Heath Gober
ISA Certified Arborist TX-4310A

Authorizing Signature

Date

REGULAR MEETING
Alliance Regional Water Authority Technical Committee

COMMITTEE MEMBER PACKETS
Wednesday, March 11th, 2020 at 3:00 P.M.
520 E. RR 150, Kyle, TX 78640

F.4 Discussion and possible direction to Staff regarding the preliminary Commissioning Plan for the Phase 1B projects. ~ *Ryan Sowa, P.E., Kimley-Horn & Associates*

Background/Information

The Authority previously discussed with the Technical Committee the need to identify the source of water to be utilized for commissioning of all facilities. Kimley-Horn has prepared the attached presentation to discuss commissioning standards, possible source water and the likely phasing required to commission all of the Phase 1B facilities.

Next Step(s)

- Enter into an interlocal agreement with the City of San Marcos for use of San Marcos WTP water for commissioning purposes.

Attachment(s)

- Commissioning Feasibility Study Presentation – March 11, 2020

Technical Committee Decision Needed:

- Possible direction to Staff.

Phase 1B Program Update

Commissioning Feasibility Study
March 11, 2020

ALLIANCE WATER

Kimley»Horn

1

Agenda

- Commissioning Requirements
- Source Water
- Commissioning Phases

ALLIANCE WATER

Kimley»Horn

2

Commissioning

- Disinfection Procedure Standards:
  - ANSI/AWWA C651-14 Disinfecting Water Mains
  - ANSI/AWWA C653-13 Disinfection of Water Treatment Plants
  - ANSI/AWWA C652-11 Disinfection of Water-Storage Facilities
- Primary Source Water
  - City of San Marcos Water Treatment Plant
    - Located at 91 Old Bastrop Rd, San Marcos, Texas
- Alternate Source Water
  - ARWA Water Treatment Plant and Well Field
    - Requires construction and commissioning of facility prior to commissioning water being available for the remainder of the system.

ALLIANCE WATER

Kimley»Horn

3

Commissioning

- Forms of Chlorine Disinfection
  - Liquid Chlorine (gas)
  - Sodium Hypochlorite solution (liquid)
  - Calcium Hypochlorite (granules or tablets)
- Basic Commission Procedure
  - Remove debris and Inspection (greater than 24-inch)
  - Flush main (24-inch and smaller)
  - Hydrostatic Pressure testing
  - Chlorinating and Bacteriological Testing
  - Flush chlorinated water
  - Connection to system

ALLIANCE WATER

Kimley»Horn

4

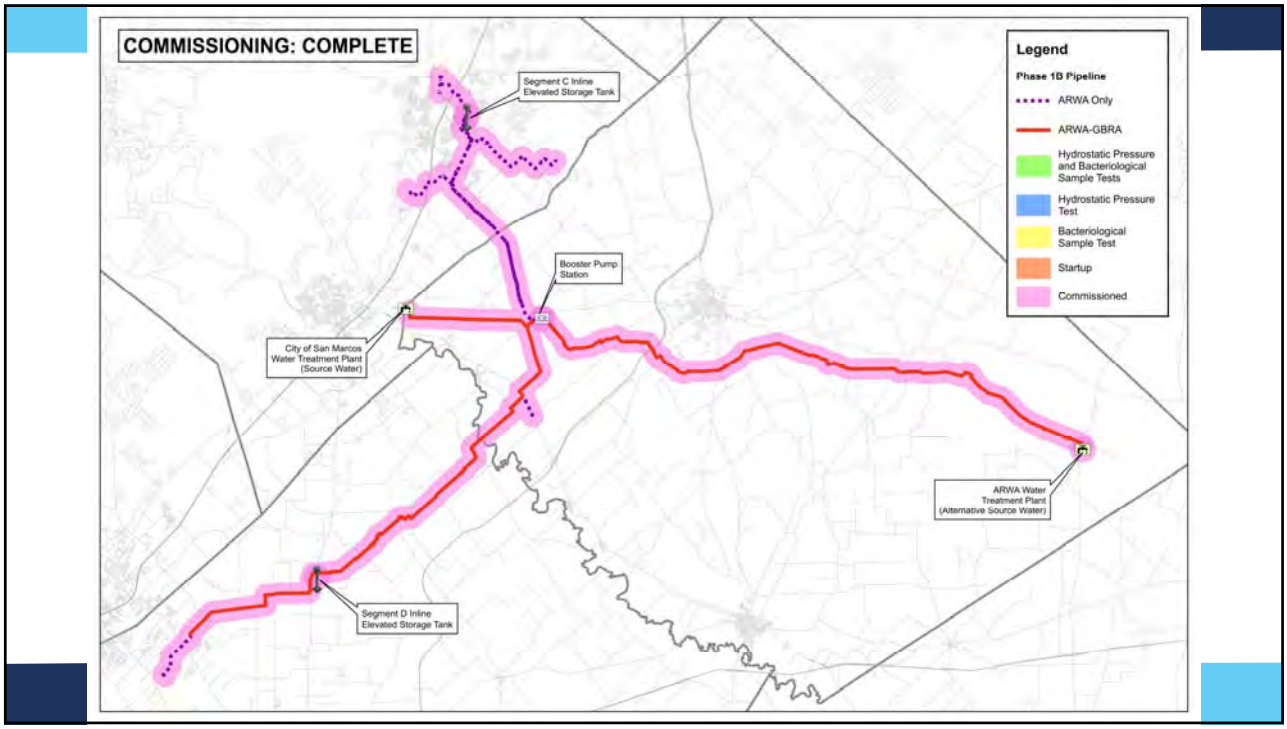
Source Water

City of San Marcos Water Treatment Plant (WTP)

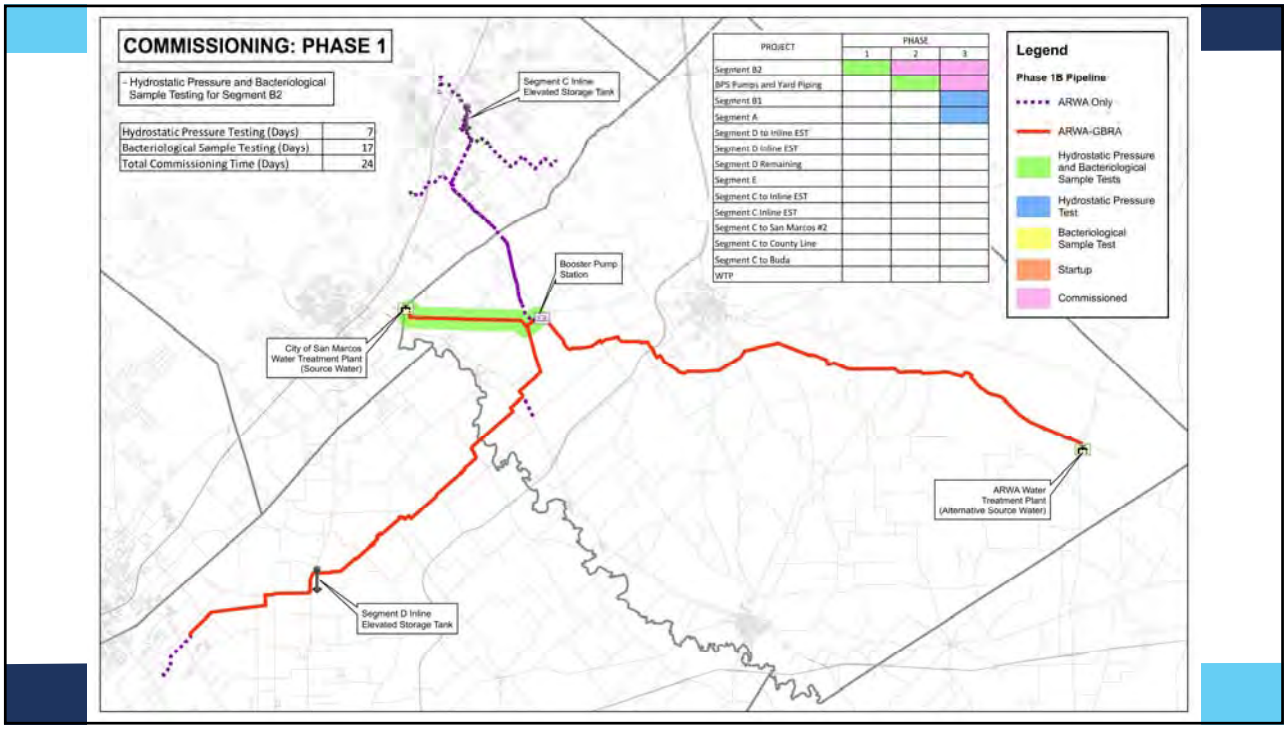
ALLIANCE WATER

Kimley»Horn

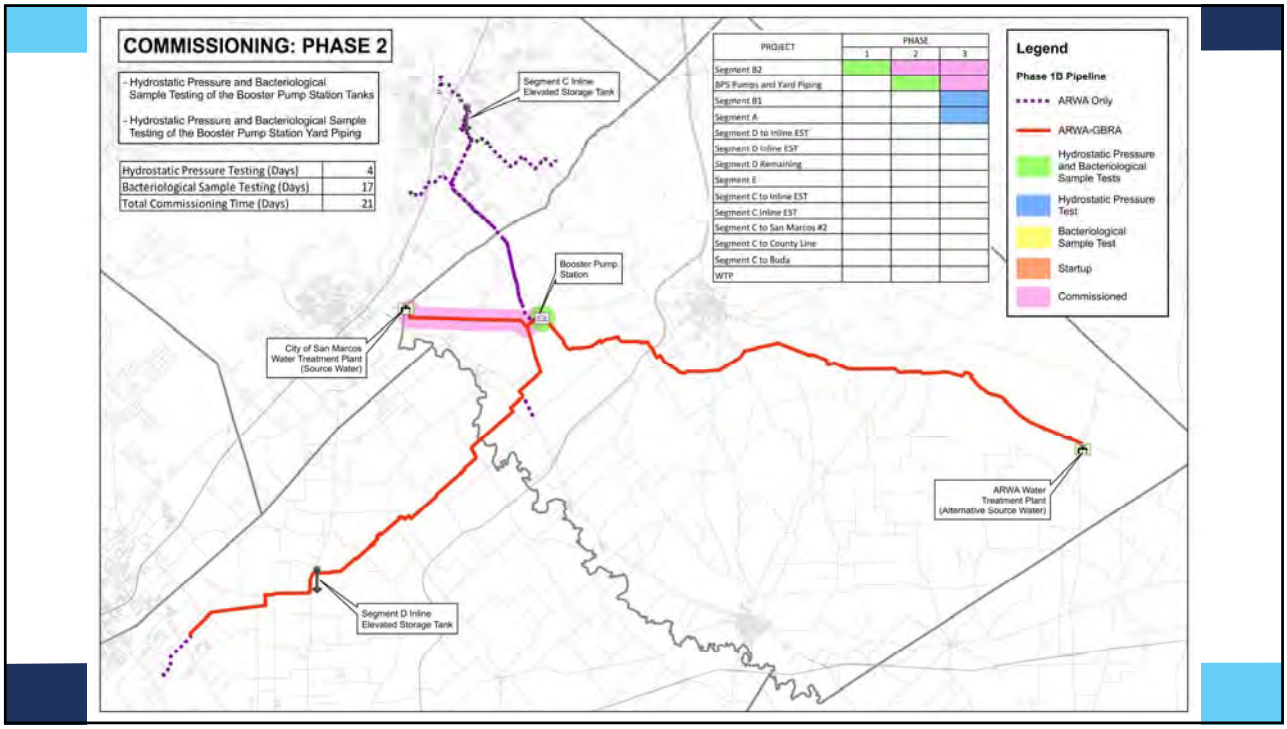
5



6


COMMISSIONING: PHASE 1
- Hydrostatic Pressure and Bacteriological Sample Testing for Segment B2
Hydrostatic Pressure Testing (Days) 7
Bacteriological Sample Testing (Days) 17
Total Commissioning Time (Days) 24
Segment C Inline Elevated Storage Tank
Booster Pump Station
City of San Marcos Water Treatment Plant (Source Water)
ARWA Water Treatment Plant (Alternative Source Water)
Segment D Inline Elevated Storage Tank
PROJECT
PHASE
1
2
3
Segment B2
BPS Pumps and Yard Piping
Segment B1
Segment A
Segment D to Inline EST
Segment D Inline EST
Segment D Remaining
Segment E
Segment C to Inline EST
Segment C Inline EST
Segment C to San Marcos #2
Segment C to County Line
Segment C to Buda
WTP
Legend
Phase 1B Pipeline
ARWA Only
ARWA-GBRA
Hydrostatic Pressure and Bacteriological Sample Tests
Hydrostatic Pressure Test
Bacteriological Sample Test
Startup
Commissioned

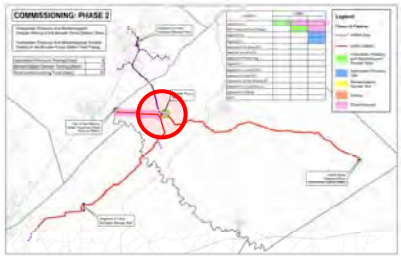
7

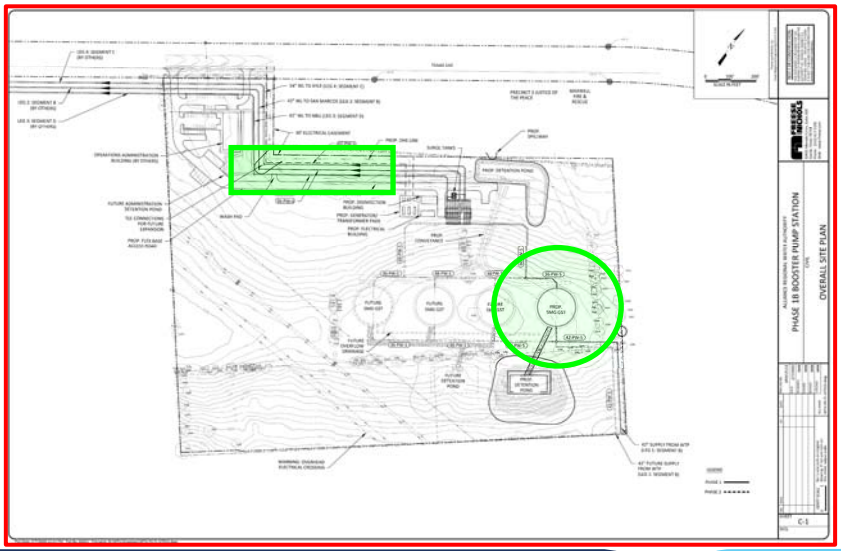

COMMISSIONING: PHASE 2
- Hydrostatic Pressure and Bacteriological Sample Testing of the Booster Pump Station Tanks
- Hydrostatic Pressure and Bacteriological Sample Testing of the Booster Pump Station Yard Piping
Hydrostatic Pressure Testing (Days) 4
Bacteriological Sample Testing (Days) 17
Total Commissioning Time (Days) 21
Segment C Inline Elevated Storage Tank
Booster Pump Station
City of San Marcos Water Treatment Plant (Source Water)
ARWA Water Treatment Plant (Alternative Source Water)
Segment D Inline Elevated Storage Tank
PROJECT
PHASE
1
2
3
Segment B2
BPS Pumps and Yard Piping
Segment B1
Segment A
Segment D to Inline EST
Segment D Inline EST
Segment D Remaining
Segment E
Segment C to Inline EST
Segment C Inline EST
Segment C to San Marcos #2
Segment C to County Line
Segment C to Buda
WTP
Legend
Phase 1B Pipeline
ARWA Only
ARWA-GBRA
Hydrostatic Pressure and Bacteriological Sample Tests
Hydrostatic Pressure Test
Bacteriological Sample Test
Startup
Commissioned

8

Phase 2 – Booster Pump Station (BPS) Tanks & Yard Piping

- Commissioning the BPS Tanks and Yard Piping
- Startup BPS Pumps

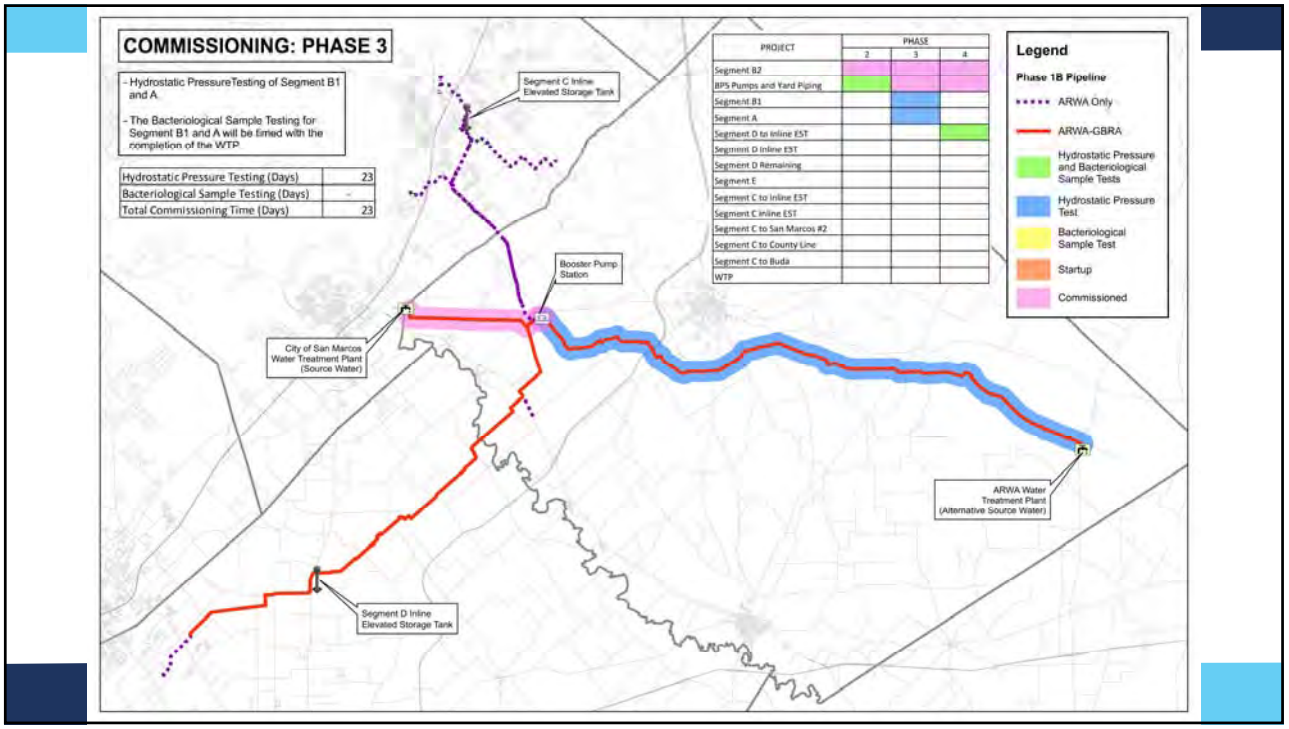




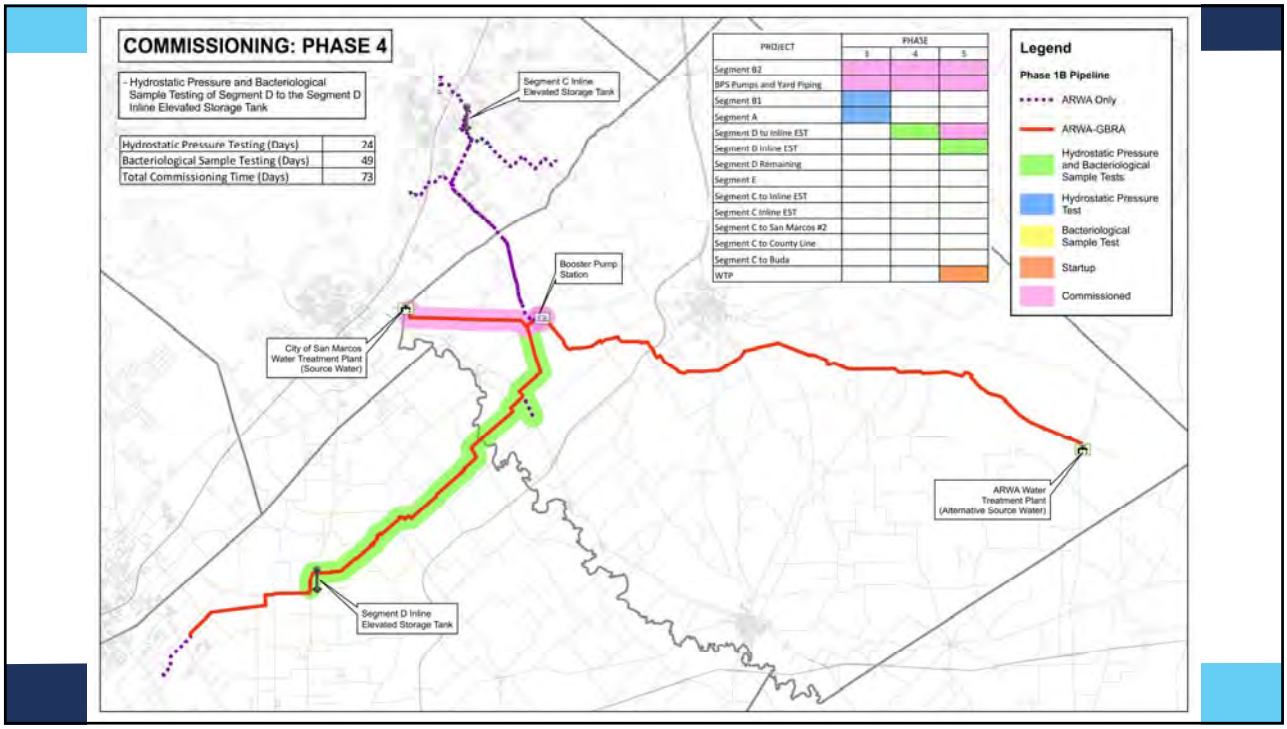
ALLIANCE WATER

Kimley»Horn

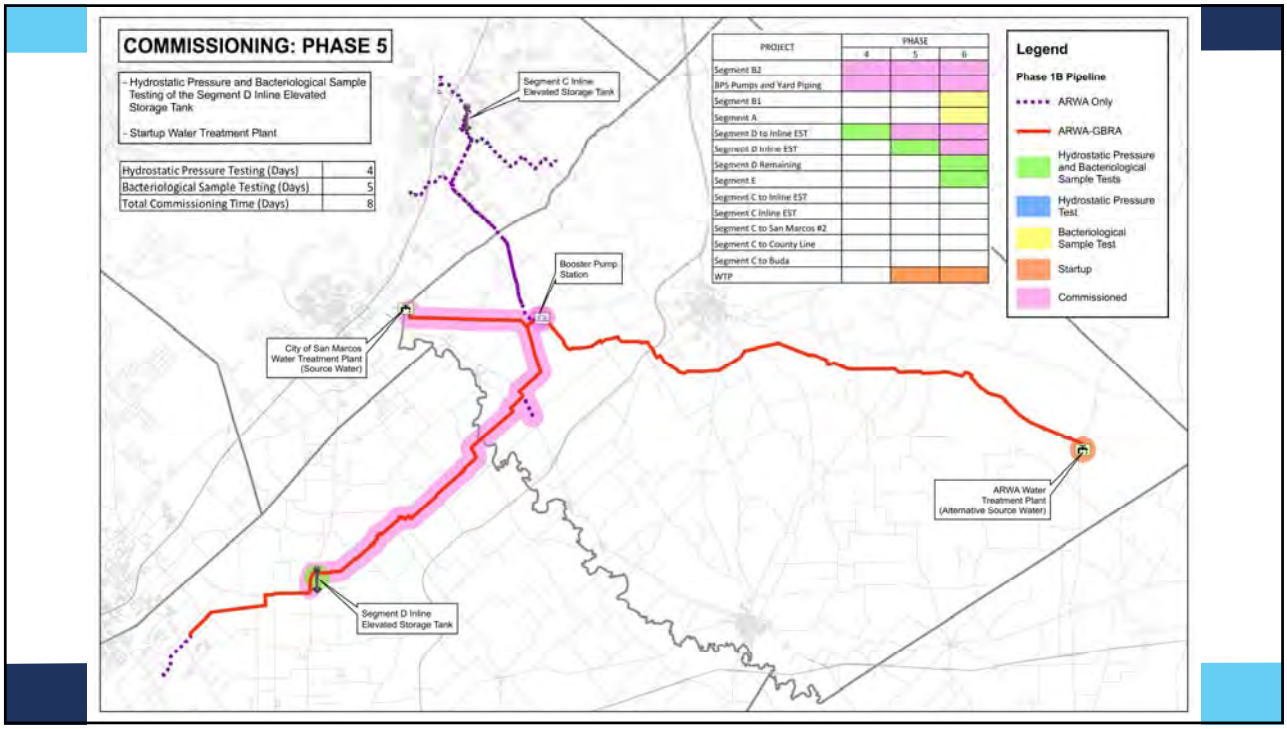
9



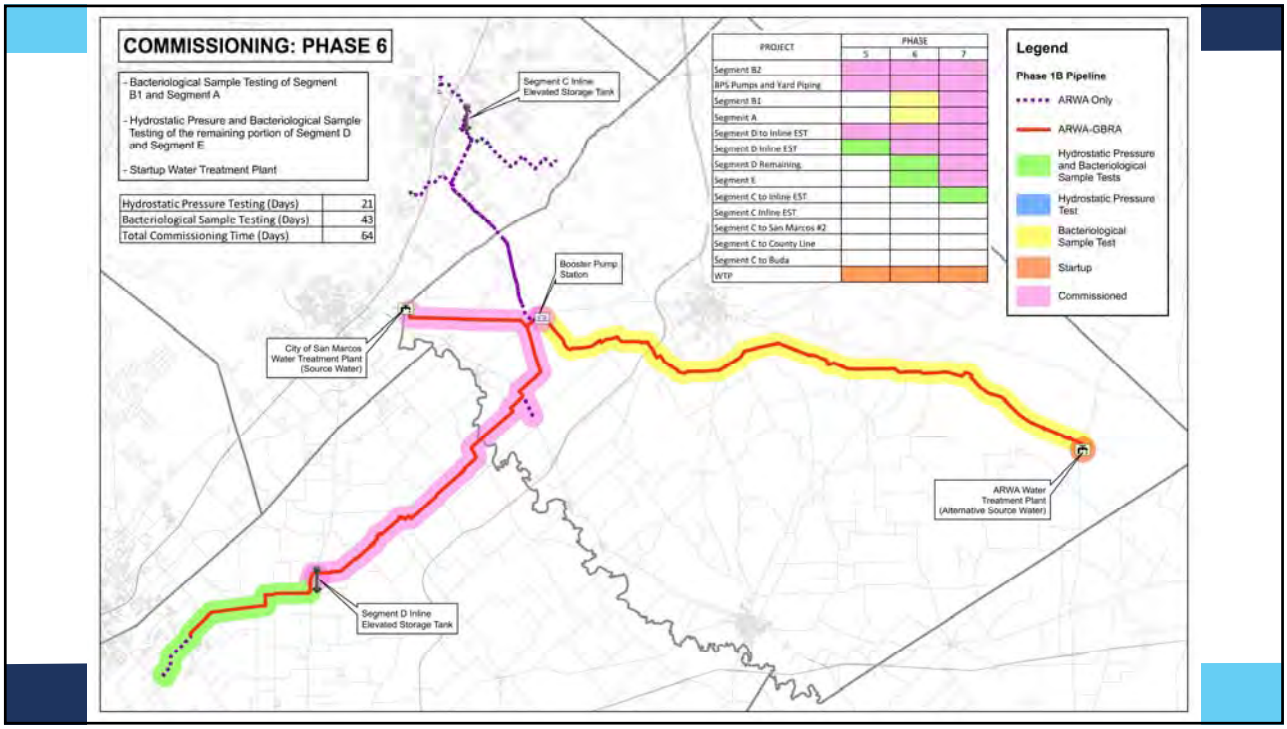
10


COMMISSIONING: PHASE 4
- Hydrostatic Pressure and Bacteriological Sample Testing of Segment D to the Segment D Inline Elevated Storage Tank
Hydrostatic Pressure Testing (Days) 24
Bacteriological Sample Testing (Days) 49
Total Commissioning Time (Days) 73
Segment C Inline Elevated Storage Tank
Booster Pump Station
City of San Marcos Water Treatment Plant (Source Water)
Segment D Inline Elevated Storage Tank
ARWA Water Treatment Plant (Alternative Source Water)
PROJECT
PHASE
3
4
5
Segment B2
BPS Pumps and Yard Piping
Segment B1
Segment A
Segment D to Inline EST
Segment D Inline EST
Segment D Remaining
Segment E
Segment C to Inline EST
Segment C Inline EST
Segment C to San Marcos #2
Segment C to County Line
Segment C to Buda
WTP
Legend
Phase 1B Pipeline
ARWA Only
ARWA-GBRA
Hydrostatic Pressure and Bacteriological Sample Tests
Hydrostatic Pressure Test
Bacteriological Sample Test
Startup
Commissioned

11


COMMISSIONING: PHASE 5
- Hydrostatic Pressure and Bacteriological Sample Testing of the Segment D Inline Elevated Storage Tank
- Startup Water Treatment Plant
Hydrostatic Pressure Testing (Days) 4
Bacteriological Sample Testing (Days) 5
Total Commissioning Time (Days) 8
Segment C Inline Elevated Storage Tank
Booster Pump Station
City of San Marcos Water Treatment Plant (Source Water)
Segment D Inline Elevated Storage Tank
ARWA Water Treatment Plant (Alternative Source Water)
PROJECT
PHASE
4
5
6
Segment B2
BPS Pumps and Yard Piping
Segment B1
Segment A
Segment D to Inline EST
Segment D Inline EST
Segment D Remaining
Segment E
Segment C to Inline EST
Segment C Inline EST
Segment C to San Marcos #2
Segment C to County Line
Segment C to Buda
WTP
Legend
Phase 1B Pipeline
ARWA Only
ARWA-GBRA
Hydrostatic Pressure and Bacteriological Sample Tests
Hydrostatic Pressure Test
Bacteriological Sample Test
Startup
Commissioned

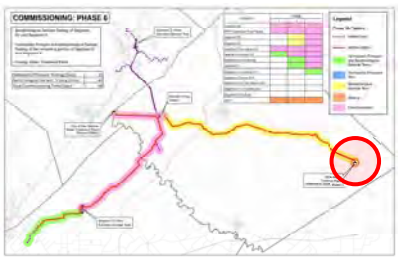
12

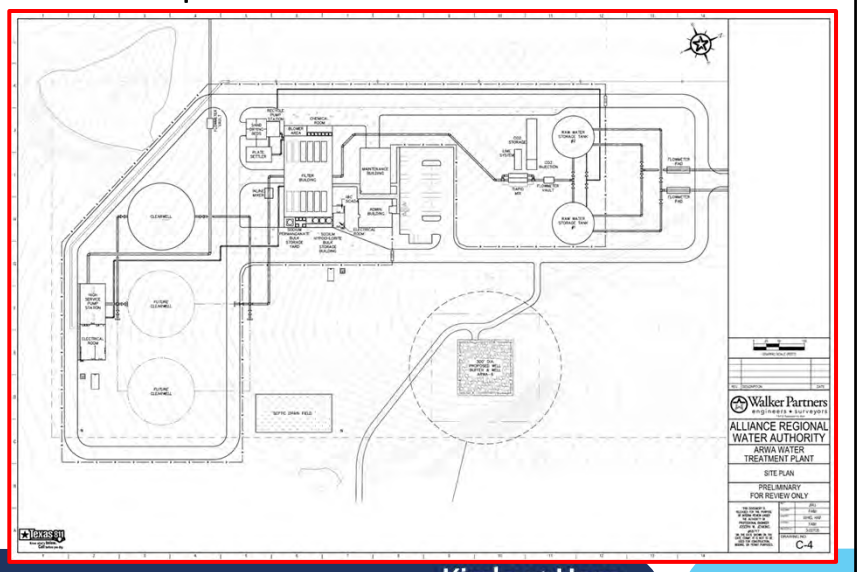


13

Phase 6 – WTP Startup

- WTP Startup will begin in Phase 6 and continue through Phase 9

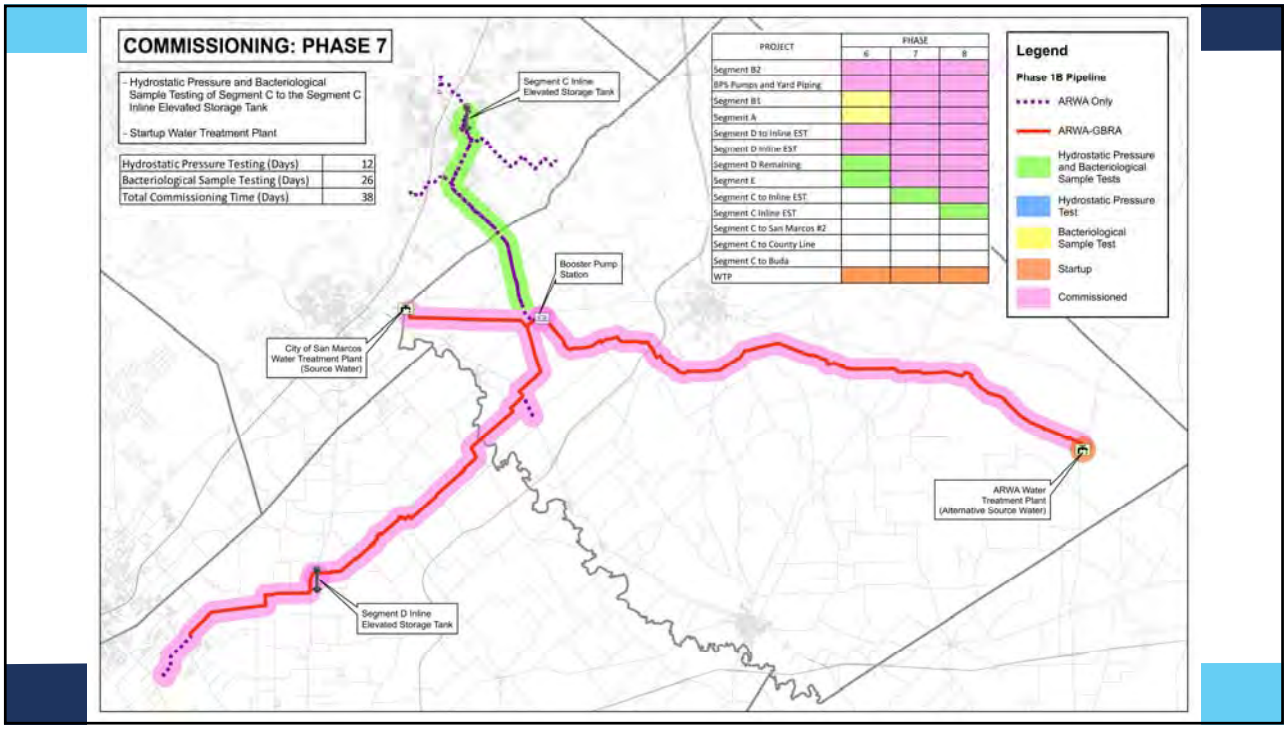




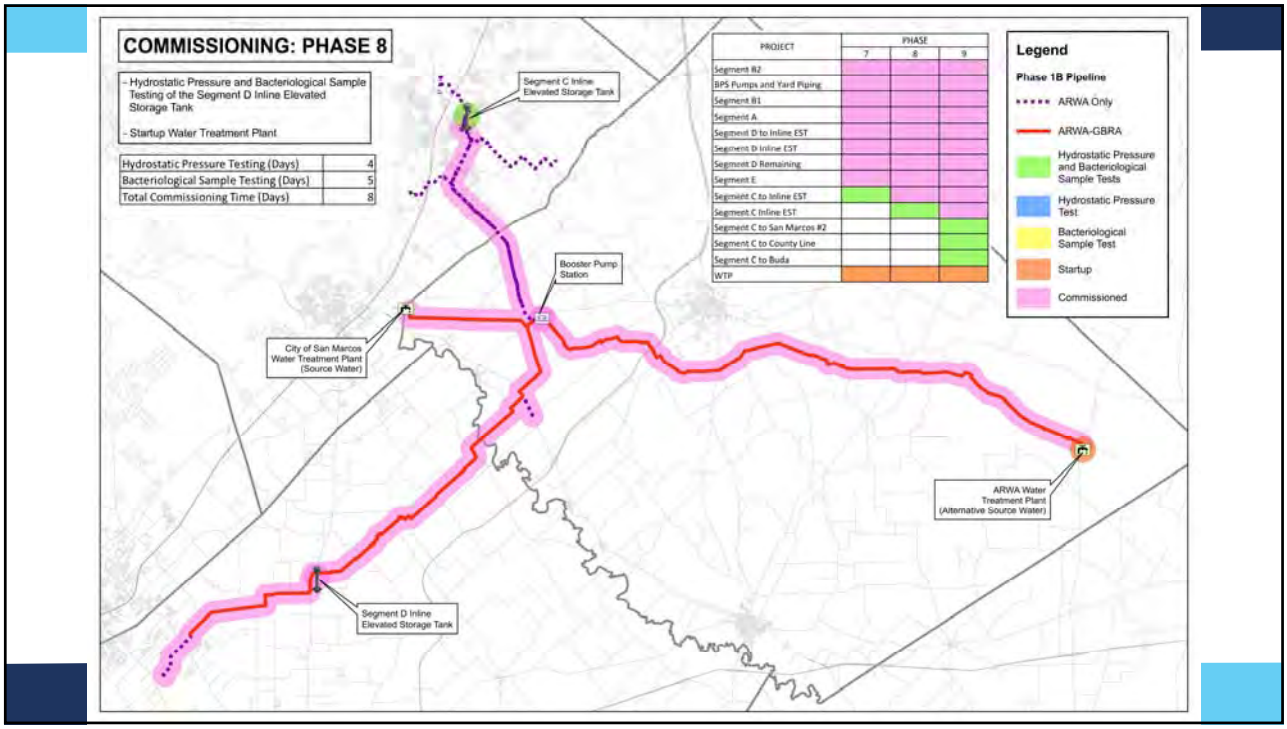
ALLIANCE WATER

Kimley»Horn

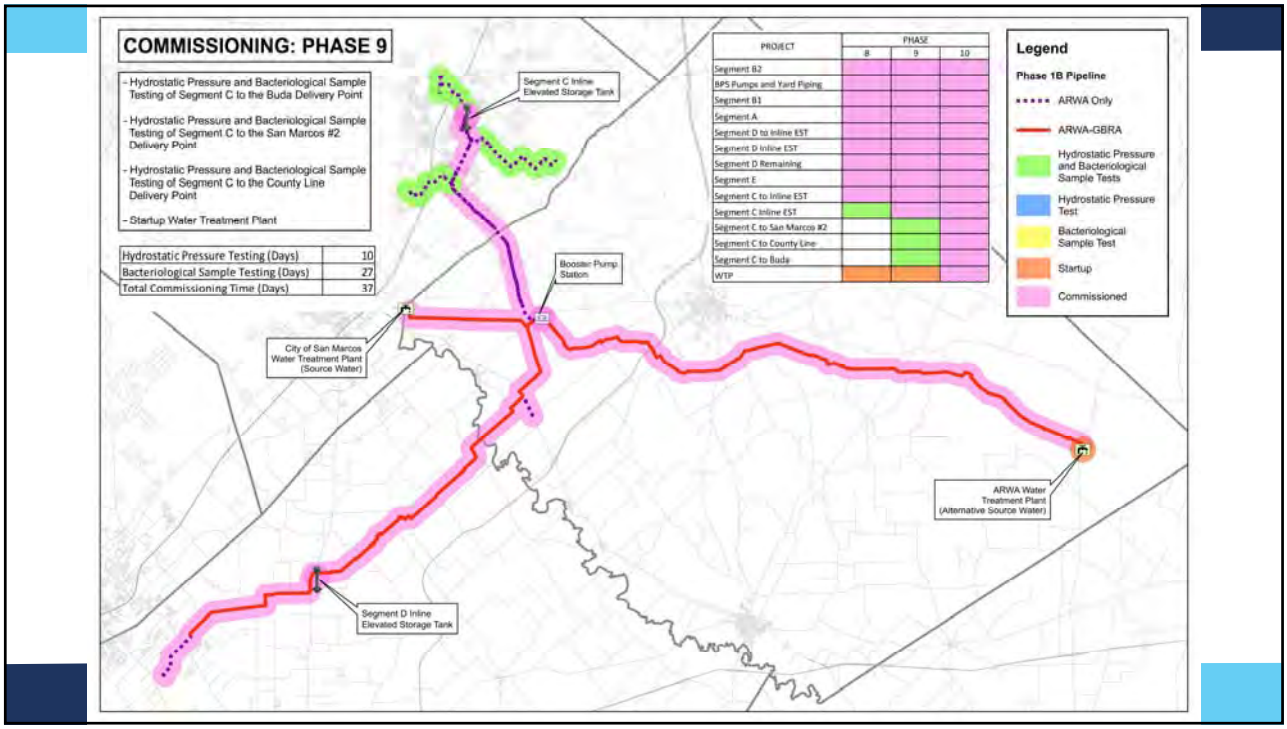
14


COMMISSIONING: PHASE 7
- Hydrostatic Pressure and Bacteriological Sample Testing of Segment C to the Segment C Inline Elevated Storage Tank
- Startup Water Treatment Plant
Hydrostatic Pressure Testing (Days) 12
Bacteriological Sample Testing (Days) 26
Total Commissioning Time (Days) 38
Segment C Inline Elevated Storage Tank
Booster Pump Station
City of San Marcos Water Treatment Plant (Source Water)
Segment D Inline Elevated Storage Tank
ARWA Water Treatment Plant (Alternative Source Water)
PROJECT
PHASE
6
7
8
Segment B2
BPS Pumps and Yard Piping
Segment B1
Segment A
Segment D to Inline EST
Segment D Inline EST
Segment D Remaining
Segment E
Segment C to Inline EST
Segment C Inline EST
Segment C to San Marcos #2
Segment C to County Line
Segment C to Buda
WTP
Legend
Phase 1B Pipeline
ARWA Only
ARWA-GBRA
Hydrostatic Pressure and Bacteriological Sample Tests
Hydrostatic Pressure Test
Bacteriological Sample Test
Startup
Commissioned

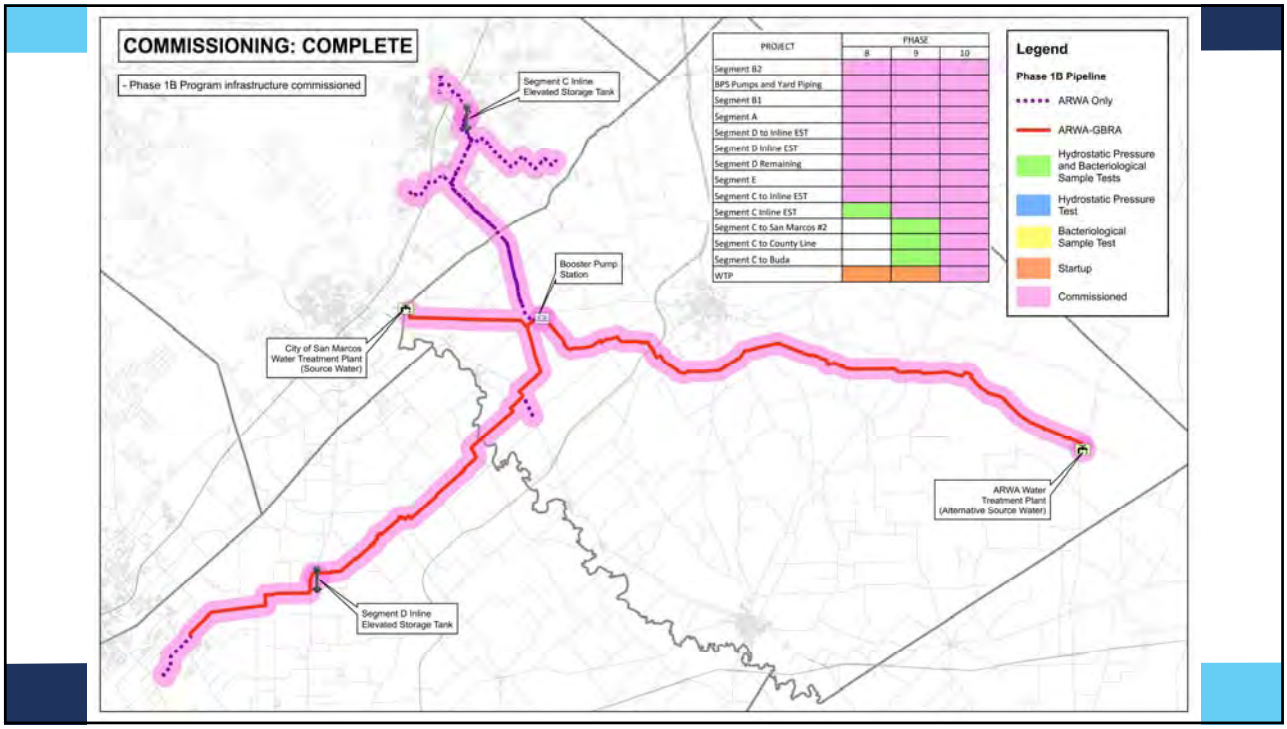
15


COMMISSIONING: PHASE 8
- Hydrostatic Pressure and Bacteriological Sample Testing of the Segment D Inline Elevated Storage Tank
- Startup Water Treatment Plant
Hydrostatic Pressure Testing (Days) 4
Bacteriological Sample Testing (Days) 5
Total Commissioning Time (Days) 8
Segment C Inline Elevated Storage Tank
Booster Pump Station
City of San Marcos Water Treatment Plant (Source Water)
Segment D Inline Elevated Storage Tank
ARWA Water Treatment Plant (Alternative Source Water)
PROJECT
PHASE
7
8
9
Segment B2
BPS Pumps and Yard Piping
Segment B1
Segment A
Segment D to Inline EST
Segment D Inline EST
Segment D Remaining
Segment E
Segment C to Inline EST
Segment C Inline EST
Segment C to San Marcos #2
Segment C to County Line
Segment C to Buda
WTP
Legend
Phase 1B Pipeline
ARWA Only
ARWA-GBRA
Hydrostatic Pressure and Bacteriological Sample Tests
Hydrostatic Pressure Test
Bacteriological Sample Test
Startup
Commissioned

16


COMMISSIONING: PHASE 9
- Hydrostatic Pressure and Bacteriological Sample Testing of Segment C to the Buda Delivery Point
- Hydrostatic Pressure and Bacteriological Sample Testing of Segment C to the San Marcos #2 Delivery Point
- Hydrostatic Pressure and Bacteriological Sample Testing of Segment C to the County Line Delivery Point
- Startup Water Treatment Plant
Hydrostatic Pressure Testing (Days) 10
Bacteriological Sample Testing (Days) 27
Total Commissioning Time (Days) 37
PROJECT
PHASE
8
9
10
Segment B2
BPS Pumps and Yard Piping
Segment B1
Segment A
Segment D to Inline EST
Segment D Inline EST
Segment D Remaining
Segment E
Segment C to Inline EST
Segment C Inline EST
Segment C to San Marcos #2
Segment C to County Line
Segment C to Buda
WTP
Legend
Phase 1B Pipeline
ARWA Only
ARWA-GBRA
Hydrostatic Pressure and Bacteriological Sample Tests
Hydrostatic Pressure Test
Bacteriological Sample Test
Startup
Commissioned
Segment C Inline Elevated Storage Tank
Booster Pump Station
City of San Marcos Water Treatment Plant (Source Water)
ARWA Water Treatment Plant (Alternative Source Water)
Segment D Inline Elevated Storage Tank

17


COMMISSIONING: COMPLETE
- Phase 1B Program infrastructure commissioned
PROJECT
PHASE
8
9
10
Segment B2
BPS Pumps and Yard Piping
Segment B1
Segment A
Segment D to Inline EST
Segment D Inline EST
Segment D Remaining
Segment E
Segment C to Inline EST
Segment C Inline EST
Segment C to San Marcos #2
Segment C to County Line
Segment C to Buda
WTP
Legend
Phase 1B Pipeline
ARWA Only
ARWA-GBRA
Hydrostatic Pressure and Bacteriological Sample Tests
Hydrostatic Pressure Test
Bacteriological Sample Test
Startup
Commissioned
Segment C Inline Elevated Storage Tank
Booster Pump Station
City of San Marcos Water Treatment Plant (Source Water)
ARWA Water Treatment Plant (Alternative Source Water)
Segment D Inline Elevated Storage Tank

18

Questions?

ALLIANCE WATER

Kimley»Horn

19

REGULAR MEETING
Alliance Regional Water Authority Technical Committee

COMMITTEE MEMBER PACKETS
Wednesday, March 11th, 2020 at 3:00 P.M.
520 E. RR 150, Kyle, TX 78640

F.5 Discussion and possible direction to Staff regarding the preliminary findings of the Solar Field Production System Estimate for the Authority's property at the Phase 1B Water Treatment Plant. ~ *Ryan Sowa, P.E., Kimley-Horn & Associates*

Background/Information
As the Authority was reviewing cost saving options last Fall, the Technical Committee asked for an analysis of the potential for a solar array to offset some (or all) of the electrical power demand at the water treatment plant property. Attached is the high-level memorandum that was prepared by Kimley-Horn on this topic. They will make a presentation hitting the highlights of the study.

Staff needs direction as to the next steps the Technical Committee would like to pursue for a solar production system. Below are some options for consideration by the Committee:

- Option 1: No further study – no longer consider solar at the WTP property.
- Option 2: Evaluate potential with GVEC and/or BBEC on their interest in a solar array on the WTP property. Include investigation of possible funding sources for an Authority led effort.
- Option 3: Investigate possible 3rd party operators and enter into discussions on feasibility of them installing/funding such a system.

Attachment(s)
- Solar Field Feasibility Study Presentation – March 11, 2020
- Solar Field Production System Estimate Memo – January 9, 2020

Technical Committee Decision Needed:

- Possible direction to Staff.

Phase 1B Program Update

Solar Field Feasibility Study
March 11, 2020

ALLIANCE WATER

Kimley»Horn

1

Agenda

- Background
- Analytical Approach
- Results
- Next Steps


Kimley»Horn

January 9, 2020

Mr. Graham Moore, PE
Executive Director
Alliance Regional Water Authority
630 E. Hopkins Street
San Marcos, Texas 78666

RE: *ARWATBPRG – Solar Field Production System Estimate*

Dear Mr. Moore,

Pursuant to your request for a Production System Generation Estimate associated with the Alliance Regional Water Authority Phase 1B Water Treatment Plant in referenced water system project in Caldwell County, Texas, kindly refer to the following pages. Should you have any questions, please let us know.

Sincerely,

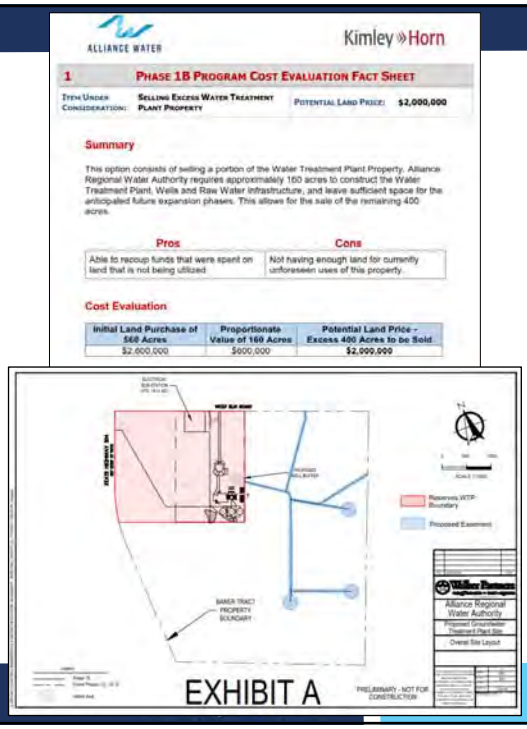
Christopher Hanna
Electrical Analyst

ALLIANCE WATER

2

Background

- October 2019 Program Cost Workshop
  - Excess WTP property identified
    - Recommendations included:
      - Selling
      - Keeping as collateral
      - Solar Field Production



ALLIANCE WATER

Kimley»Horn

1 PHASE 1B PROGRAM COST EVALUATION FACT SHEET

ITEM UNDER CONSIDERATION: SELLING EXCESS WATER TREATMENT PLANT PROPERTY

POTENTIAL LAND PRICE: $2,000,000

Summary

This option consists of selling a portion of the Water Treatment Plant Property. Alliance Regional Water Authority requires approximately 160 acres to construct the Water Treatment Plant, Wells and Raw Water infrastructure, and leave sufficient space for the anticipated future expansion phases. This allows for the sale of the remaining 400 acres.

Pros	Cons
Able to recoup funds that were spent on land that is not being utilized	Not having enough land for currently unforeseen uses of this property.

Cost Evaluation

Initial Land Purchase of 560 Acres	Proportionate Value of 160 Acres	Potential Land Price - Excess 400 Acres to be Sold
$2,600,000	$600,000	$2,000,000

EXHIBIT A

ALLIANCE WATER

3

Analytical Approach

- Site Plan
  - 400 acres available
  - ~80 acres modeled
  - Total Panels – 74,800 in a North-South tracker installation
  - Site Constraint Features
    - Existing energy utility easement
    - Pond
    - Topography
    - Raw Water Pipeline and Well Site easements

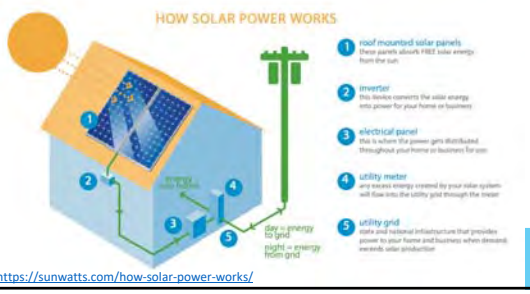
ALLIANCE WATER

Kimley»Horn

4

Analytical Approach

- Solar Field Production
  - Specific Yield - 1,811 – kilowatt hour (kWh) per kilowatt peak (kWp)
  - Site able to support 54 million kWh and supports 30 MWp
- Two Scenarios were considered
  - Scenario No. 1 - 4,000 hours of demand per year
  - Scenario No. 2 - Daily run time of 16 hours
  - Both modeled with a ratio of max demand vs. total possible demand of 90% to account for downtime
    - Maintenance, repairs, outages, etc.



https://sunwatts.com/how-solar-power-works/

ALLIANCE WATER

5

Analytical Approach

- Conceptual Level Cost
  - Includes Photovoltaic modules, electrical equipment, structural components, and labor costs.

Estimate Range Type	Total Project (Installed) Cost ($/Wp, DC)
Low	0.93
High	1.12

Table 1 – Conceptual level installation cost for solar field

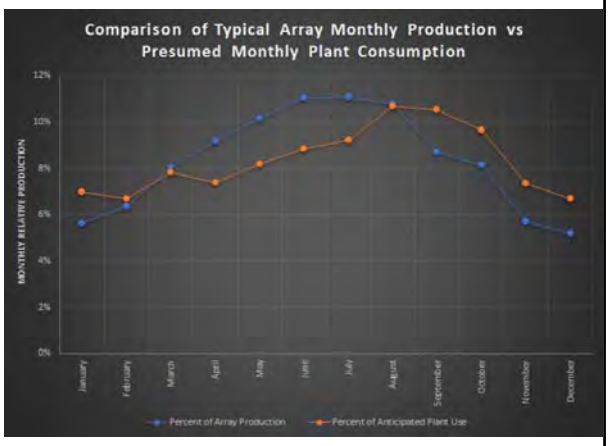
ALLIANCE WATER

Kimley»Horn

6

Results

- Production over the year is larger than anticipated plant use
- Summer and Fall months generate excess energy
- Winter and Spring months require energy supply from GVEC
- Excess sold back to the grid through the Electricity Reliability Council of Texas (ERCOT)



ALLIANCE WATER

Kimley»Horn

7

Results

- Estimated Energy Requirements and Installation Cost

Criteria	Energy Consumption: 5.980 MVA at 4,000 Hours/Year and 90% Diversity	Energy Consumption: 5.980 MVA at 16 Hours / Day and 90% Diversity
Annual Estimated kWh Needed	21,528,000	31,430,880
Estimated Array (kWp) To Produce Based on 1,811 kWh/kWp	11,887	17,356
Low Installation Cost Estimate ($0.93/Wp)	$11,055,240	$16,140,651
High Installation Cost Estimate ($1.12/Wp)	$13,313,838	$19,438,203

Table 3 – Estimated Solar Array Size and Estimated Installation Costs

ALLIANCE WATER

Kimley»Horn

8

Next Steps

- Decide if Solar Production is something Alliance Water wants to continue analyzing
- Discussions with GVEC and/or BBEC on Solar generation at the WTP site
- Further investigation would identify key criteria:
  - Interconnection availability
  - Operating Costs
  - Net Metering Guidelines
  - Owner Payback criteria
  - Ownership Models / Possible Partners

ALLIANCE WATER

Kimley»Horn

9

Questions?

https://www.nytimes.com/2018/10/09/business/energy-environment/the-magic-kingdom-is-going-green.html

ALLIANCE WATER

Kimley»Horn

10

Kimley»Horn

January 9, 2020

Mr. Graham Moore, PE
Executive Director
Alliance Regional Water Authority
630 E. Hopkins Street
San Marcos, Texas 78666

RE: ***ARWA1BPRG – Solar Field Production System Estimate***

Dear Mr. Moore,

Pursuant to your request for a Production System Generation Estimate associated with the Alliance Regional Water Authority Phase 1B Water Treatment Plant in referenced water system project in Caldwell County, Texas, kindly refer to the following pages. Should you have any questions, please let us know.

Sincerely,

Christopher Hanna
Electrical Analyst

Kimley»Horn

Introduction

Alliance Regional Water Authority ("ARWA") seeks to deliver a new Carrizo water supply project to its sponsors by 2023. Kimley-Horn has been tasked to perform a conceptual-level evaluation of the potentially-available space assigned to the project in the hopes of offsetting the new energy requirements driven by this project.

Analytical Approach

To determine a reasonable maximum array size based on the provided location, Kimley-Horn created a photovoltaic (PV) system model comprised of Tier 1 supplier components to determine typical performance of an array in this location. Specifically, the following components were assembled into the model: Trina 400 Watt (DC, Wp) bifacial panel, SMA Sunny inverters, and NEXTracker NX Horizon™ racking. Physical layout constraints ensured that intra-row and column-to-column shading would be limited to less than 2% loss. Further, to create a more robust production generation model, subsystem criteria were limited to create a typical building block of 5 MW (AC) maximum.

This building block was simulated in a two-dimensional space and the key metric (specific yield) was calculated to be 1,811-kilowatt hour (kWh) per kilowatt peak (kWp). This allows for the scaling of the production estimate provided the general constraints and DC/AC ratio (1.25 to 1.30) is applied. Note the specific yield in kWh per kWp reflects the total annual energy generated per kWp installed; kWp is the max DC power rating of the PV module/array under ideal conditions.

Physical known constraints were then applied to determine the largest practicable array that might be considered. The same equipment criteria were utilized. Please refer to Figure 1 in the Results section for these output data.

The estimated system demand was estimated against industry standard diversity/demands and compared to the data provided by the Client. Diversity and demand factors reflect that power is not uniformly used through time and that full load power is not always required; this allows for a derating of the total demand. Specifically, two cases were considered: one with a use of 4,000 hours per year and one with a daily run time of 16 hours per day. In both cases, a diversity of 90% accounts for lost time due to maintenance, repairs, outages, etc. This demand, in kWh, was then used to determine an estimated array size that would provide this yearly energy requirement based on the kWh/kWp factor previously calculated. The last results table (Table 3) captures these calculations. Should the usage or usage patterns ultimately vary, this logic can be applied to determine the appropriate array size.

Cost data based upon installations witnessed in the last two (2) calendar years and the latest National Renewable Labs data were applied to create a conceptual level installation cost matrix associated with each array configuration. The conceptual level cost is a composite cost that includes the PV modules, other electrical equipment (e.g. inverters, switchgear, conduit, etc.), structural components (e.g. racking system), labor costs, etc [1]. Broadly speaking, the engineering estimate of probable cost incorporates all the known project information and currently-understood assumptions against vetted data sources and observed cost data to depict a Total Project Cost. At this stage of the project, it is provided as a reference point without guarantee.

[1] Refer to NREL report for broader description of costs – https://www.nrel.gov/docs/fy19osti/72133.pdf

Estimate Range Type	Total Project (Installed) Cost ($/Wp, DC)
Low	0.93
High	1.12

Table 1 – Conceptual level installation cost for solar field

The cost ranges depicted match the range of array sizes calculated and represent single axis type tracker installations. For reference, fixed-array ground type may be up to 8% less expensive but not yield the same energy density.

Results

Figure 1 depicts the set of arrays representing a maximum coverage scenario based on the stated criteria. The total capacity (DC) was determined to be 29,920.00 kWp based on the panel count of 74,800 in the North-South tracker installation configuration. While not an optimized configuration, it can be considered instructive in terms of size required per production. Kindly note that not all the available space is consumed, representing the ability to add capacity.

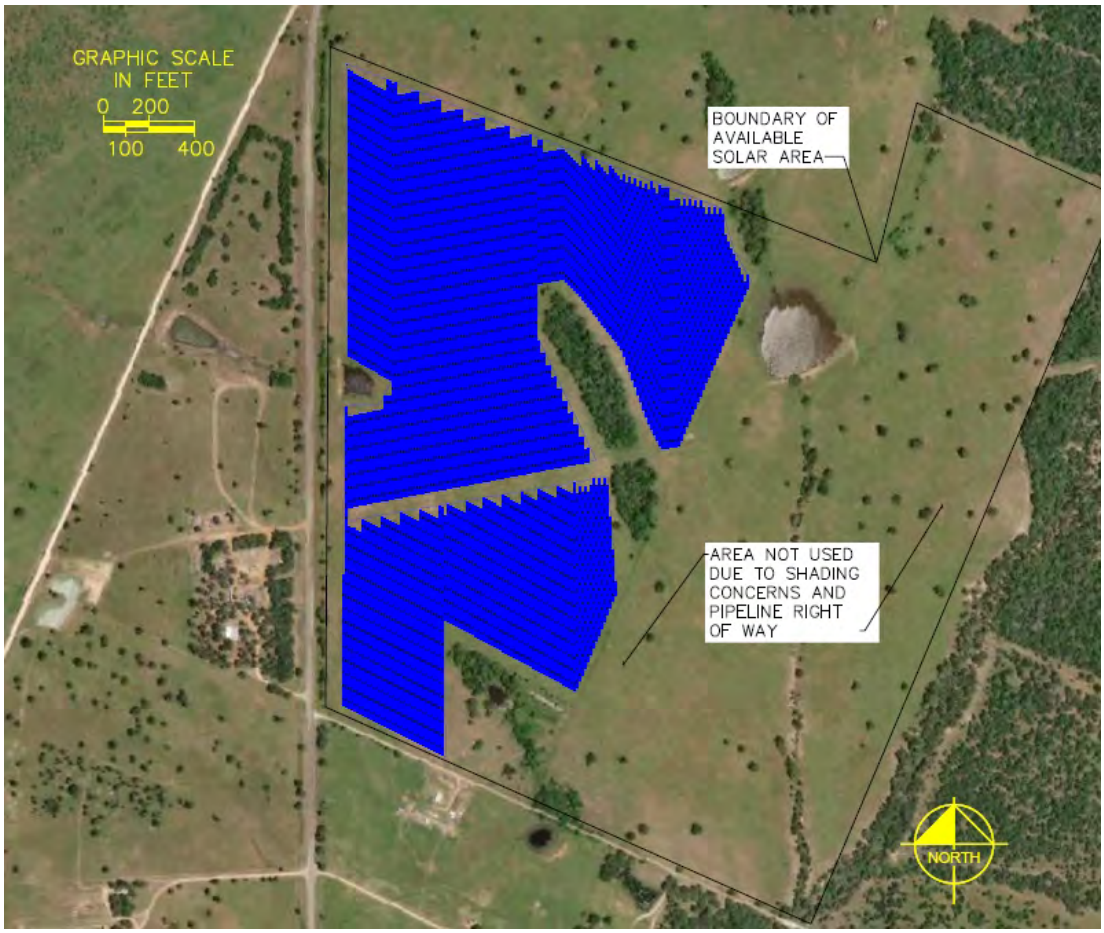


Figure 1 - Potential Solar Array Locations and Layout.

Figure 2 depicts that the array will produce a variable amount of energy per month; while the numerical average is 8% of the annual total per month, the summer months produce a higher energy value.

Figure 2 also depicts, again, based on assumed industry data absent of client specific demands, a peak demand in the late summer and early fall months which does not match to the array's predicted output. This mismatch may be accommodated using the Virtual Net Metering rules of the Electricity Reliability Council of Texas (ERCOT) which does have provisions to "buy back" energy where generation exceeds use.

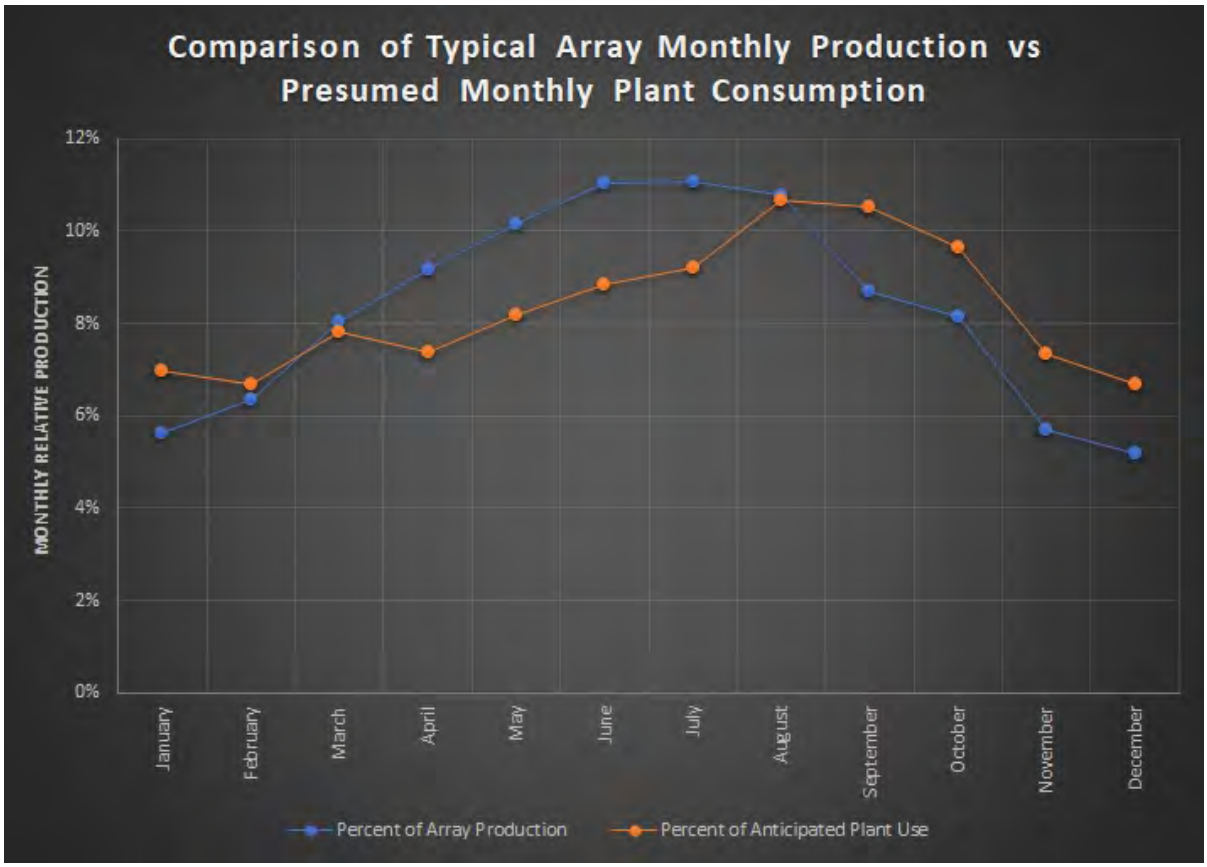


Figure 2 - Production vs Use Monthly Values

The decision to match either yearly totals or monthly totals is driven in part by the State's Virtual Net Metering Policies which may have size limitations. Further discussion with the local power provider and ERCOT would be warranted to use this criterion for ultimate project determination.

Table 2 depicts the comparison of the estimated power (in kWh, measured at the grid interface) generated per typical 5 MW AC block; System Loss calculations are also provided for reference.

Month	Monthly Output (kWh, net)
January	523,057
February	590,101
March	747,082
April	853,807
May	943,835
June	1,027,927
July	1,029,750
August	1,003,583
September	810,082
October	758,808
November	531,689
December	482,443
Annual total kWh	9,302,164

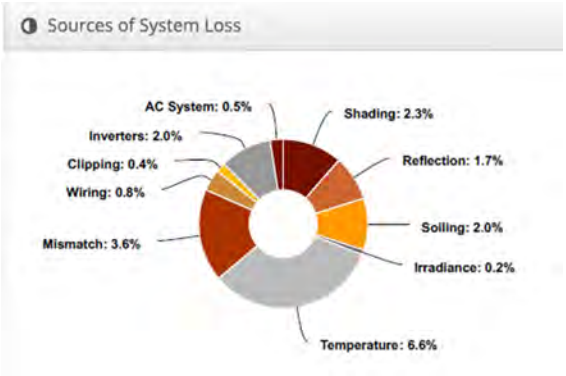


Table 2 – Estimated Year 1 Solar Production per 5 MW Block

The following table captures ARWA estimated energy requirements against usage patterns of 4,000 hours per year and 16 hours per day, respectively.

Criteria	Energy Consumption: 5.980 MVA at 4,000 Hours/Year and 90% Diversity	Energy Consumption: 5.980 MVA at 16 Hours / Day and 90% Diversity
Annual Estimated kWh Needed	21,528,000	31,430,880
Estimated Array (kWp) To Produce Based on 1,811 kWh/kWp	11,887	17,356
Low Installation Cost Estimate ($0.93/Wp)	$11,055,240	$16,140,651
High Installation Cost Estimate ($1.12/Wp)	$13,313,838	$19,438,203

Table 3 – Estimated Solar Array Size and Estimated Installation Costs

Summary

Based on the information provided and analysis executed, the site appears to be able to support more than 30 MWp which would be estimated to generate more than 54 million kWh. The highest annual consumption predicted is less than 32 million kWh, meaning that the site appears to benefit from the application of a PV generating facility. Additionally, as the estimated production in the footprint described would produce more power than the estimated demand, that excess generation could potentially be stored and/or utilized by the local power provider. A more refined analysis is warranted to optimize the PV solution. Further investigation would identify key criteria such as interconnection availability, baseline predicted operating costs, Net Metering guidelines, and Owner payback criteria. With this information and a more refined production estimate, different ownership models can be formulated to best suit the overall Program.

REGULAR MEETING
Alliance Regional Water Authority Technical Committee

COMMITTEE MEMBER PACKETS
Wednesday, March 11th, 2020 at 3:00 P.M.
520 E. RR 150, Kyle, TX 78640

F.6 Update, discussion and possible direction to Staff regarding the Authority's submission of an Abridged Application to the Texas Water Development Board for additional SWIFT Funding. ~ *Graham Moore, P.E., Executive Director*

Background/Information
Staff submitted a new Abridged Application to the Texas Water Development Board (TWDB) for additional SWIFT Funding prior to the February 3, 2020 deadline. The request was for an additional $65 million. The request was made for low interest loans, similar to the funding that has been secured to date. Staff indicated the following schedule for issuances of the debt:

2020 Additional Funding Request		
	2020	**2021**
Original Request	$95,575,000	$0
Updated Request	$122,575,000	$38,000,000
DIFFERENCE	**$27,000,000**	**$38,000,000**

The table below breaks out the proposed funding for 2020 and 2021 for each Sponsor. Staff sent out the new debt service schedules for the proposed issuance amounts.

Funding by Sponsor		
	2020	**2021**
San Marcos	$43,955,000	$13,625,000
CRWA	$37,865,000	$11,740,000
Kyle	$34,530,000	$10,705,000
Buda	$6,225,000	$1,930,000

The application is currently under review by the TWDB. If approved, additional information will be required from the Sponsors to support the funding request. As has been done in the past, Staff will lead this effort and will coordinate with the Sponsors to receive and submit this information.

The final decision on how much financing to receive in 2020 will need to be made by the early September 2020.

Technical Committee Decision Needed:

- Possible direction to Staff.

REGULAR MEETING
Alliance Regional Water Authority Technical Committee

COMMITTEE MEMBER PACKETS
Wednesday, March 11th, 2020 at 3:00 P.M.
520 E. RR 150, Kyle, TX 78640

F.7 Update on status of groundwater management in project target area, and Gonzales County Underground Water Conservation District, Plum Creek Conservation District, Groundwater Management Area 13, Region L Planning Group, Guadalupe-Blanco River Authority, Hays County and CAPCOG activities. *~ Graham Moore, P.E., Executive Director*

Gonzales County Underground Water Conservation District (GCUWCD)
The GCUWCD is scheduled to meet on March 10th. In addition to their regular meeting, they will have a meeting to receive comments on their updated rules. A verbal update of the meeting's activities will be provided to the Technical Committee

Plum Creek Conservation District (PCCD)
The PCCD is scheduled to meet on March 17th.

Groundwater Management Area 13
No update.

Region L Planning Group
No update.

Guadalupe-Blanco River Authority; Hays County Activities; CAPCOG Activities
No update.

Technical Committee decision needed:

- None.

REGULAR MEETING
Alliance Regional Water Authority Technical Committee

COMMITTEE MEMBER PACKETS
Wednesday, March 11th, 2020 at 3:00 P.M.
520 E. RR 150, Kyle, TX 78640

G. EXECUTIVE DIRECTOR REPORT - Update on future meeting dates, locations, consultant invoices paid, approved changed orders, status of Authority procurements, Executive Director activities and other operational activities where no action is required. ~ *Graham Moore, P.E., Executive Director*

Board Meeting

- The March Board meeting will be held at the CRWA Facility on Lake Dunlap on Wednesday, March 25th.

Board Appointments

- Letters went out to all Sponsors that are scheduled to appoint Board members in April (San Marcos – 2, CRWA – 2 & Buda – 1).

Water Sharing / Water Use Survey

- Water use surveys for our use in reviewing water sharing options will be sent out soon.

Consultant Invoices Paid

- Below are reports on the consultant invoices paid in February.

FY 19-20 CONSULTANT INVOICES PAID in FEBRUARY 2020

Consultant	Total Authorized	Current Invoice	Invoiced-to-Date	% of Contract Invoiced	Remaining	Notes/ Anomalies
Mark B. Taylor	$17,500.00	$0.00	$12,895.00	74%	$4,605.00	
LAN - Kyle/Buda Design	$116,280.27	$3,397.50	$20,962.67	18%	$95,317.60	
Patricia Ehrlinger Carls	$25,000.00	$1,690.50	$7,848.25	31%	$17,151.75	
RW Harden	$40,000.00	$867.50	$10,711.25	27%	$29,288.75	
Tx Solutions Group	$72,000.00	$6,000.00	$30,000.00	42%	$42,000.00	
BGE - Ph 1A CA	$53,938.59	$7,224.91	$13,846.78	26%	$40,091.81	
LAN - ROW Acquisition	$32,110.04	$0.00	$0.00	0%	$32,110.04	
Kent Alan Sick - ROW Legal	$45,000.00	$2,372.94	$35,041.28	78%	$9,958.72	
LNV - Ph 1A Observations	$4,006.84	$0.00	$110.00	3%	$3,896.84	
LNV - GIS Svcs	$30,777.63	$300.00	$300.00	1%	$30,477.63	
MLA Labs, Inc. - Pump Station	$10,814.00	$1,368.00	$2,600.00	24%	$8,214.00	
Armstrong, Vaughan & Associates, P.C.	$10,715.00	$10,715.00	$10,715.00	100%	$0.00	
J.R. Tolles & Associates, Inc.	$189,985.00	$18,935.00	$70,570.00	37%	$119,415.00	
Lloyd Gosselink Rochelle & Townsend	$92,105.00	$6,074.18	$6,074.18	7%	$86,030.82	
MLA Labs, Inc. - Segment B	$13,118.00	$2,633.00	$2,633.00	20%	$10,485.00	
Total	**$753,350.37**	**$61,578.53**	**$224,307.41**		**$529,042.96**	

REGULAR MEETING
Alliance Regional Water Authority Technical Committee

COMMITTEE MEMBER PACKETS
Wednesday, March 11th, 2020 at 3:00 P.M.
520 E. RR 150, Kyle, TX 78640

PHASE 1B FY 19-20 CONSULTANT INVOICES PAID in FEBRUARY 2020

Consultant	Total Authorized	Current Invoice	Invoiced-to-Date	% of Contract Invoiced	Remaining	Notes/ Anomalies
Kimley-Horn Ph 1B Owner's Rep	$1,372,351.19	$240,687.91	$976,538.60	71%	$395,812.59	
Blanton - Environmental	$580,237.08	$106,552.30	$162,112.72	28%	$418,124.36	
LAN - Segment A Prelim	$182,524.80	$4,777.65	$64,749.55	35%	$117,775.25	
LAN - Segment A Final	$1,932,444.00	$106,642.93	$106,642.93	6%	$1,825,801.07	
KFA - Segment B Prelim	$69,707.94	$3,999.37	$49,751.25	71%	$19,956.69	
KFA - Segment B Final	$1,841,314.00	$0.00	$0.00	0%	$1,841,314.00	
BGE - Segment C Prelim	$172,491.20	$23,075.65	$95,758.78	56%	$76,732.42	
FNI - Segment D Prelim	$73,867.86	$0.00	$10,334.20	14%	$63,533.66	
Walker - Segment E Prelim	$270,927.60	$3,172.50	$26,157.30	10%	$244,770.30	
LAN - ROW Acquisition	$2,145,847.22	$45,350.10	$137,277.29	6%	$2,008,569.93	
DTR&G	$894,535.31	$24,705.41	$113,416.36	13%	$781,118.95	
CBRE - Appraisals	$2,291,500.00	$0.00	$87,750.00	4%	$2,203,750.00	
CP&Y - Survey	$2,019,932.20	$263,250.25	$390,611.70	19%	$1,629,320.50	
RW Harden - WDH	$13,920.00	$0.00	$8,880.00	64%	$5,040.00	
LNV - RWI	$1,063,283.45	$38,237.95	$171,149.73	16%	$892,133.72	
Walker Partners - WTP Design	$254,937.12	$27,418.84	$221,760.01	87%	$33,177.11	
FNI - BPS Prelim	$283,282.88	$76,755.80	$210,091.63	74%	$73,191.25	
Plummer - Inline Elevated Tank	$87,509.05	$4,097.00	$21,383.50	24%	$66,125.55	
Total	**$15,550,612.90**	**$968,723.66**	**$2,854,365.55**		**$12,696,247.35**	

Approved Change Orders

- See below for Change Orders approved in February 2020.

CHANGE ORDERS APPROVED IN FEBRUARY 2020

Consultant	Original Authorization	Change Orders to Date	Change Order Approved this Month	New Total Contract Amount
Walker Partners: 1B Segment E	$ 408,755.00	$ 152,157.00	$ 40,333.00	$ 560,912.00
Black Castle - Phase 1A BPS Construction	$ 4,999,080.00	$ 111,827.56	$ -	$ 5,110,907.56
Drilling & Hydrogeology	$ 114,000.00	$ 31,380.00	$ -	$ 145,380.00
Freese & Nichols: 1B BPS & DP Prelim	$ 771,617.00	$ 34,863.00	$ -	$ 806,480.00
K Friese & Assoc.: 1B Segment B	$ 565,417.00	$ 60,095.00	$ -	$ 625,512.00
BGE: 1B Segment C	$ 614,626.00	$ 10,290.00	$ -	$ 624,916.00
Freese & Nichols: 1B Segment D	$ 597,714.00	$ 66,722.00	$ -	$ 664,436.00
Walker Partners: 1B WTP	$ 1,203,606.00	$ 40,406.00	$ -	$ 1,244,012.00
CP&Y: Ph 1B Program Survey	$ 3,375,780.00	$ 62,000.00	$ 32,000.00	$ 3,437,780.00
Freese & Nichols: 1B Segment D (Final)	$ 1,999,464.00	$ 5,790.00	$ -	$ 2,005,254.00
LAN: 1B Segment A	$ 1,903,077.00	$ 29,367.00	$ 29,367.00	$ 1,932,444.00
Blanton & Assoc: Environmental Invest.	$ 1,398,775.00	$ 150,703.00	$ 150,703.00	$ 1,549,478.00
K Friese & Assoc: 1B Seg B Final Design	$ 1,830,994.00	$ 10,320.00	$ 10,320.00	$ 1,841,314.00

REGULAR MEETING
Alliance Regional Water Authority Technical Committee

COMMITTEE MEMBER PACKETS
Wednesday, March 11th, 2020 at 3:00 P.M.
520 E. RR 150, Kyle, TX 78640

H. COMMITTEE MEMBER ITEMS OR FUTURE AGENDA ITEMS – Possible acknowledgement by Committee Members of future area events and/or requests for item(s) to be placed on a future agenda where no action is required.

Background/Information
The Committee Members have an opportunity to make announcements or to request that items be added to future Board or Committee agendas.

REGULAR MEETING
Alliance Regional Water Authority Technical Committee

COMMITTEE MEMBER PACKETS
Wednesday, March 11th, 2020 at 3:00 P.M.
520 E. RR 150, Kyle, TX 78640

I.1 *Executive Session pursuant to the Government Code, Section 551.071 (Consultation with Attorney) and/or Section 551.072 (Real Property Deliberations) regarding:*

A. Water supply partnership options
B. Groundwater leases
C. Acquisition of real property for water supply project purposes

---

REGULAR MEETING
Alliance Regional Water Authority Technical Committee

COMMITTEE MEMBER PACKETS
Wednesday, March 11th, 2020 at 3:00 P.M.
520 E. RR 150, Kyle, TX 78640

I.2 Action from Executive Session on the following matters:

A. Water supply partnership options
B. Groundwater leases
C. Acquisition of real property for water supply project purposes

---

REGULAR MEETING
Alliance Regional Water Authority Technical Committee

COMMITTEE MEMBER PACKETS
Wednesday, March 11th, 2020 at 3:00 P.M.
520 E. RR 150, Kyle, TX 78640

J. ADJOURNMENT
