

Riverbend Water Resources District Regional Water Master Plan



Town Hall Meeting

**City of Hooks – City Hall
October 24, 2017**



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Presentation Outline

- ◆ Project Overview and Recap of Voting Exercise
- ◆ Final Population and Water Demand Projections – Municipal and Manufacturing
- ◆ Final Alternatives – Regional Water Infrastructure
- ◆ Capital and O&M Cost Estimates
- ◆ Preliminary Conclusions and Recommendations
- ◆ Q&A Discussion
- ◆ Next Steps



Project Participants

- ◆ Riverbend Water Resources District
- ◆ Bowie County
- ◆ Cass County
- ◆ Red River County
- ◆ Central Bowie County WSC*
- ◆ City of Annona
- ◆ City of Atlanta
- ◆ City of Avery
- ◆ City of Clarksville*
- ◆ City of De Kalb
- ◆ City of Hooks



Project Participants (cont.)

- ◆ City of Leary
- ◆ City of Maud
- ◆ City of Nash
- ◆ City of New Boston
- ◆ City of Red Lick*
- ◆ City of Redwater
- ◆ City of Texarkana (Texas)
- ◆ City of Texarkana (Arkansas)*
- ◆ City of Wake Village
- ◆ International Paper Company
- ◆ TexAmericas Center



Scope of Work

- ◆ **Service Area Description – Data Collection**
- ◆ **Population & Water Demand Projections**
 - Quantify population and water demand projections through a data driven process; developed in five-year increments
- ◆ **Water Infrastructure Assessment & Alternatives**
 - Incorporate a more focused evaluation of existing water supplies and infrastructure alternatives available to RWRD
- ◆ **Water Supply Assessment & Alternatives**
 - Provide a detailed evaluation of present and future water supply and needs along with a defensible approach for RWRD moving forward
- ◆ **Water Conservation/Drought Management Plans**
- ◆ **Funding Options**
 - Develop planning roadmap for RWRD that aligns with TWDB Region D and well-positions RWRD for various grants and financing alternatives



Data Collection Activities

- ◆ Participating entities' input about their water systems
 - CCN maps of existing water infrastructure
 - Current population and growth projections
 - Historical Data – annual summary of meter counts
 - Copies of recent comprehensive plans, water master plans and/or additional planning studies
 - Monthly, average and max day water demand data
 - Utility development agreements; build-out schedules of future developments in service area
 - Annexation activities (recent and future)
- ◆ Texas Demographic Center, Rice University and Arkansas-Texas Council of Governments data also used for comparison purposes of growth projections for Counties
- ◆ Previous planning documents and comprehensive plans for Riverbend Water Resources District
 - HDR Engineering (November 2008)
 - CH2M HILL (August 2012, Phases 1-3)



Important Study Drivers

1) Regulatory

- TCEQ Minimum Criteria: 0.6 gpm/connection
- COE Ultimate & Interim Rule Curve

2) Capacity and Demand (Existing & Future)

- Municipal (Current & Potential Member Entities)
- Manufacturing (IP, TAC)
- Agricultural (Wheat, Soybeans, Timber, Livestock)
- Environmental Flows

3) Conservation and Firm Supply Availability

- TWDB Water Consumption Goal: 140 gpcd



Recap of Voting Exercise

Riverbend Regional Water Facility Planning Study Second Project Meeting - Results of Working Session & Email Vote*		
PRELIMINARY REGIONAL WATER INFRASTRUCTURE AND ALTERNATIVES	NO. OF VOTES	RANKING
I. NEW BOSTON ROAD WATER TREATMENT PLANT		
1 Decommission	0	
2 Operate Water Treatment Plant As-Is	2	
3 Utilize Full Water Treatment Plant Capacity	33	1
4 Expand Existing Water Treatment Plant	4	
5 Build New Water Treatment Plant at New Boston Road Site	0	
II. MILLWOOD WATER TREATMENT PLANT		
1 Decommission	0	
2 Operate Water Treatment Plant As-Is	1	
3 Utilize Full Water Treatment Plant Capacity	1	
4 Expand Existing Water Treatment Plant	15	
5 Build New Water Treatment Plant at Millwood Site	1	
III. INTERNATIONAL PAPER WATER TREATMENT PLANT		
1 Decommission	0	
2 Operate Water Treatment Plant As-Is	0	
3 Utilize Full Water Treatment Plant Capacity	24	
4 Expand Existing Water Treatment Plant	25	4
5 Build New Water Treatment Plant in Cass County	30	2
IV. NEW WATER FACILITY**		
1 Phased approach for constructing new Water Treatment Plant (WTP); provides system redundancy and increased reliability	2	
2 Revisit Six Proposed Sites from CH2M Study:		
a Site 1A - New Boston Road WTP	0	
b Site 1B - Jarvis Parkway Corridor	2	
c Site 2A - City of Wake Village (FM 2146)	0	
d Site 2B - Property Located North and West of Site 2A	0	
e Site 3 - TexAmericas Center (Bowie County Parkway)	20	
f Site 4 - TexAmericas Center (SW corner of former Ammunition Plant)	4	
Total Votes for New Water Facility	28	3

* The top four alternatives that received the highest number of votes are highlighted in yellow.

** All of the approaches listed for Alternative IV include constructing a new intake structure and raw water pipeline to TexAmericas Center in order to complete the new water facility.



Recap of Voting Exercise

- ◆ **Alternative 1:** Construct New Intake Structure and Raw Water Pipeline at Lake Wright Patman
 - A) TexAmericas Center
 - B) New Boston Road Water Treatment Plant
- ◆ **Alternative 2:** Make Necessary Improvements at New Boston Road Water Treatment Plant
 - A) Modify Raw Water Delivery System (i.e. intake, pump station, raw water pipeline)
 - B) Expand WTP from 18 to 24 MGD to utilize entire permitted treatment capacity
- ◆ **Alternative 3:** Construct New Water Treatment Plant at TexAmericas Center
 - A) Bowie County Parkway site
 - B) Southwest Corner of the former Ammunition Plant
- ◆ **Alternative 4:** Consider Water Treatment Options in Cass County
 - A) Expand existing International Paper Water Treatment Plant
 - B) Construct New Water Treatment Plant in Cass County

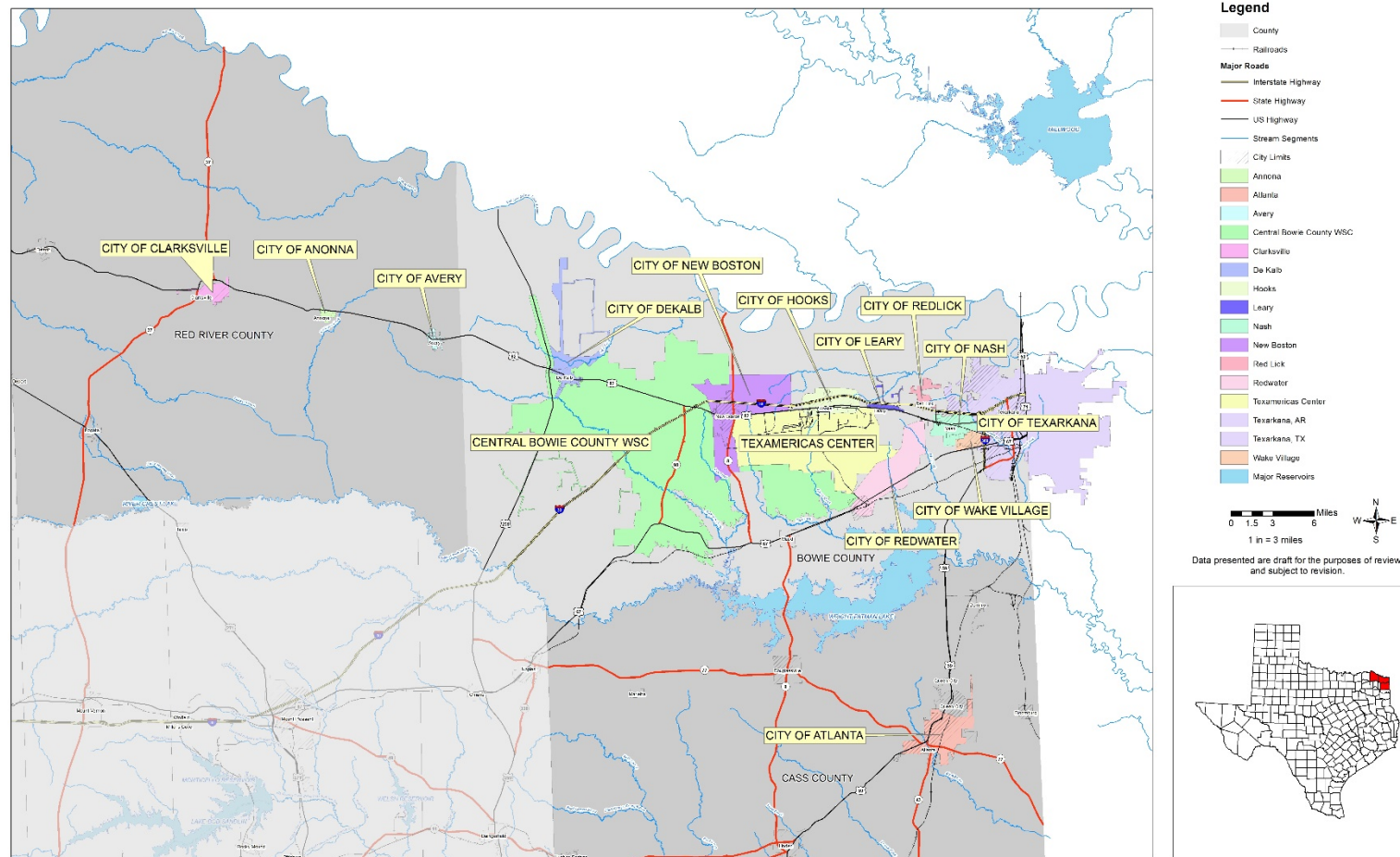
Municipal Population Projections



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Project Participants – Water CCN Boundary

Riverbend WRD Regional Water Facility - Overview Map

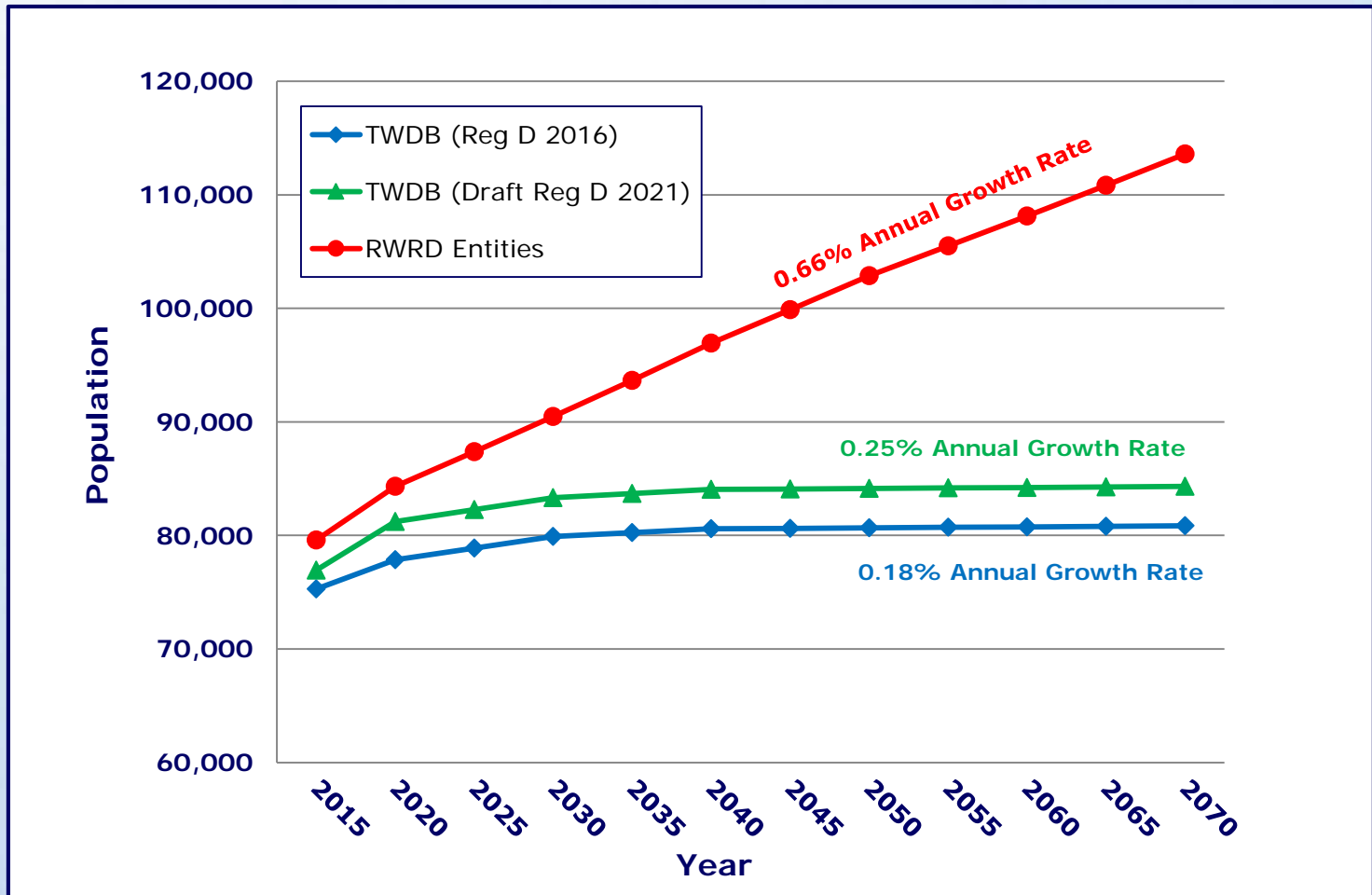


Municipal Population Projections

- ◆ Methodology for Population Projections:
 - (1) Determined 2015 population for cities based on their current meter count and multiplied by Average Household Size (U.S. Census data)
 - (2) Determined projected growth rate based on annual historical meter counts from 2010-2015;
 - (3) Referenced recent Comprehensive Plans prepared by engineering consultants for future decadal growth rate; also compared to TWDB decadal growth rate if available;
 - (4) Reviewed city's existing CCN area and future annexation plans to determine city's build-out period.
- ◆ Revision requests developed and supported by local data that meets TWDB criteria.



Population Projections: TWDB & Entity Data Comparison



Data Source Comparison for Counties

	2050 TWDB (Pop. & Avg. Annual Growth) *		2050 TDC (Pop. & Avg. Annual Growth) * *	
Bowie County	99,263	0.17%	100,503	0.21%
Cass County	31,229	0.06%	31,326	0.07%
Red River County	12,976	0.02%	12,064	-0.16%

* Based on 2012 TDC data and represents 0.5 Migration Scenario; used for 2016 and Draft 2021 Region D Water Plan

** Based on 2014 Texas Demographic Center (TDC) data and represents 0.5 Migration Scenario

Population Revision Request Summary

Name of Entity	2016 Region D Projections		2021 Draft Region D Projections		Proposed Revision (+/-)	
	Y2020	Y2070	Y2020	Y2070	Y2020	Y2070
Central Bowie Co. WSC	7652	7937	7529	7809	-123	-128
City of Annona	Not classified as a WUG					
City of Atlanta	5778	5818	5672	5711	-106	-107
City of Avery	Not classified as a WUG					
City of Clarksville	3315	3315	3315	3315	0	0
City of De Kalb	1757	1822	1658	1718	-99	-104
City of Hooks	2863	2970	2863	2971	0	1
City of Leary	Not classified as a WUG					
City of Maud	1092	1133	1119	1161	27	28
City of Nash	3061	3175	3197	3316	136	141
City of New Boston	4705	4880	5960	6180	1255	1300
City of Red Lick	1043	1081	N/A	N/A	N/A	N/A
City of Redwater	1093	1134	3116	3233	2023	2099
City of Texarkana, TX	37646	39046	37790	39196	144	150
City of Wake Village	5949	6160	6025	6239	76	79

Municipal Water Demand Projections



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Average Annual Water Demand

- ◆ Basis for determining annual water supply needs;
- ◆ Used to determine operational costs;
- ◆ Range of participant's per capita water demand reported in 2014 TWDB Survey:
66 to 333 gpcd
- ◆ Range of participant's per capita water demand reported for study: 74 to 159 gpcd
- ◆ TWDB Water Consumption Goal: 140 gpcd
- ◆ Used TWU's data to calculate Average Day Water Demands for each entity

Maximum Day Water Demand

- ◆ Most important criteria for a municipal infrastructure planning project
- ◆ Basis for determining required capacity of intakes, wells and WTPs
- ◆ Basis for sizing transmission mains
- ◆ TCEQ Minimum Criteria: 0.6 gpm/connection
- ◆ Study team will evaluate water system data and compare to TCEQ design criteria
- ◆ Calculated Maximum Day and Average Day Water Demand Ratio for New Boston Road and Millwood WTPs to determine peaking factor to project max water demands through 2070

Additional Design Criteria

- ◆ Minimum transmission main pressure: 35 psi
- ◆ Maximum transmission main pressure: 200 psi
- ◆ Minimum clearwell capacity: 100 gallons per connection or 10% of daily plant capacity (for surface water systems)
- ◆ Design velocity in water transmission mains: 5.0 fps
- ◆ Water storage for booster pumping stations: 30 minutes of storage at the design pumping rate of the booster station



TAC Manufacturing Water Demand Projections



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Background on TAC Water Demand Projections

- ◆ **Riverbend WRD acquired the wet utilities from TAC** and took responsibility for wet utility contract with Red River Army Depot;
- ◆ **RWRD's contractual obligation to TAC:** required to construct necessary infrastructure to deliver not less than 6.0 MGD of raw water by May 1, 2026 and then an additional 19.0 MGD (total 25 MGD)
- ◆ TexAmericas Center – **industrial park in its infancy; baseline being established** since historical demands not existing



Background on TAC Water Demand Projections (Cont.)

- ◆ Methodology:
 - (A) Determined TAC water demand based on previous list of potential prospects (30 MGD); demand is projected to double in the next 20-30 years.
 - (B) Identified industrial park similar to TAC in Pryor, Oklahoma to serve as direct model for TAC growth and development
- ◆ Relevant example of specific case where adjustments are necessary for TAC revision request according to TWDB *Methodologies for Developing Draft Irrigation, Manufacturing, and Steam-Electric Water Demand Projections (Section 3.1)*.



TexAmericas Center vs. MidAmerica Industrial Park

Comparison Factors	TexAmericas Center	MidAmerica Industrial Park
Largest Industrial Park	Texas	Oklahoma
Size of Park (Acres)	9,000	9,000
Distance from Metropolitan Area	Located between the Cities of Dallas (TX) & Little Rock (AR) along I-30 Corridor	Located 30 miles from Tulsa
Origin of Development	Developed in early 1940's as a military ordnance depot; later served munitions production & military vehicle maintenance	Developed by Dept. of Defense in 1940 to serve Ammunitions Facility
Beginning of Growth/WTP Expansion History	Riverbend WRD acquired wet utilities – May 1, 2016	1978 (20 to 30 MGD Exp.) 1983 (30 to 40 MGD Exp.) Mid 1990s (40 to 50 MGD Exp.)
Number of Industrial Companies at Park	3	80 (initially 3 in 1978)

TexAmericas Center – Prospective Industrial Customers (2011-2016)

Project Name	Year	Potable Water (MGD)	Raw Water (MGD)	Unspecified (MGD)
Artemis	2016	0.025		
Southern Comfort	2016	normal office use	0.04	
Fortress Texas	2016		0.40	
Pillar Twin II	2016		0.21	
Cast Iron	2016	3.33	18.87	
Sailfish	2016	0.25		
Take Away	2015	0.41		
Hill Country	2015		0.53	
Bed Bunk	2015		0.10	
Greenfield Food	2015			3.89
P&B Ernst	2014		0.70	
Power Chip	2014			0.10
Falcon	2012			0.27
Delta GACC	2011		5.00	
TOTAL WATER NEEDS		4.02	25.85	4.26
TOTAL (Potable + Raw Water Needs) = 30 MGD				

MidAmerica Industrial Park – Model for Projected TAC Growth & Water Demands

MidAmerica Industrial Park Water Demand			TAC Water Demand
YEAR	MGD	AC-FT	YEAR
1980	30.0	33,604	2020
1990	53.5	59,928	2030
2012	59.4	66,509	2040
2020	66.7	74,735	2050
2030	74.1	82,961	2060
2040	81.4	91,187	2070

Final Alternatives – Regional Water Infrastructure



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ALTERNATIVE 1

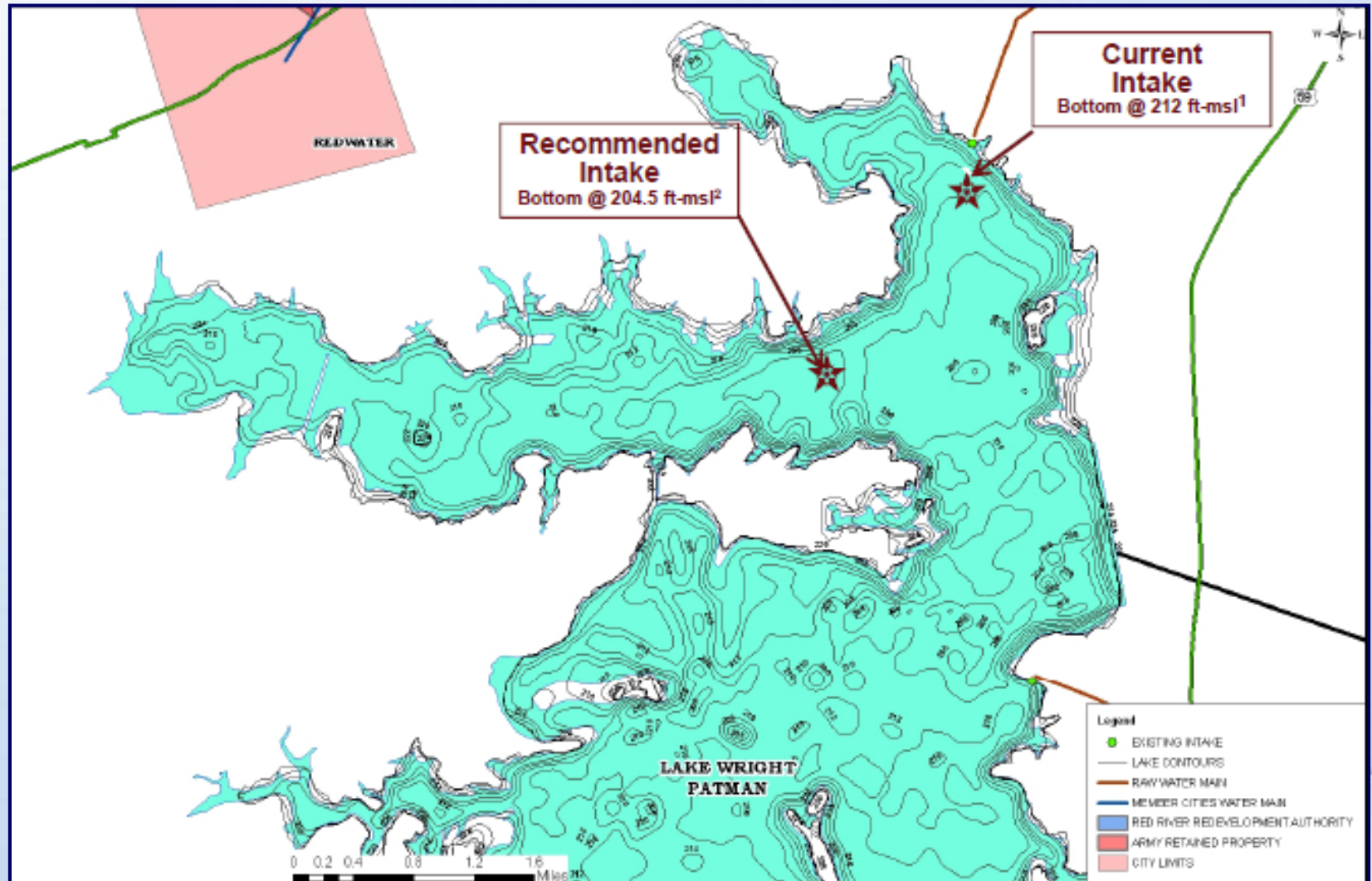
Construct New Intake Structure and Raw Water Pipeline at Lake Wright Patman

- 1A) TexAmericas Center
- 1B) Connection to existing New Boston Road Water Treatment Plant



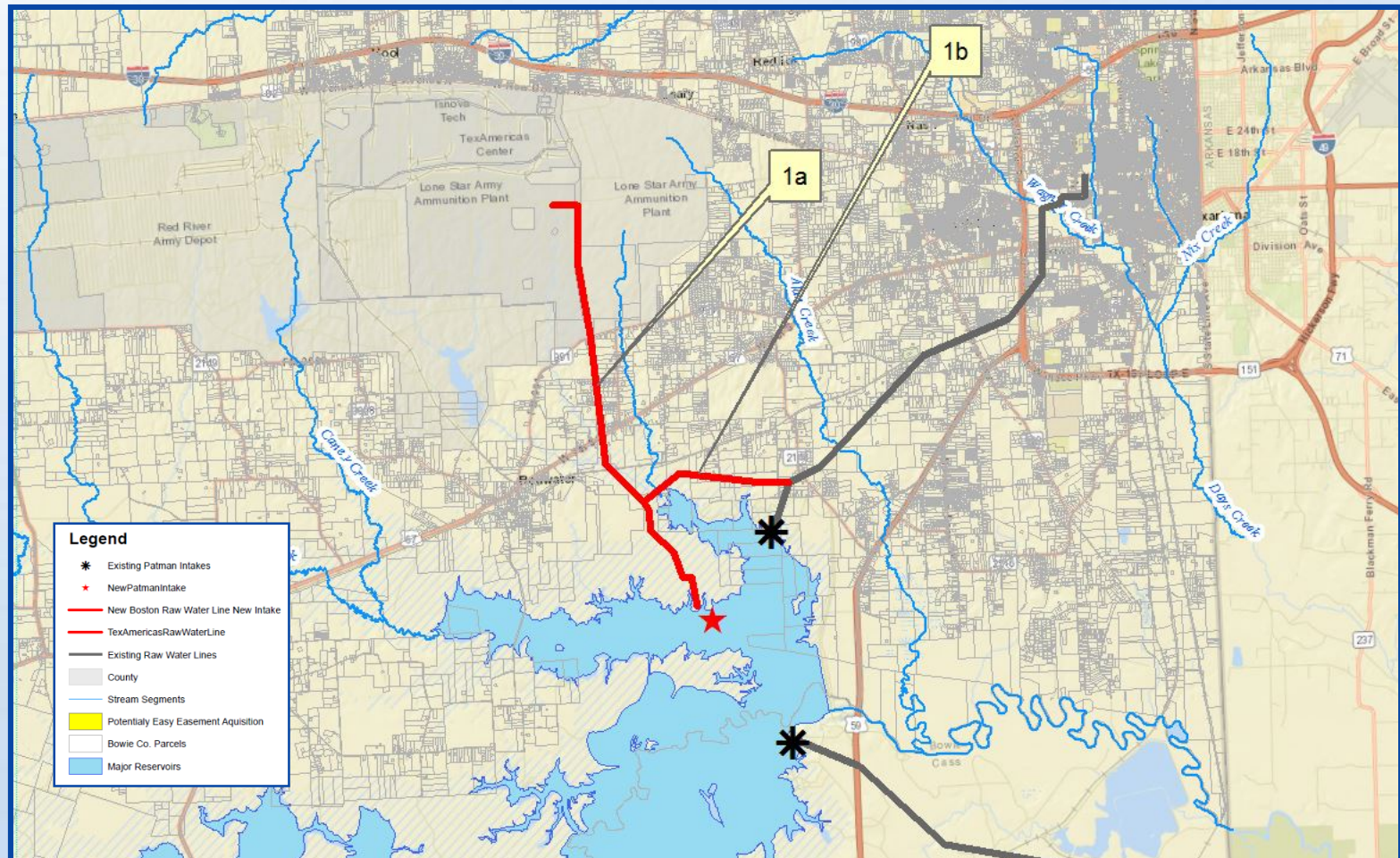
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Recommended Location of New Raw Water Intake at Lake Wright Patman

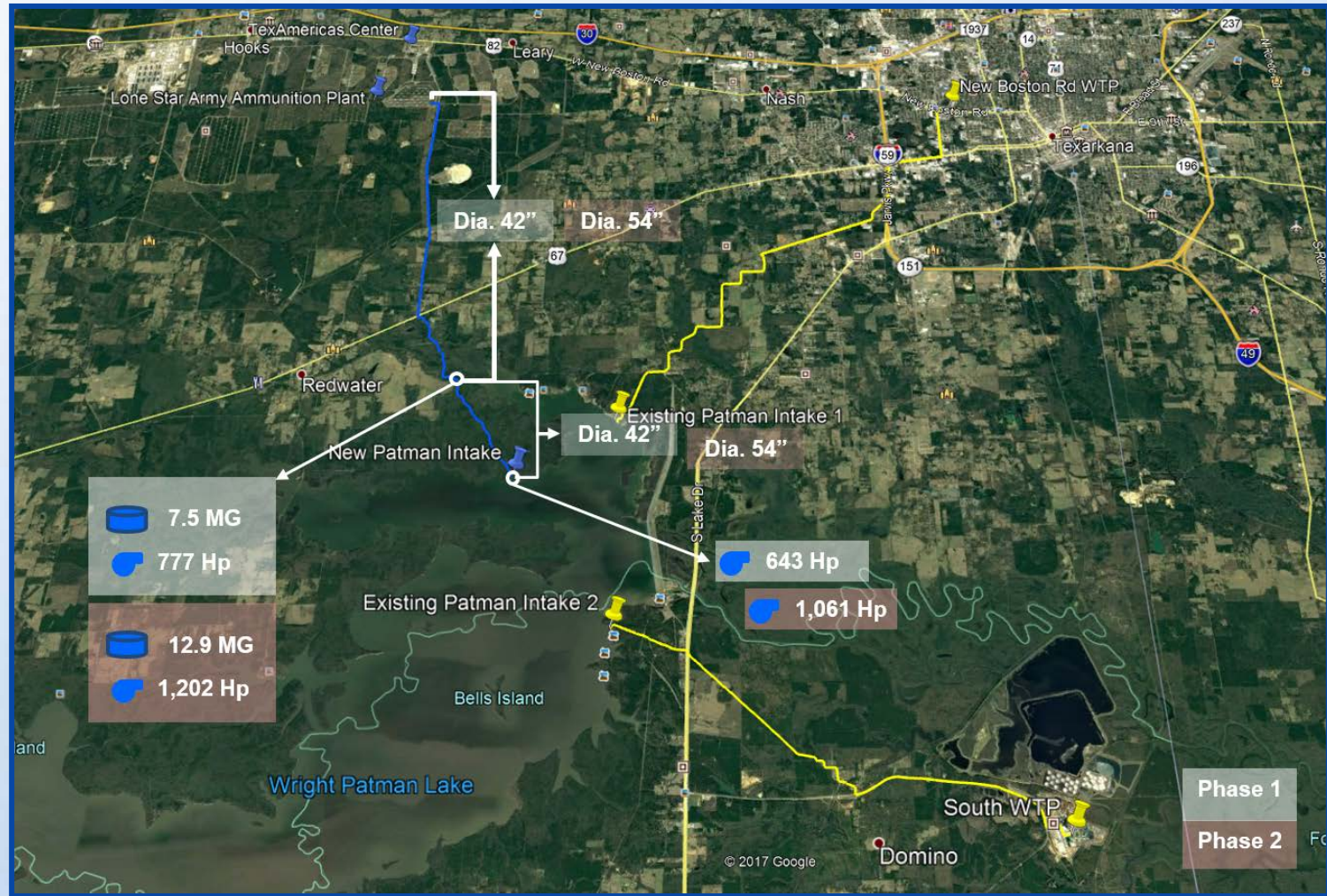


*Source: RWRD Phase 3 Report on Water Treatment Plant and Raw Water Intake Site Selection; CH2M HILL (August 29, 2012)

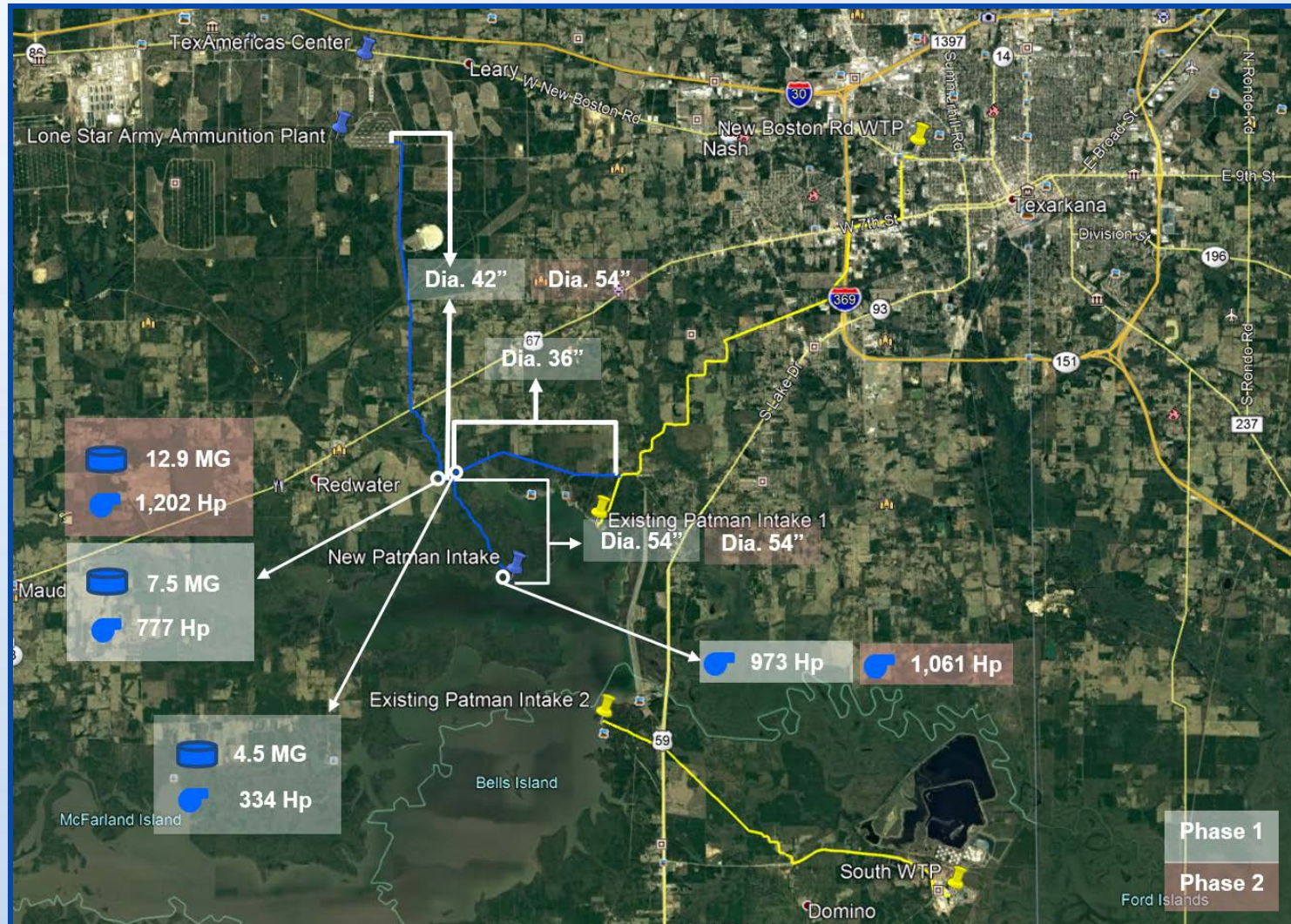
Proposed Alignment of New Intake Structure and Raw Water Pipeline



Alternative 1A – Phased (TAC Raw Water)



Alternative 1B – Phased (TAC + Tie-in to New Boston Road WTP)



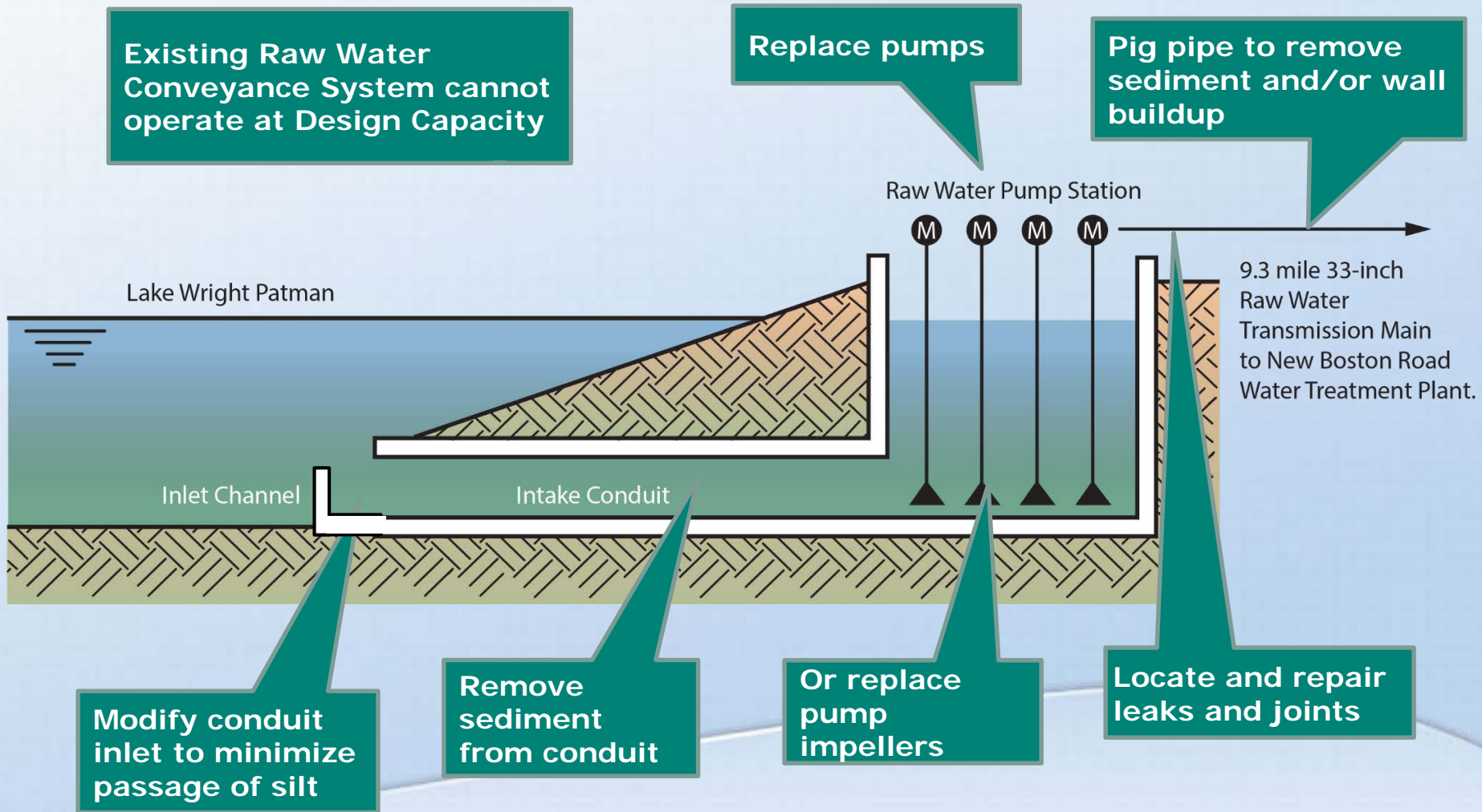
ALTERNATIVE 2

Make necessary improvements at New Boston Road Water Treatment Plant

- 2A) Modify Raw Water Delivery System (i.e. intake, pump station, raw water pipeline)
- 2B) Expand existing New Boston Road Water Treatment Plant from 18 to 24 MGD to utilize entire permitted treatment capacity



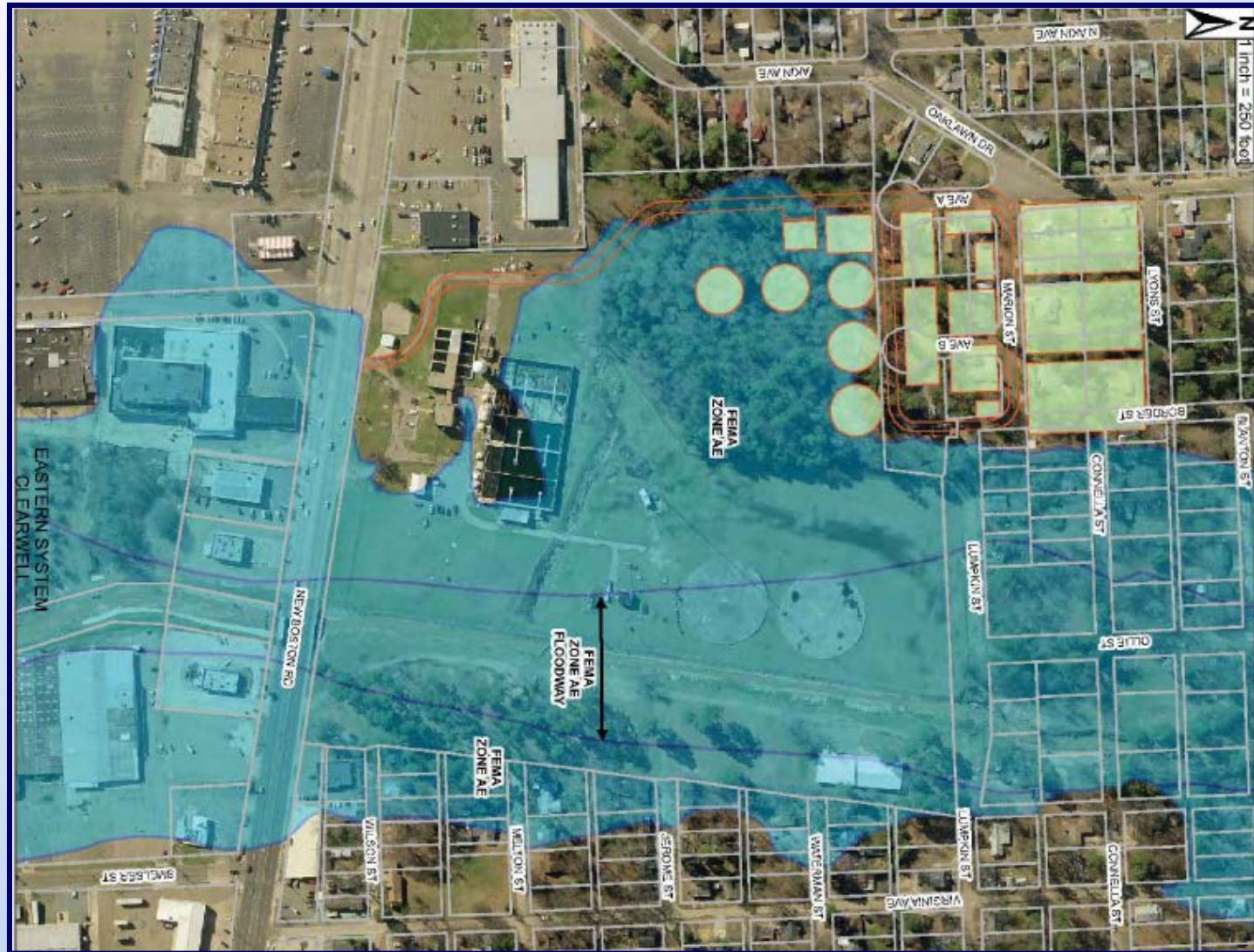
Alternative 2A: Potential fixes to recover lost hydraulic capacity



Alternative 2A: Raw Water Delivery System at New Boston Road WTP

System Element	Improvements	Description
Intake Conduit	Inspection of Conduit	Diver to inspect intake conduit for condition assessment and sedimentation
	Sediment Removal	Remove sediment from conduit
	Inlet Modifications	Modify conduit inlet to minimize passage of silt
Pump Station	Pump Field Testing	Perform field pump tests to assess actual pump performance
	Pump Replacement	Replace pumps including electrical upgrades
Pipeline	Flow Testing	Field measurement of inlet and outlet flows to identify leakage
	Pipeline Inspection	Remote inspection of pipeline to assess internal condition
	Leak Repair	Locate and repair leaks and joints
	Pipeline Pigging	Pig pipe to remove sediment and/or wall build-up

New Boston Road WTP – Floodplain Limits



*Source: RWRD Phase 3 Report on Water Treatment Plant and Raw Water Intake Site Selection; CH2M HILL (August 29, 2012)

ALTERNATIVE 3

Construct New Water Treatment Plant at
TexAmericas Center

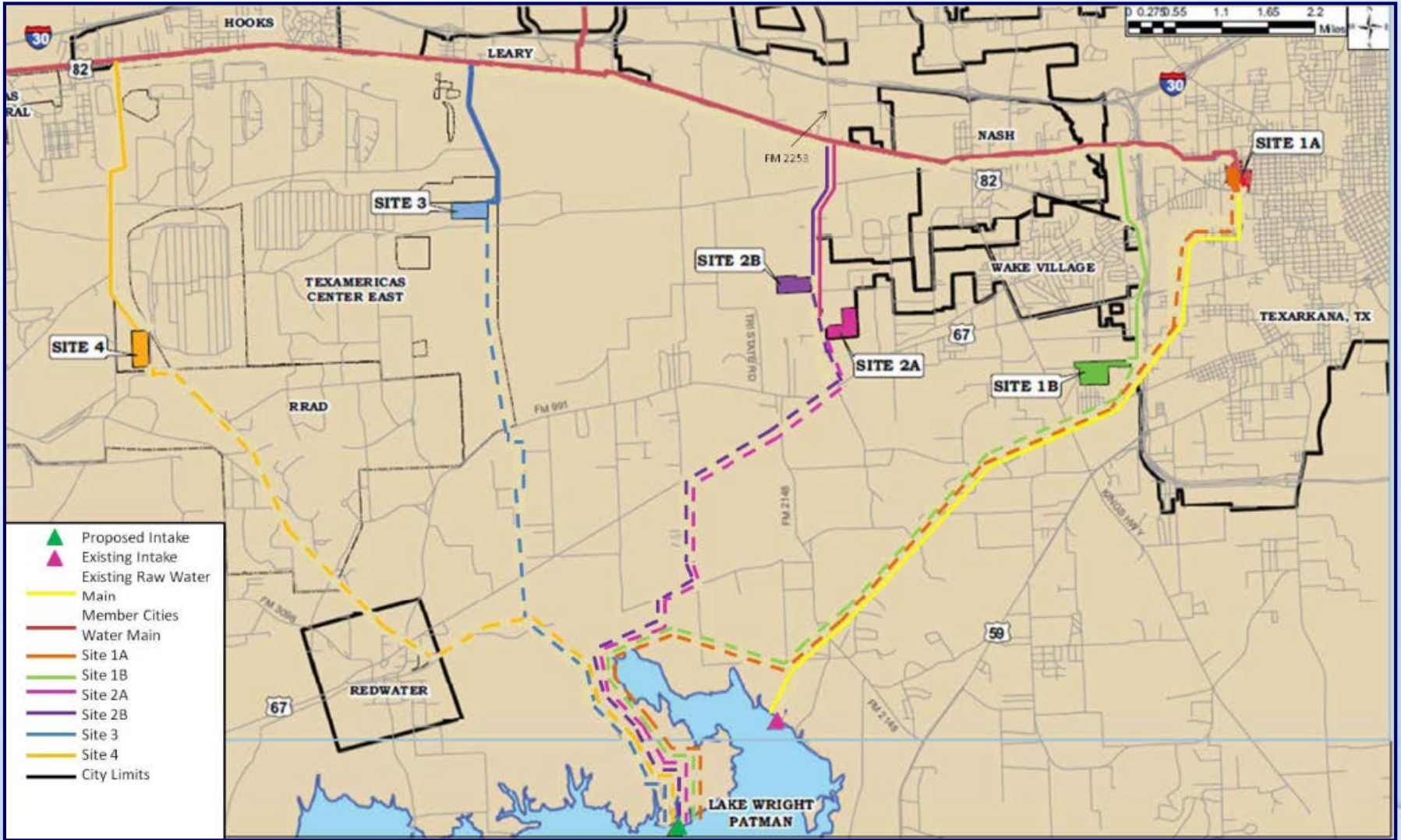
3A) Bowie County Parkway site

3B) Southwest Corner of former Ammunition Plant



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Options for New Water Treatment Plant Site



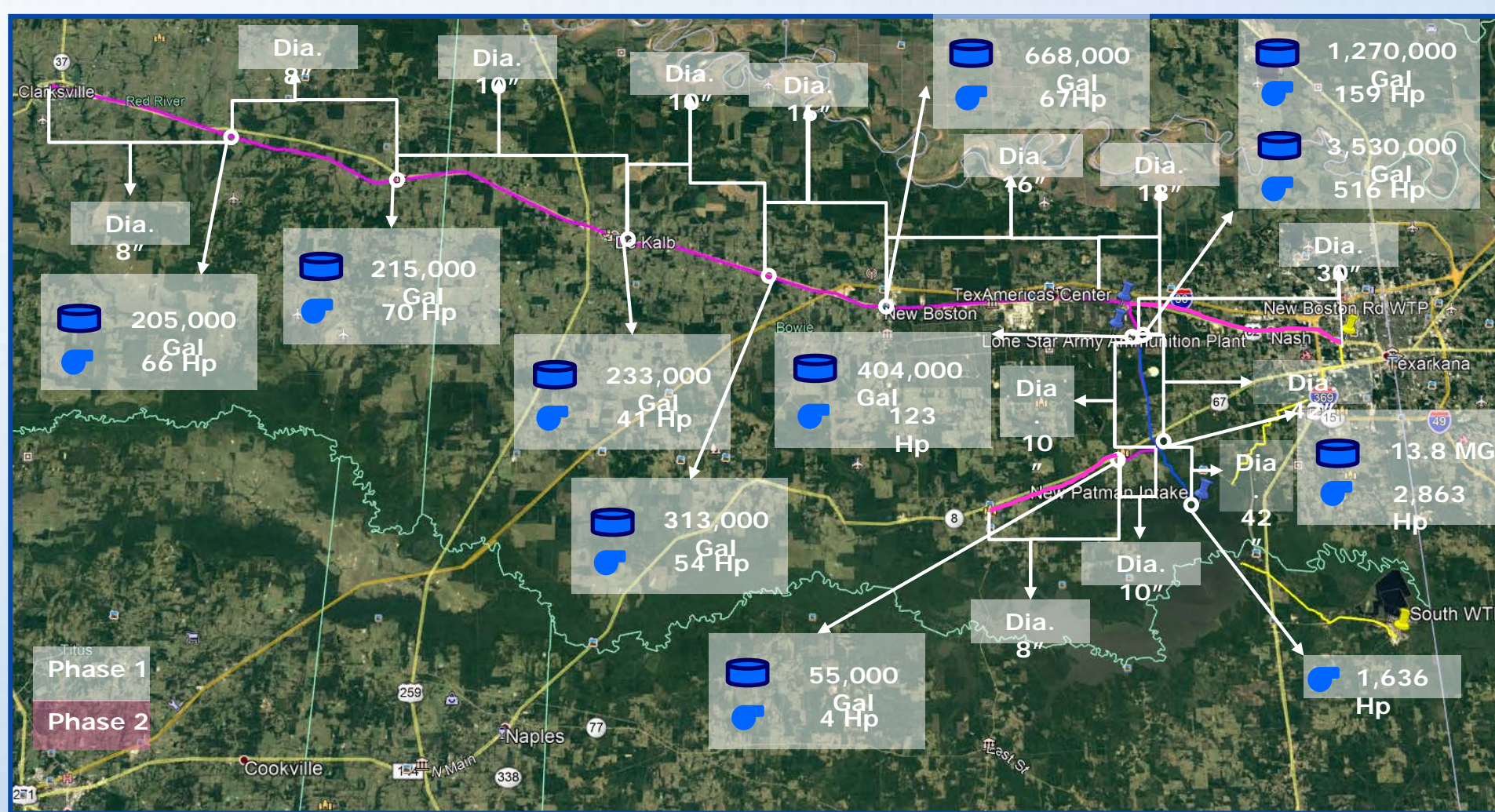
*Source: RWRD Phase 3 Report on Water Treatment Plant and Raw Water Intake Site Selection, CH2M HILL (August 29, 2012)

Evaluation of Sites for New TAC WTP

Alternative 3A-Bowie County Parkway Site selected as location for new TAC WTP for the following reasons:

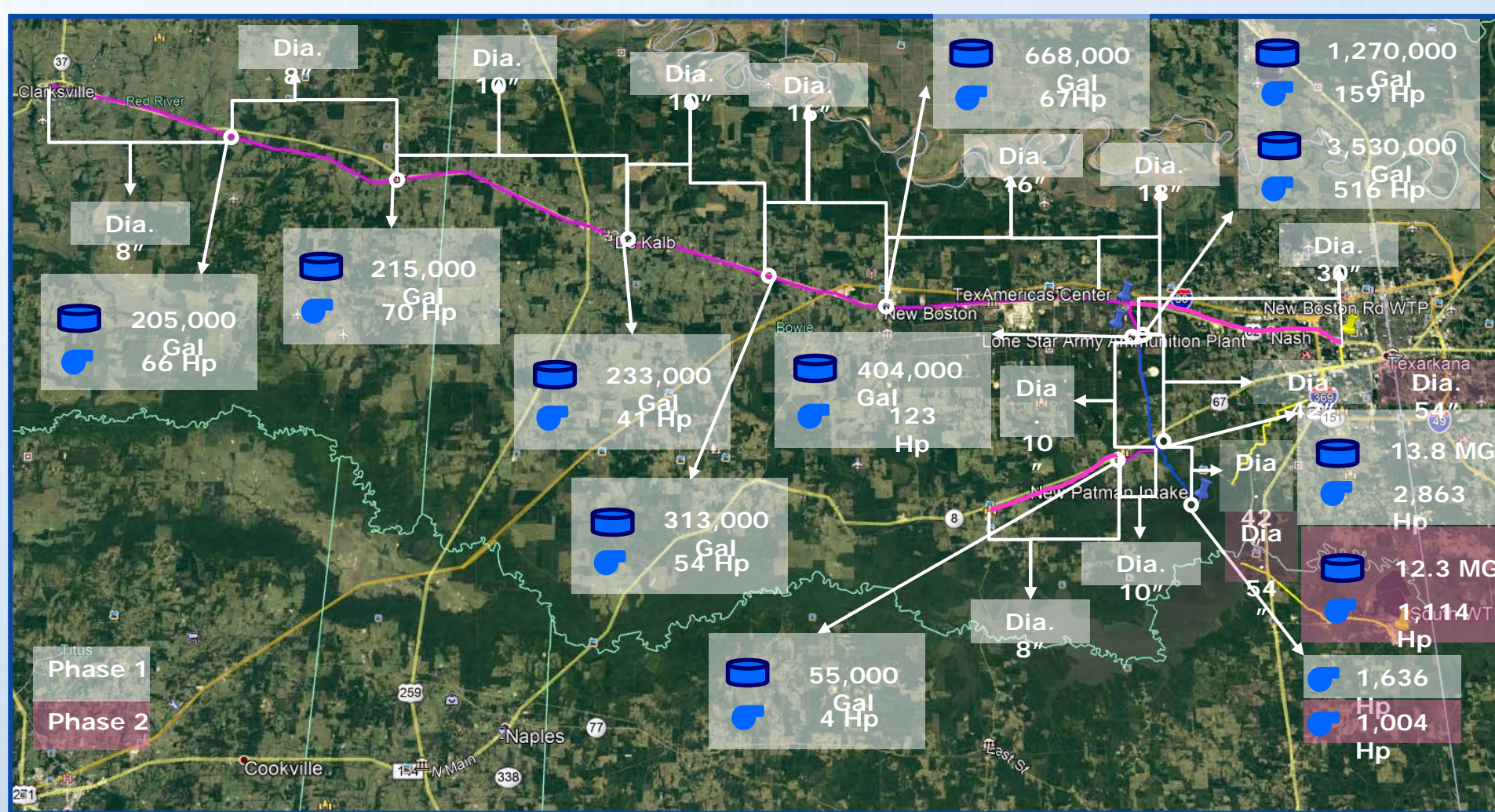
- ◆ One of two sites to receive highest votes;
- ◆ Ideal location to tie into transmission line along Highway 82 to the other RWRD entities and closer to the greater demand;
- ◆ Reserved property by TAC for new WTP and located within RWRD Water CCN;
- ◆ Location in close proximity to new raw water line that needs to be constructed to serve TAC; and,
- ◆ CH2M HILL study identified environmental concerns on the former Ammunition Plant Site.

Alternative 3A (TAC WTP) – Phase 1*



*Phase 1 - Initial TAC WTP at 15MGD (designed hydraulically up to 25 MGD)

Alternative 3A (TAC WTP) – Phase 2*



*Phase 2 – Additional 10 MGD expansion (up to 25 MGD)

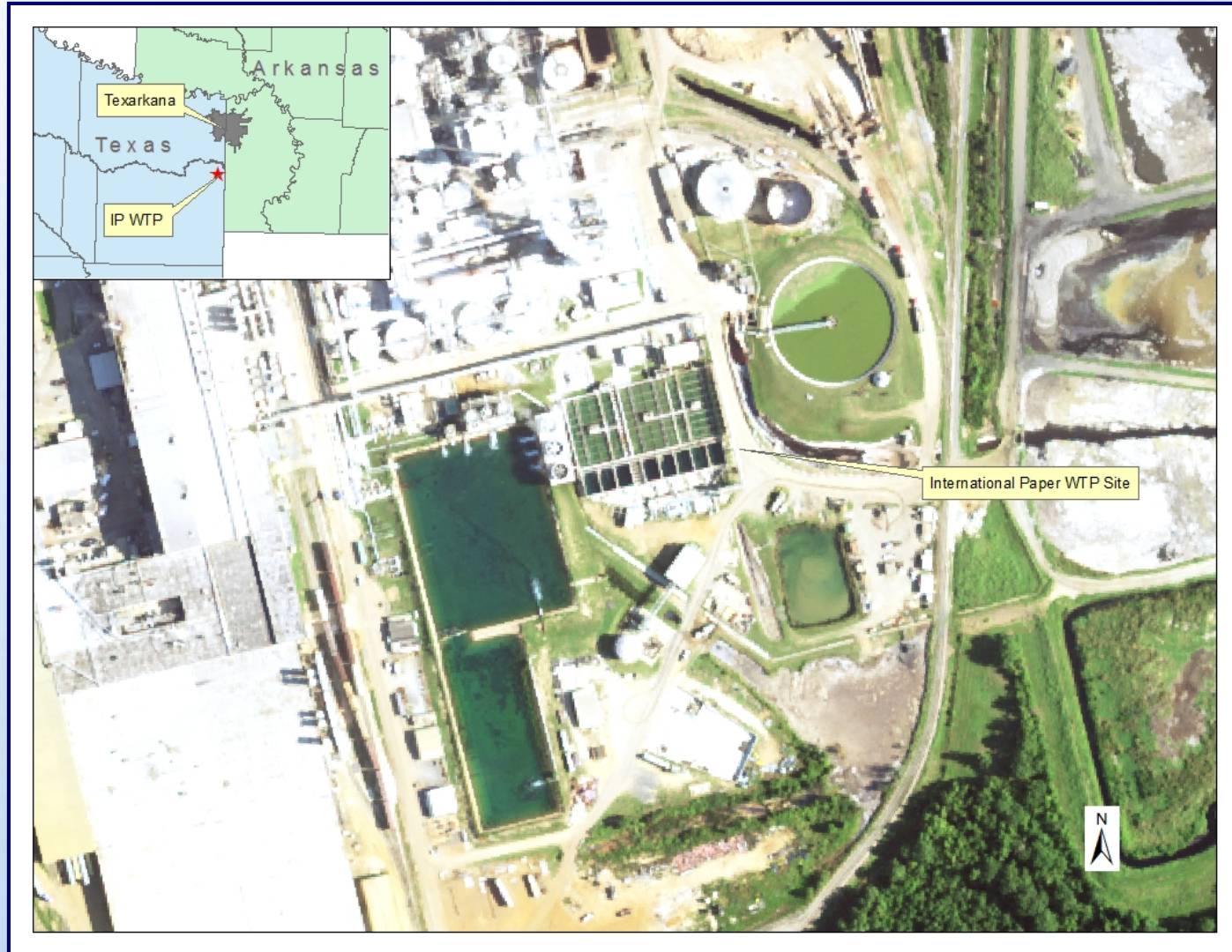
ALTERNATIVE 4

Consider Water Treatment Options in Cass County

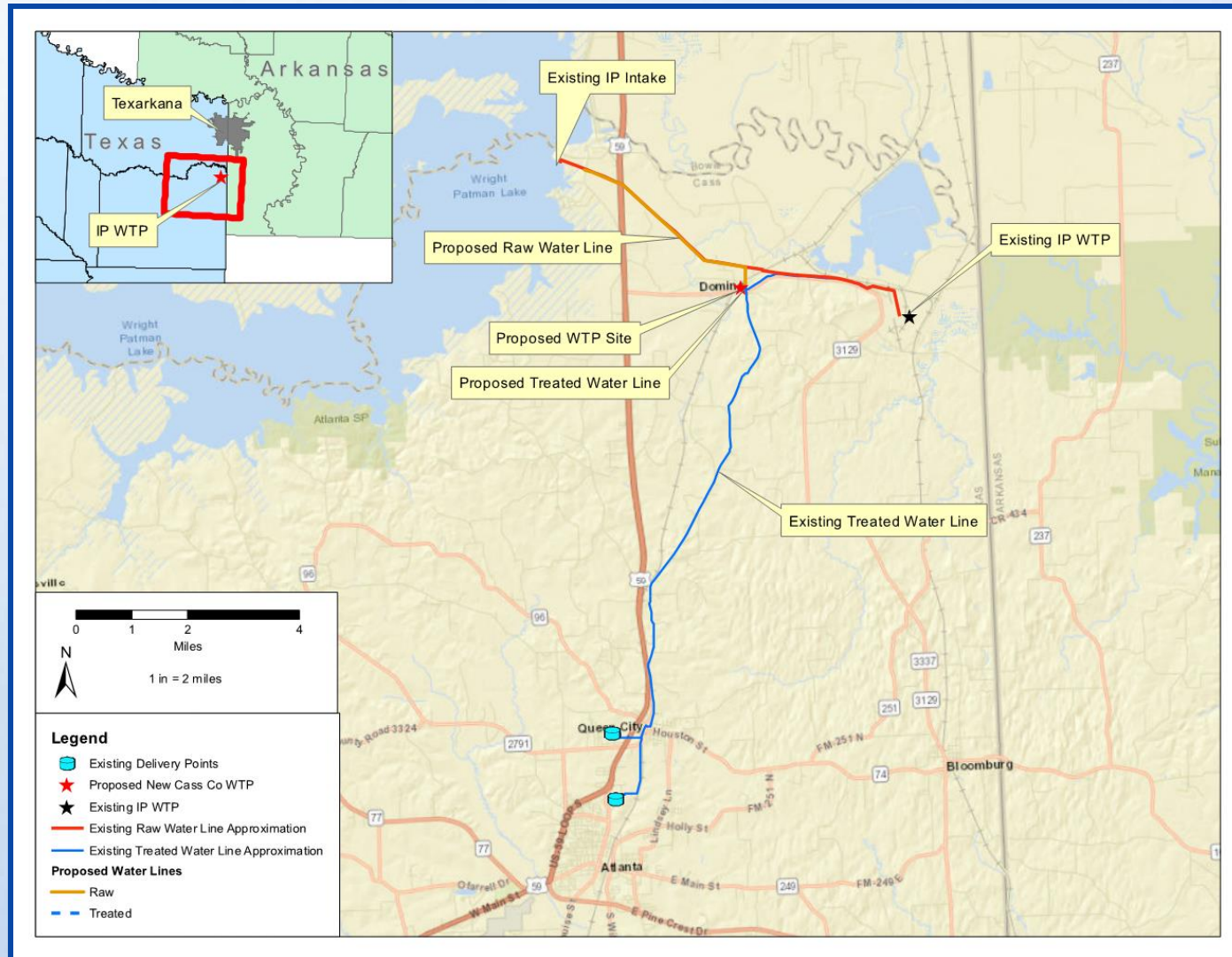
- 4A) Expand existing International Paper Water Treatment Plant
- 4B) Construct New Water Treatment Plant in Cass County



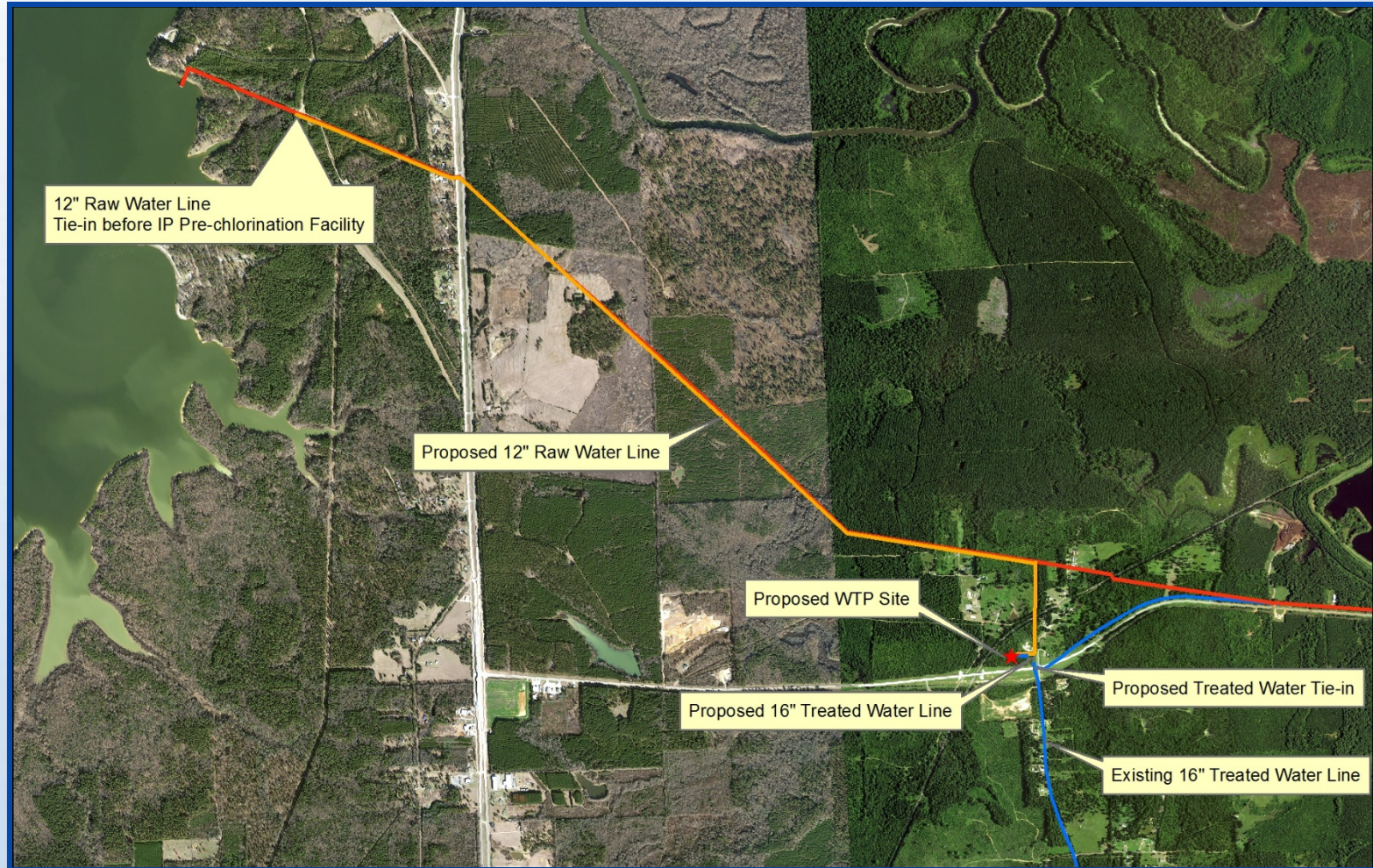
Alternative 4A: Expand Existing WTP



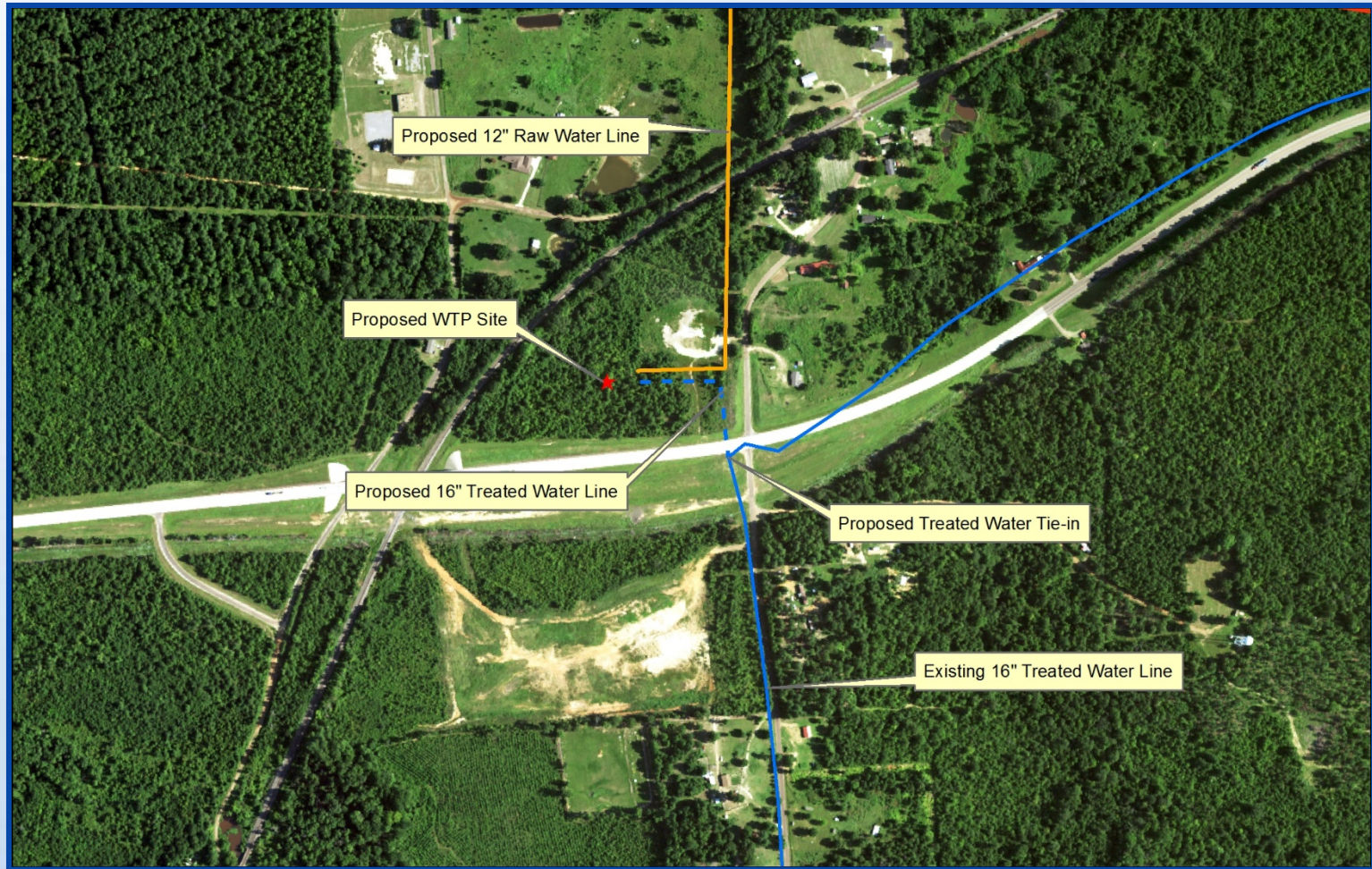
Alternative 4B: New WTP in Cass Co.



Alternative 4B: New WTP in Cass Co.



Alternative 4B: New WTP in Cass Co.



Preliminary Conclusions and Recommendations

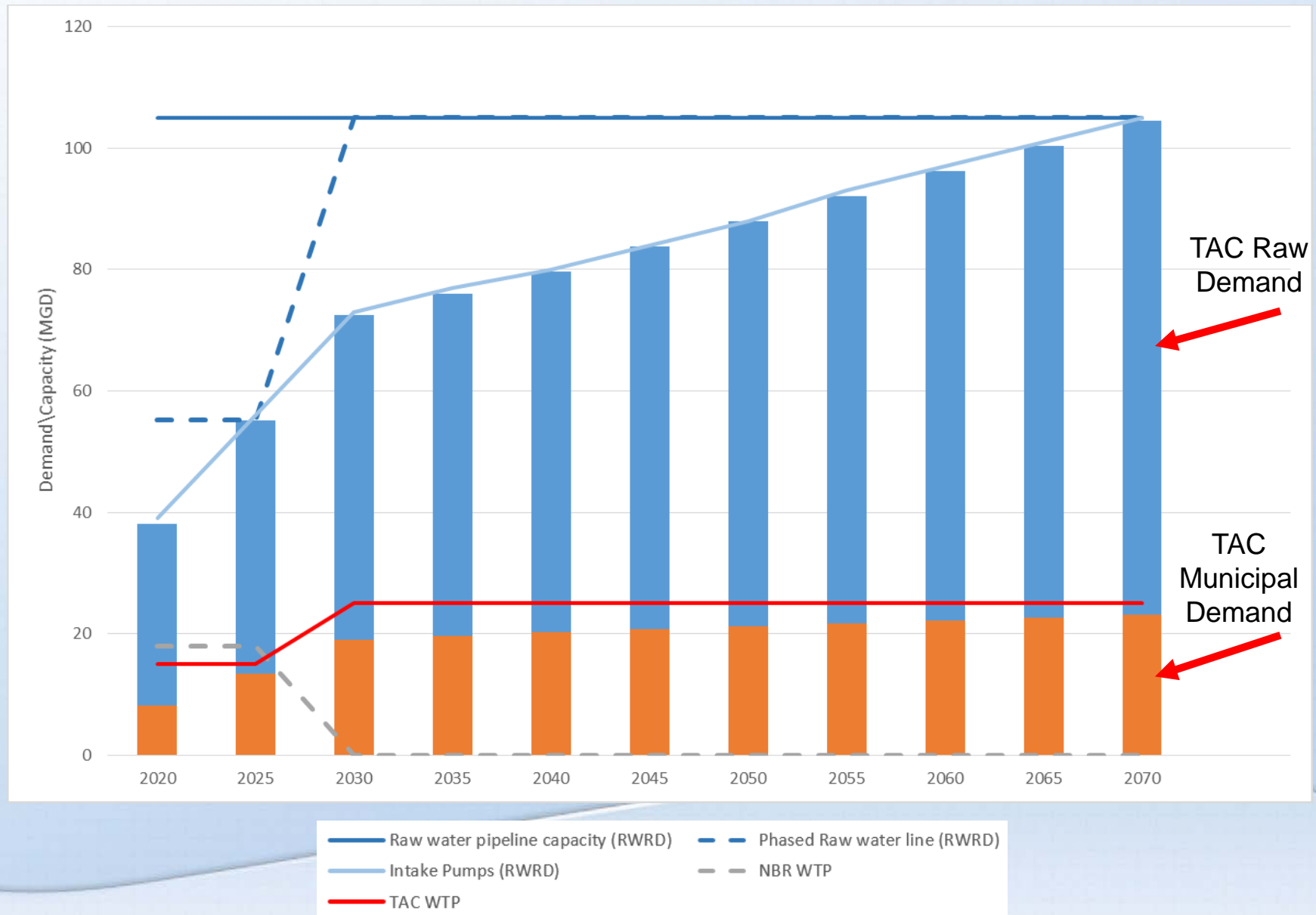


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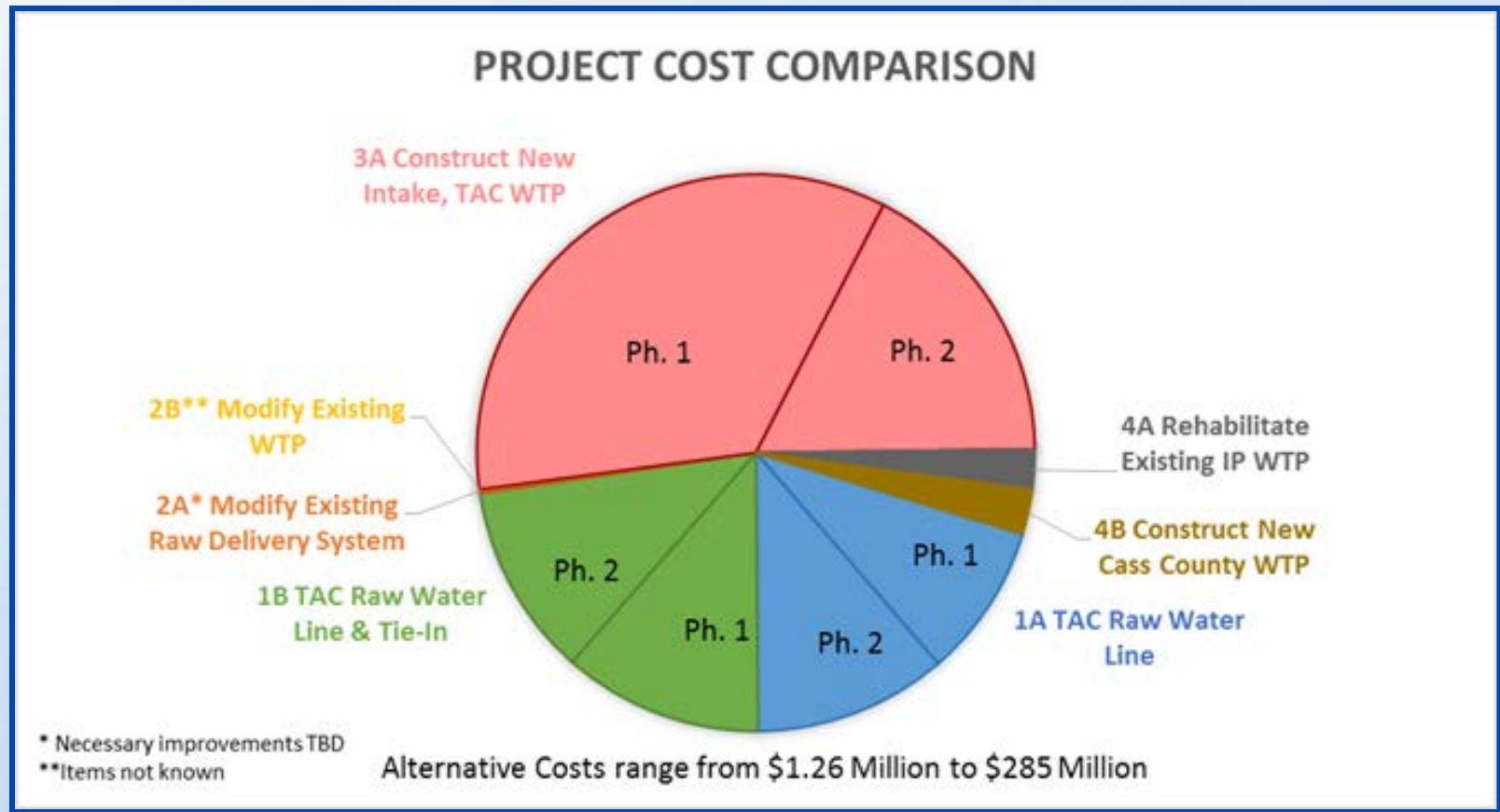
Preliminary Conclusions and Recommendations

- ◆ Construct Phase 1 of New TAC WTP, Raw Water Conveyance System (intake, raw water line, pump station) and Regional Transmission Line in 2020 due to treatment capacity issues;
- ◆ Phase 1 in 2020 will initially serve TAC and the RWRD Member Entities. Approximately 50% water demand of City of Texarkana (TX) will be served in 2025.
- ◆ New Boston Road WTP will serve City of Texarkana (TX) until 2030 to plan for environmental regulatory requirements and to allow for overlap period during the timing of construction/expansion of New TAC WTP.
- ◆ Construct Phase 2 of New TAC WTP and expand Raw Water Conveyance System to serve entire water demands of City of Texarkana (TX) in 2030.
- ◆ Construct New Cass County WTP in the City of Domino (date TBD)

Overall Implementation Plan



Summary of Total Capital Cost Estimates – Regional Infrastructure



Q&A Discussion



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Next Steps



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Project Timeline

- ◆ **Project Kick-off Meeting (July 21, 2016)**
- ◆ **Data Collection Activities (August 31, 2016)**
- ◆ **WTP Site Assessments (October 26-27, November 2 and November 8, 2016)**
- ◆ **First Town Hall Meeting (November 8, 2017)**
 - Discuss project overview, status update and planning region
- ◆ **Second Town Hall Meeting (January 31, 2017)**
 - Discuss population/water demand data and various regional water supply, distribution/treatment alternatives
- ◆ **Third Town Hall Meeting (October 24, 2017)**
 - Discuss preliminary cost analysis and evaluation of final alternatives for regional supply, distribution and treatment
- ◆ **Fourth Town Hall Meeting (February 2018)**
 - Discuss comments on Draft Report (participants receive electronic copy 2 weeks prior to meeting)
- ◆ **Finalize Report by March 31, 2018**



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