

September 30, 2016

TO: ALL POTENTIALLY INTERESTED PARTIES:

RE: Brazosport Water Authority (DWSRF Project No. 62643) – Water Treatment Plant Improvements Project

The attached document is being provided for your information. This is not a permit application. No action is required from your agency.

The attached document is an environmental determination issued by the Texas Water Development Board (TWDB) for a proposed project to be funded through the TWDB. Pursuant to the environmental assessment requirements of 31 Texas Administrative Code (TAC) § 371.41 of the TWDB rules, the Executive Administrator of the TWDB has determined that the proposed action described in the attached documents is consistent with the National Environmental Policy Act. Coordination with the appropriate regulatory agencies and a public meeting were part of this determination.

Documentation supporting this decision is on file in the offices of the TWDB, and is available for public review upon request. After evaluating the comments received, the Executive Administrator will make a final determination. However, no action regarding the provision of federal financial assistance for the project will be taken for at least thirty (30) calendar days after release of this Finding of No Significant Impact. Comments supporting or disagreeing with this preliminary environmental determination may be submitted to the Director, Regional Water Project Development, Texas Water Development Board (TWDB), P.O. Box 13231, Austin, Texas 78711-3231.

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FINDING OF NO SIGNIFICANT IMPACT

TO ALL INTERESTED AGENCIES AND PUBLIC GROUPS:

As required by the permanent rules of the Texas Water Development Board (TWDB), 31 Texas Administrative Code (TAC) § 371.41, an environmental review consistent with the National Environmental Policy Act (NEPA), 42 U.S. Code § 4321 et seq., has been performed on the project below. This project is proposed to be funded through the Drinking Water State Revolving Fund (DWSRF), which is administered by the TWDB.

Brazosport Water Authority
TWDB Project Number 62643
Water Treatment Plant Improvements
Total DWSRF Loan Amount: \$15,500,000 (L1000326)

Brazosport Water Authority (Authority) is proposing to make the following improvements to their existing water treatment plant (WTP): (1) construct a new maintenance building and high service pump station; (2) install a new 10 million gallon (MG) clearwell; (3) upgrade the WTP's electrical system; (4) upgrade the SCADA system; and (5) complete associated yard piping, electrical, and instrumentation improvements. All work will occur within the existing WTP site. The total project cost associated with the proposed project, including planning, design, and construction phases is estimated at \$15,500,000. This funding package includes the planning, design, and construction funds for the proposed WTP improvements.

An environmental review of the remainder of the proposed project consistent with NEPA has been completed following the guidelines provided in 31 TAC Chapter 371, Subchapter E. This environmental review is documented by the enclosed Environmental Assessment (EA). The EA contains mitigation conditions that will be applied to the project and are structured so that no significant adverse environmental impacts will result from the proposed project. The Executive Administrator of the TWDB has made a preliminary decision not to require the preparation of an Environmental Impact Statement. In order to ensure that the proposed project will not have a significant impact on floodplains, cultural resources, threatened or endangered species, and protected migratory bird species, loan conditions have been developed which are described in detail in the attached EA. These conditions are listed below.

- The Authority agrees to complete coordination with the United States Army Corps of Engineers by submitting a Pre-Construction Notification for Nationwide Permit 39 for Commercial and Institutional Developments and obtaining all necessary permits prior to construction (USACE Project No. SWG-1997-00999);
- As per agreement with the Texas Parks and Wildlife Department (TPWD Project No. ERCS-11196), construction activities such as, but not limited to, tree felling

as well as vegetation clearing, trampling, or maintenance should occur outside of the April 1 – July 15 migratory bird nesting season. To comply with the Migratory Bird Treaty Act (MBTA), if these activities occur within the nesting season, the proposed site should be surveyed for migratory bird nest sites prior to construction. Since raptors nest in late winter and early spring, all construction activities as identified above should be excluded from a minimum zone of 100 meters around any raptor nest during the period of February 1 – July 15;

- Standard emergency discovery condition for threatened and endangered species; and,
- Standard emergency discovery condition for cultural resources.

Documentation supporting this decision is on file in the office of the Regional Water Project Development, TWDB, and is available for public review upon request. Comments supporting or disagreeing with this preliminary environmental determination may be submitted to the Director, Regional Water Project Development, Texas Water Development Board, P.O. Box 13231, Austin, Texas 78711-3231. After evaluating the comments received, the Executive Administrator will make a final determination. However, no action regarding the provision of federal financial assistance for the project will be taken for at least thirty (30) calendar days after release of this Finding of No Significant Impact.

**Brazosport Water Authority, Brazoria County
Drinking Water State Revolving Fund Project No. 62643
Water Treatment Plant Improvements
Environmental Assessment**

INTRODUCTION/BACKGROUND

The proposed project is located on the existing Brazosport Water Authority (Authority) Water Treatment Plant (WTP) site. The existing WTP site is located approximately eight miles south of State Highway (SH) 35 and four miles north of SH 36 in Brazoria County, Texas. The Authority proposes to use funds from a \$15,500,000 Drinking Water State Revolving Fund (DWSRF) loan (L1000326) to finance the planning, design, and construction phases of the WTP Improvements project. The Authority closed on the above referenced loan on October 22, 2014.

Purpose and Need¹

The Authority serves several cities, companies, and agencies in Brazoria County. The current maximum daily demand for existing customers is 17.87 million gallons per day (MGD) and the current capacity of the existing WTP is 17.98 MGD. The Authority does not have the capacity to meet the City of Brazoria's current maximum daily demand or the calculated additional water production capacity necessary to meet the 2040 maximum daily demands. Additionally, the current WTP power system, which was originally constructed in 1987, experiences intermittent outages. The purpose of the proposed project is to increase capacity at the existing WTP to accommodate a rapidly growing population within existing customer cities and ensure operational flexibility during natural disaster or emergency situations.

PROJECT DESCRIPTION

The proposed project will include the following project components: (1) construction of a 10 MG clearwell to store treated brackish groundwater; (2) construction of a high service pump station; (3) improvements to associated yard piping, electrical and instrumentation; (4) supervisory control and data acquisition (SCADA) system improvements; (5) plant electrical system upgrade; and (6) construction of a new administrative building.

The design year for the proposed improvements is 2040. A projected 2040 population of 438,066 was estimated for the Brazoria County Water Master Plan area. The Brazoria County Water Master Plan found that future demands in 2025 and 2040 are estimated to be 26 MGD and 32 MGD, respectively. These improvements will accommodate the projected maximum daily demand.

¹ Brazosport Water Authority (October 2015). *Environmental Information Document: Brazosport Water Treatment Plant* (Prepared by CDM Smith). Received by TWDB on October 30, 2015. Made complete with additional materials submitted on September 16, 2016.

EVALUATION OF ALTERNATIVES

This section identifies the other action alternatives that were considered and evaluated for implementation as solutions for addressing the water supply shortages at the existing WTP.

Preferred Action Alternative

The preferred action alternative was selected due to the competitive cost and limited area that would be impacted by construction. The proposed action would involve the construction of a 10 MG clearwell, a high performance pump station, upgrades to the electrical and instrumentation systems at the existing WTP, and construction of a new administrative building, parking lot, and associated improvements including electrical, plumbing, and heating, ventilation, and air conditioning (HVAC).

As with any project that includes construction, certain impacts are unavoidable such as a temporary increase in noise, traffic, and air emissions from trucks and other equipment, and increased impervious cover which may have impacts on water quality. During implementation of the proposed action, Best Management Practices (BMPs) would be implemented to reduce erosion and sedimentation of adjacent waters. Implementation of the proposed action would provide the least environmental impact of all of the action alternatives and would provide increased water security for the Authority's current and future customers. This action alternative allows the Authority to securely supply water to existing customers into the future as their communities and facilities grow as well as the ability to provide treated water to new customers in Brazoria County.

Alternative 1

This alternative consists of expanding the existing WTP to meet the future demands of existing customers. A new WTP would be constructed on the north side of Harris Reservoir to serve potential new customers. This alternative assumes that a suitable location could be found on Harris Reservoir for a new WTP, and that the water supply would be available.

The existing WTP would be expanded to meet the 2040 maximum daily demands of current customers, resulting in a 3 MGD expansion in 2035. Under this alternative, Angleton, Brazoria, Clute, Freeport, Lake Jackson, Oyster Creek, and Richwood would continue to utilize their current groundwater capacity with treated surface water from the existing WTP.

This alternative assumes that the expansion would be a conventional water filtration plant similar to the one that the Authority currently operates. The high service pump station at the existing WTP that pumps finished water from the WTP through the distribution system would be expanded incrementally with the WTP. This high service pump station

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Brazosport Water Authority, Brazoria County
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would be expanded to a firm capacity of 21.8 MGD in 2035. The raw water pump station/intake on the fresh water canal would also be expanded to 21.8 MGD in 2035.

In addition, under this alternative, a new Northern Brazoria Regional WTP would be constructed on the north side of Harris Reservoir. The new WTP would be constructed in 2015 at an initial capacity of 11 MGD, with an expansion of 15 MGD in 2025 and another 8 MGD in 2035. This alternative assumes that the new plant would be a conventional water filtration plant such as the one the Authority currently operates. The high service pump station at the new WTP that pumps finished water from the WTP through the transmission system would be expanded incrementally with the WTP to a firm capacity of 34 MGD by 2035.

The raw water pump station/intake constructed on the Harris Reservoir would also be expanded incrementally to 34 MGD by 2035. New water transmission pipelines would be resized to meet the year 2040 maximum daily water demand while maintaining pipeline velocity of approximately 5 feet per second (FPS) and would be constructed in 2015.

Alternative 1 was not selected because it would involve significantly more environmental impacts due to the construction of a new WTP on Harris Reservoir. Under this alternative, the timeframe for when increased water supply would be available is later and uncertain due to regulatory requirements, permitting, and coordination with other stakeholders all of which are necessary when siting a new WTP facility. Furthermore, under this alternative the environmental impacts would be greater and impact a larger area of land.

Alternative 2

This alternative is the same as Alternative 1, with the exception of the water shortage planning. This evaluation assumed that beginning immediately, the Authority would purchase 7,885 acre-feet of water for the existing WTP and 13,893 acre feet of water for the new WTP, and that the cost of the raw water would range from \$62.50 per acre-foot in 2013 to \$150 per acre-foot in 2040, based on the Brazos River Authority (BRA) long-term planning strategy.

Alternative 2 was not selected because while it would provide increased water supply, this alternative would involve significantly more environmental impacts due to constructing a new WTP on Harris Reservoir. Under this alternative, the timeframe for when increased water supply would be available is more lengthy and uncertain due to regulatory requirements, permitting, and coordination with other stakeholders all of which are necessary when siting a new WTP facility. Furthermore, under this alternative the environmental impacts would be greater and impact a larger area of land.

Alternative 3

In this alternative, the Authority would continue to meet the demands of existing customers, plus added service to rural water users and Texas Department of Criminal Justice (TDCJ) Units, Ramsey, Stringfellow, and Terrell. A new North Brazoria Regional WTP would be constructed in northwestern Manvel to serve Manvel, TDCJ Darrington Unit and half the additional rural population along Texas Highway 288. This alternative assumes the water supply would be available from BRA for the new WTP raw water supply.

This alternative assumes that the Authority would experience a water shortage 10 percent of the time; therefore, an annual stipend equating to the cost of 10 percent of the year's average day demand would be set aside for use if a water shortage occurs. It is assumed that BRA would have the necessary water for sale, and that the cost of the raw water would range from \$62.50 per acre-foot in 2013 to \$150 per acre-foot in 2040, based on the BRA long-term planning strategy.

Alternative 3 was not selected because while it would provide increased water supply, this alternative would involve significantly more environmental impacts due to constructing a new WTP in Manvel. Under this alternative, the timeframe for when increased water supply would be available is later and uncertain due to regulatory requirements, permitting, and coordination with other stakeholders all of which are necessary when siting a new WTP facility. Furthermore, under this alternative, the environmental impacts would be greater and impact a larger area of land.

Alternative 4

This alternative is the same as Alternative 3, with the exception of the water shortage planning. To increase the reliability of the system during periods of drought, this alternative assumed that the Authority would negotiate a contract with BRA for firm water equivalent to eight months, or 67 percent, of the given WTP's 2040 average day water demand. As such, this evaluation assumed that beginning immediately, the Authority would purchase 13,466 acre-feet of water for the existing WTP and 12,500 acre-feet of water for the new WTP, and that the cost of the water would range from \$62.50 per acre-foot in 2013 to \$150 per acre-foot in 2040, based on the BRA long-term planning strategy.

Alternative 4 was not selected because while it would provide increased water supply, this alternative would involve significantly more environmental impacts due to constructing a new WTP in Manvel. Under this alternative, the timeframe for when increased water supply is available is more lengthy and uncertain due to regulatory requirements, permitting, and coordination with other stakeholders all of which are necessary when siting a new WTP facility. Furthermore, under this alternative the environmental impacts would be greater and impact a larger area of land.

Alternative 5

In this alternative, the existing WTP would be expanded to meet the 2014 maximum daily demands of Angleton, Brazoria, Clute, Freeport, Lake Jackson, Oyster Creek, Richwood, TDCJ Clemens Unit, TDCJ Wayne Scott Unit and Dow and would add service to the communities of Sweeny, Jones Creek, Surfside Beach and Phillips 66. A new WTP would be constructed on the north side of Harris Reservoir to serve Manvel, TDCJ Darrington Unit, TDCJ Ramsey Unit, Stringfellow Unit and Terrell Unit, Bailey's Prairie, Holiday Lakes, West Columbia, Varner Creek, and the rural population growth along Texas Highway 288.

This alternative assumes that the Authority would experience a water shortage 10 percent of the time; therefore, an annual stipend equating to the cost of 10 percent of the year's average day demand would be set aside for use if a water shortage occurs. It is assumed that BRA would have the necessary water for sale, and that the cost of the raw water would range from \$62.50 per acre-foot in 2013 to \$150 per acre-foot in 2040, based on the BRA long-term planning strategy.

Alternative 5 was not selected because while it would provide increased water supply, this alternative would involve significantly more environmental impacts due to constructing a new WTP on Harris Reservoir. Under this alternative, the timeframe for when increased water supply would be available is later and uncertain due to regulatory requirements, permitting, and coordination with stakeholders all of which are necessary when siting a new WTP facility. Furthermore, under this alternative the environmental impacts would be greater and impact a larger area of land.

Alternative 6

This alternative is the same as Alternative 5, with the exception of the water shortage planning. To increase the reliability of the system during periods of drought, this alternative assumed that the Authority would negotiate a contract with BRA for the rights to eight months, or 67 percent, of the given WTP's 2040 average daily water demand. As such, this evaluation assumed that beginning immediately, the Authority would purchase 8,843 acre-feet of water for the existing WTP and 14,446 acre-feet of water for the new WTP, and that the cost of the raw water would range from \$62.50 per acre-foot in 2013 to \$150 per acre-foot in 2040, based on the BRA long-term study.

Although it would provide increased water supply, Alternative 6 was not selected because it would involve significantly more environmental impacts due to constructing a new WTP on Harris Reservoir. Under this alternative, it is not certain when an increased water supply might become available. Also, the project would be subject to regulatory requirements, permitting, and coordination with stakeholders. Furthermore, under this alternative the environmental impacts would be greater and impact a larger area of land.

Alternative 7

This alternative is the same as Alternative 3, except the initial 10 MGD expansion in 2015 would be the construction of a reverse osmosis (RO) plant treating brackish groundwater at the existing WTP site. The second expansion of 7 MGD in 2030 would be an expansion to the current conventional filtration treatment process.

In addition to the RO Plant, wells would need to be drilled near the existing WTP site. Based on a study completed by INTERA, the wells should be no larger than 3 MGD each. For this alternative, it is assumed that 3 MGD wells would be needed. They would be approximately 1,200 to 1,500 feet deep and 2,500 feet apart. Each well would have a 12-inch riser, connecting to a header increasing in size, culminating in 24-inch collection pipeline to the RO Plant. With brackish groundwater being readily available, this alternative does not include a provision for buying water during periods of drought.

Alternative 7 was not selected because while it would provide increased water supply, this alternative would involve significantly more environmental impacts due to constructing a new WTP in Manvel. Under this alternative, the timeframe for when increased water supply would be available is longer and uncertain due to regulatory requirements, permitting, and coordination with other stakeholders all of which are necessary when siting a new WTP facility. Furthermore, under this alternative the environmental impacts would be greater and impact a larger area of land. Brackish groundwater desalination produces a waste product in the form of desalination concentrate (i.e., brine) that would need to be disposed of accordingly.

Alternative 8

This alternative is the same as Alternative 3, except the initial 10 MGD expansion in 2015 would be the construction of a RO plant treating seawater at the existing WTP site. The second expansion of 7 MGD in 2030 would be an expansion to the current conventional filtration treatment process. With sea water being readily available, this alternative does not include a provision for buying water during periods of drought.

Alternative 8 was not selected because while it would provide increased water supply, this alternative would involve significantly more environmental impacts due to constructing a new WTP in Manvel. Under this alternative, the timeframe for when increased water supply would be available is longer and uncertain due to regulatory requirements, permitting, and coordination with other stakeholders all of which are necessary when siting a new WTP facility. Furthermore, under this alternative the environmental impacts would be greater and impact a larger area of land. Seawater desalination produces large volumes of brine, which would need to be disposed of in injection wells or other acceptable disposal methods. In comparison to brackish groundwater desalination, seawater desalination creates larger volumes of desalination concentrate.

Alternative 9

This alternative is the same as the preferred alternative, except the water supply would be seawater as opposed to brackish groundwater.

Alternative 9 was not selected because while it would provide increased water supply, this alternative would be significantly more costly and produce a large volume of desalination concentrate that would need to be disposed of accordingly. While this alternative would avoid impacts associated with siting and constructing a new plant, the cost and quantity of waste resulting from a seawater RO plant are significantly more expensive compared to the proposed action alternative.

No Action Alternative

The no action alternative is included to describe potential future conditions if no action is taken to increase water supply capacity at the existing WTP. Under the no action alternative, no work would be conducted to address water supply capacity issues in the Authority's treated water supply service area. Communities and facilities that are currently the Authority's customers would remain at an elevated risk of insufficient water supplies during drought and in the future as population increases.

The no action alternative was not selected because under this alternative water demands in the Authority's service area would not be met. Furthermore, the probability of water shortages in times of drought would continue to be unacceptably high. As population in communities currently served by the Authority increases and water demands grow, these populations would be at an elevated risk of water supply instability.

ENVIRONMENTAL SETTING

Location and Landforms

The proposed project is located near Lake Jackson on the north bank of the Brazos River in southeastern Texas, in southern Brazoria County about 50 miles south of Houston and 140 miles northeast of Corpus Christi. The proposed project area is located approximately eight miles south of SH 35 and four miles north of SH 36 in Brazoria County, Texas. The proposed project is on an already developed tract of the existing WTP site. The land around the existing WTP project area is primarily wooded with some undeveloped land associated with Farm to Market 2004 to the west. Land use in the vicinity of the plant is undeveloped woodland area and residential development associated with Lake Jackson is further north and east.

Brazoria County covers approximately 1,597 square miles of the State of Texas. Pearland, the county's largest city, is in the northern part of the county south of the

intersection of Sam Houston Parkway (Beltway 8) and SH 35. Lake Jackson and the WTP are located about 40 miles southwest of Pearland.

Climate

The climate is categorized as having long hot and humid summers, frequently cooled by the sea breezes. The winters are usually warm and occasionally experience cool air from the north. Rainfall occurs throughout the year and precipitation is sufficient enough for all crops. Every few years a hurricane will cross this area. In the winter the average temperature is about 55 degrees F and in the summer the average temperature is about 91 degrees Fahrenheit (F). The total annual precipitation is 52 inches, and approximately 60 percent of this usually falls between April and September. Snowfall is rare and in short duration, never exceeding more than four inches of snow. The average relative humidity in the midafternoon is about 60 percent at dawn.

The climatic wind data from 1930 to 1996 in Galveston, Texas was summarized by the National Climatic Data Center (NCDC) in 1998. The data did not capture wind direction; however, the averages for each month had wind speeds that ranged from 9 to 12 miles per hour. The closest air quality monitoring station to the project area is called CAMS 1016 – Lake Jackson and is approximately 0.5 mile north of the project area. The Ozone Summary for 2014 at this station has a yearly max of 89 parts per billion (ppb), and a yearly minimum of 0 ppb, at a yearly average of 24 ppb. These levels exceed the National Ambient Air Quality Standards (NAAQS) that are set through the Clean Air Act (CAA) and are designed to protect from and reduce the harmful effects to the public and environmental health. The 2015 NAAQS for ozone levels is 0.070 parts per million (ppm).

Geology and Soils

According to *Lake Jackson* U.S. Geologic Survey (USGS) 7.5-minute topographic quadrangle, the elevation of the proposed project area is approximately 15 feet above mean sea-level and is nearly level.

The surface geology is Quaternary alluvium, as is the case for most of the Texas coastal plain. The Alluvium is described as clay, silt, and sand, organic matter abundant locally; includes point-bar natural levee, stream channel, backswamp, coastal marsh, mud-flat and narrow beach deposits. The project area is mapped as Pledger clay. Pledger soils are found on nearly level floodplains and formed from calcareous stratified clayey alluvium of Holocene age. It is a Vertisol, so it is subject to shrinking and swelling caused by variations in moisture.

Pledger clay, the only soil the project area, is prime agricultural land, but the project area has been the site of the existing WTP since 1987. The project will not include any land use conversions from agricultural uses.

Drainage, Wetlands, and Floodplain

According to the USGS National Hydrography Dataset, there are no flowlines or waterbodies that intersect the project area. According to the natural topography, the majority of the run-off on the project area flows from the west to the east toward an irrigation ditch. This irrigation ditch flows from Oyster Creek south to the Brazos River. The Brazos River ultimately drains into the Gulf of Mexico, approximately 14.6 river miles from the proposed project area.

According to the Environmental Protection Agency (EPA), the nearest impaired water body segment within the Lower Brazos Watershed is the coastal shorelines between Freeport and Port Aransas (TX-2502-05), approximately 12 miles from the proposed project area.

According to the U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory the proposed project area intersects three features identified as "Freshwater Forested/Shrub Wetland." Field investigations determined that approximately 5.16 acres of potentially jurisdictional waters of the U.S. are located within the proposed project boundary. The proposed project will impact approximately 0.37 acre of the potentially jurisdictional wetlands. The Authority has chosen to pursue a Nationwide Permit (NWP) 39 for Commercial and Institutional Development through the U.S. Army Corps of Engineers, Galveston District. Due to the level of impact, a pre-construction notification (PCN) was required. The TWDB received a copy of the PCN on September 16, 2016.

A desktop review of the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) found that the proposed project area is located within the 100-year floodplain. All new plant components will be elevated above the base flood elevation and the proposed action will include the implementation of BMPs to minimize erosion and sedimentation runoff to ensure the floodplain is not negatively impacted by the proposed project.

Flora and Fauna

The proposed project lies within the "Floodplains and Low Terraces" of the "Western Gulf Coastal Plains" ecoregion as delineated and defined by *Ecoregions of Texas*². This ecoregion includes the Holocene floodplains and low terrace deposits with soil orders such as Vertisols, Mollisols, and Entisols. The bottom land forests of this ecoregion include pecan (*Carya illinoensis*), water oak (*Quercus nigra*), southern live oak (*Quercus virginiana*), elm (*Ulmus* sp.), and some bald cypress (*Taxodium distichum*) on larger

² Griffith, G.E., S.B. Bryce, J.M. Omernik, and A. Rogers. 2007. *Ecoregions of Texas*. Texas Commission on Environmental Quality. Austin, TX. 125p.

rivers. The terraces consist of black hickory (*Carya texana*), post oak (*Quercus stellata*), and winged elm (*Ulmus alata*).

According to *The Vegetation Types of Texas*, the project area lies within the “Pecan-Elm Forest” classification. This classification is found from the bottomlands of the Brazos, Colorado, Guadalupe, San Antonio, and Frio River basins and the Gulf Coast Prairie within areas of the San Bernard, Navidad, and Lavaca Rivers. Vegetation species within this classification include: American elm (*Ulmus Americana*), cedar elm (*Ulmus crassifolia*), cottonwood (*Populus deltoids*), sycamore (*Platanus occidentalis*), and black willow (*Salix nigra*). This designation is generally consistent with onsite conditions. Vegetation observed within the proposed project area during field reconnaissance includes, but is not limited to: hackberry (*Celtis occidentalis*), cedar elm, black gum (*Nyssa sylvatica*), dwarf palmetto (*Sabal minor*), yaupon (*Ilex vomitoria*), greenbrier (*Smilax bona-nox*), Japanese honeysuckle (*Lonicera japonica*), water oak, buttonbush (*Cephalanthus occidentalis*), poison ivy (*Toxicodendron radicans*), wax myrtle (*Myrica cerifera*), cattail (*Typha* sp.), bushy bluestem (*Andropogon glomeratus*), spikerush (*Eleocharis* sp.), black willow (*Salix nigra*), Chinese tallow tree (*Triadica sebifera*), Drummond’s rattlebox (*Sesbania drummondii*), sedge (*Cyperus* sp.), smartweed (*Polygonum* sp.), rush (*Juncus* sp.), dewberry (*Rubus* sp.), American Elm, and wild onion (*Allium* sp.).

According to the USFWS Environmental Conservation Online System (ECOS), Information, Planning, and Conservation System (IPaC), there is potential habitat for 12 threatened, endangered, or candidate species in Brazoria County, Texas, which has the potential to be impacted by the proposed project. These species include the Eskimo curlew (*Numenius borealis*), piping plover (*Charadrius melodus*), red knot (*Calidris canutus rufa*), Sprague’s pipit (*Anthus spragueii*), whooping crane (*Grus americana*), sharpnose shiner (*Notropis oxyrhynchus*), smalltooth sawfish (*Pristis pectinata*), jaguarundi (*Herpailurus yagouaroundi*), Louisiana black bear (*Ursus americanus luteolus*), ocelot (*Leopardus paradalis*), red wolf (*Canis rufus*), West Indian manatee (*Tricheus manatus*), smooth pimpleback (*Quadrula houstonensis*), Texas fawnsfoot (*Truncilla macrodon*), Atlantic hawksbill sea turtle (*Eretmochelys imbricate*), green sea turtle (*Chelonia mydas*), Kemp’s Ridley sea turtle (*Lepidochelys kempii*), leatherback sea turtle (*Dermochelys coriacea*), and loggerhead sea turtle (*Caretta caretta*). According to an endangered species database search provided by Texas Parks and Wildlife (TPWD), 46 species are state- or federally-listed as rare, candidate, threatened, or endangered in Brazoria County.

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Taxon	Scientific Name	Common Name	Status	
			Federal Status	State Status
Birds	<i>Pelecanus occidentalis</i>	Brown Pelican	DL	-
Birds	<i>Egretta rufescens</i>	Reddish Egret	-	T
Birds	<i>Plegadis chihi</i>	White-faced Ibis	-	T
Birds	<i>Mycteria americana</i>	Wood Stork	-	T
Birds	<i>Haliaeetus leucocephalus</i>	Bald Eagle	DL	T
Birds	<i>Buteo albicaudatus</i>	White-tailed Hawk	-	T
Birds	<i>Falco peregrinus</i>	Peregrine Falcon	DL	T
Birds	<i>Falco peregrinus anatum</i>	American Peregrine Falcon	DL	T
Birds	<i>Falco peregrinus tundrius</i>	Arctic Peregrine Falcon	DL	-
Birds	<i>Laterallus jamaicensis</i>	Black Rail	-	-
Birds	<i>Grus americana</i>	Whooping Crane	LE	E
Birds	<i>Charadrius alexandrinus</i>	Snowy Plover	-	-
Birds	<i>Charadrius alexandrinus nivosus</i>	Western Snowy Plover	-	-
Birds	<i>Charadrius melodus</i>	Piping Plover	LT	T
Birds	<i>Numenius borealis</i>	Eskimo Curlew	LE	E
Birds	<i>Calidris canutus rufa</i>	Red Knot	T	-
Birds	<i>Sterna fuscata</i>	Sooty Tern	-	T
Birds	<i>Anthus spragueii</i>	Sprague's Pipit	C	-
Birds	<i>Ammodramus henslowii</i>	Henslow's Sparrow	-	-
Fishes	<i>Anguilla rostrata</i>	American eel	-	-
Fishes	<i>Notropis oxyrhynchus</i>	Sharpnose shiner	LE	-
Fishes	<i>Pristis pectinata</i>	Smalltooth sawfish	LE	E
Mammals	<i>Canis rufus</i>	Red wolf	LE	E
Mammals	<i>Ursus americanus luteolus</i>	Louisiana black bear	LT	T
Mammals	<i>Spilogale putorius interrupta</i>	Plains spotted skunk	-	-
Mammals	<i>Leopardus pardalis</i>	Ocelot	LE	E
Mammals	<i>Herpailurus yaguarondi</i>	Jaguarundi	LE	E
Mammals	<i>Trichechus manatus</i>	West Indian manatee	LE	E
Reptiles	<i>Caretta caretta</i>	Loggerhead sea turtle	LT	T
Reptiles	<i>Chelonia mydas</i>	Green sea turtle	LT	T
Reptiles	<i>Eretmochelys imbricata</i>	Atlantic hawksbill sea turtle	LE	E
Reptiles	<i>Lepidochelys kempii</i>	Kemp's Ridley sea turtle	LE	E
Reptiles	<i>Macrochelys temminckii</i>	Alligator snapping turtle	-	T
Reptiles	<i>Dermochelys coriacea</i>	Leatherback sea turtle	LE	E
Reptiles	<i>Malaclemys terrapin littoralis</i>	Texas diamondback terrapin	-	-
Reptiles	<i>Phrynosoma cornutum</i>	Texas horned lizard	-	T

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Reptiles	<i>Crotalus horridus</i>	Timber rattlesnake	-	T
Mollusks	<i>Quadrula houstonensis</i>	Smooth pimpleback	C	T
Mollusks	<i>Quadrula mitchelli</i>	False spike mussel	-	T
Mollusks	<i>Truncilla macrodon</i>	Texas fawnsfoot	C	T
Plants	<i>Liatris bracteata</i>	Coastal gay-feather	-	-
Plants	<i>Thurovia triflora</i>	Threeflower broomweed	-	-
Plants	<i>Thalictrum texanum</i>	Texas meadow-rue	-	-
Plants	<i>Cyperus cephalanthus</i>	Giant sharpstem umbrella-sedge	-	-
Plants	<i>Chloris texensis</i>	Texas windmill-grass	-	-
LE, LT - Federally Listed Endangered/Threatened PT, C - Federally Proposed Threatened, or Candidate Species DL, PDL - Federally Delisted/Proposed Delisted E, T - State Endangered/Threatened " — " - Rare or Species of Concern, but no regulatory listing status *Data Sources: U.S. Fish and Wildlife Service, Texas Parks and Wildlife Department and site visit/survey of project area. Updated 11-09-2015				

Scientists from aci consulting conducted field investigations for the existing environmental conditions within the project area on February 12, 2015. Elemental Occurrence (EO) data from TPWD Texas Natural Diversity Database (TXNDD) was received on January 15, 2015 for the Texas Gulf Coast. Information files were reviewed for the known locations of federally-listed species within and surrounding Brazoria County. No EO's of rare, candidate, threatened, or endangered species or critical habitat intersects the proposed project area. Furthermore, no EO's of state-listed species occur within the proposed project area. A habitat assessment by a qualified biologist determined that it is unlikely that any state-listed species will be impacted as part of the proposed project.

No impacts to migratory birds will occur as part of the proposed project. Trees that will be removed for construction will be removed outside of the nesting/breeding season; therefore, the project will comply with the MBTA.

Historic Background

A literature review of the Texas Historical Commission (THC) Archaeological Sites Database revealed that no previous cultural resources surveys have been conducted and no previous archeological sites have been recorded within the project area. However, two sites have been previously recorded within one kilometer of the project area. Neither of the sites have yet been determined eligible for listing on the National Register of Historic Places (NHRP) nor have been designated as State Antiquities Landmarks (SALs). The types of sites that are typically recorded in the area are mussel shells middens, open campsites, or historic homesteads.

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Four previous investigations have been conducted within one kilometer. Site 41BO211 was recorded by Moore Archeological Consulting, Inc. for the Lake Jackson Recreation Center. No additional sites were located as a result of the survey.

There is little information on the Texas Historic Sites Atlas for a survey conducted in 1989 and a survey conducted for the USACE in 1995. A fourth survey was conducted by Paul Price and Associates in 2003 for the Buffalo Camp Bayou Recreational Facility project. No archaeological sites were recorded as a result of the cultural resources survey.

In January 2015, archaeologists from aci consulting conducted an archeological survey of the 19.8-acre area of the existing water treatment plant in accordance with Council of Texas Archeologists (CTA) and THC guidelines. This work was conducted in compliance with Texas Administrative Code (13 TAC 26) under Permit Number 7133. The investigation consisted of an intensive pedestrian survey, including shovel testing and backhoe trenching, and did not result in the location of any new archaeological sites or historic structures.

Population and Income

As of 2010, Brazoria County had a population of 313,166 according to the U.S. Census bureau. According to the TWDB's 2016 Regional Water Plan for the State of Texas, Brazoria County is projected to grow to 648,568 people in the planning year of 2070. The proposed project will accommodate current and future need of the County.

The median household income in 2013 for Brazoria County according to the U.S. census Bureau 2009-2013 American Community Survey was \$67,603. Based on the 2009 – 2013 American Community Surveys (ACS), management, business, science, and arts occupations were the economic sector that employed an estimated 40.4% of the population in Brazoria County followed by sales and office (22.3%) and service (14.2%). The ACS also reported an unemployment rate of 4.2% for Brazoria County in 2013.

Since the average household income levels and per capita income levels within the proposed project area are comparable to household income and per capita income levels throughout the region, low-income households are not exclusive to the project area. It can therefore be concluded that the proposed project is not expected to disproportionately affect low-income populations.

POTENTIAL IMPACTS AND MITIGATIVE MEASURES

Standard Mitigation and Precautionary Measures

Expected short-term impacts include a temporary increase in noise, traffic, and air emissions from trucks and other equipment. During the implementation of the proposed action, BMPs will be implemented to reduce erosion and sedimentation of adjacent waters. During construction, all trees not within the construction footprint will remain in place. Some trees will be removed; however, trees that will be removed for construction will be removed outside of the nesting/breeding season in order to comply with the MBTA.

Specific noise abatement procedures will be reviewed, including potential decibel levels, times of occurrence, duration, and types of noise. Measures will be taken to minimize the impacts of noise generated by the project. Fencing and other access control mechanisms will be posted around the construction zone during the proposed improvements to the existing WTP. Any effect on air quality would strictly be limited to activities performed during construction. Effects on air quality include exhaust from heavy machinery. Expected energy consumption for the project is limited to the use of gasoline and diesel fuel to run heavy construction machinery.

The proposed work will occur within the floodplain; however, all new plant components will be elevated above the base flood elevation. Furthermore, the proposed action will include implementation of BMPs to minimize erosion and sediment runoff which will ensure the floodplain is not negatively impacted by the proposed project. Following construction, all exposed soil surfaces will be revegetated with non-invasive species.

Field investigations performed by aci consulting determined that approximately 5.16 acres of potentially jurisdictional waters of the U.S. are located within the project boundary. The proposed project will impact approximately 0.37 acre of the potentially jurisdictional wetlands. Due to the impacts to potential waters of the U.S. occurring from commercial development, where commercial development includes industrial facilities, a Nationwide Permit (NWP) 39 Commercial and Institutional Developments will be required. Any impacts due to commercial or institutional development require a PCN to USACE and are limited to 0.5 acre of impacts. As per agreement with the TWDB, the Authority will complete coordination with USACE, submit a PCN, and obtain a NWP 39 (USACE Project No. SWG-1997-00999) prior to construction.

Cross-Cutter Compliance and Agency Coordination

The proposed project has been reviewed for potential impacts to the quality of the human environment following the procedures provided in 31 Texas Administrative Code § 371.41, in order to ensure compliance with DWSRF program requirements and federal

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and state regulations, including the federal cross-cutting environmental authorities from the EPA listed below.

- (1) National Environmental Policy Act of 1969, PL 91-190;
- (2) Archeological and Historic Preservation Act of 1974, PL 93-291;
- (3) Clean Air Act, 42 USC 7506(c);
- (4) Coastal Barrier Resources Act, 16 USC 3501 et seq;
- (5) Coastal Zone Management Act of 1972, PL 92-583, as amended;
- (6) Endangered Species Act, 16 USC 1531, et seq;
- (7) Executive Order 11593, Protection and Enhancement of the Cultural Environment;
- (8) Executive Order 11988, Floodplain Management;
- (9) Executive Order 11990, Protection of Wetlands;
- (10) Farmland Protection Policy Act, 7 USC 4201 et seq;
- (11) Fish and Wildlife Coordination Act, PL 85-624, as amended;
- (12) National Historic Preservation Act of 1966, PL 89-665, as amended;
- (13) Safe Drinking Water Act, §1424(e), PL 92-523, as amended;
- (14) Wild and Scenic Rivers Act, PL 90-542, as amended;
- (15) The Wilderness Act, 16 USC 1131 et seq.;
- (16) Environmental Justice, Executive Order 12898;
- (17) Flood Insurance Reform Act of 2004, Public Law 108-264;
- (18) National Flood Insurance Reform Act of 1994, Public Law 103-325;
- (19) Flood Disaster Protection Act of 1973, as amended, Public Law 93-234; and;
- (20) Clean Water Act, PL 92-500, as amended.

This environmental review included coordination with various state and federal regulatory agencies and other interested parties including a 30-day public review period of the planning documents. The following section provides a summary of that coordination and provides a discussion of any concerns, recommendations, or conditions pertaining to methods for avoidance, minimization or mitigation of potential impacts.

Bureau of Reclamation

aci consulting, on behalf of the Authority, contacted the Bureau of Reclamation on June 29, 2015 requesting the review of the proposed project. No adverse comments have been received as of the date of this report.

Bureau of Land Management

aci consulting, on behalf of the Authority, contacted the Hazardous Material Coordinator at the Bureau of Land Management (BLM) on June 29, 2015 requesting the review of the proposed project. On July 2, 2015, BLM concurred that no BLM interested would be affected by the proposed project.

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Houston-Galveston Area Council

aci consulting, on behalf of the Authority, contacted the Houston-Galveston Area Council (COG) on June 30, 2015. Although no response has been received, the certified mail receipt indicated that it was delivered to the COG on July 8, 2015. On September 17, 2015, CDM Smith confirmed that the CDM Smith Houston Office had tried to contact the COG but received no response. No adverse comments have been received as of the date of this report.

Texas Historical Commission

aci consulting, on behalf of the Authority, contacted the THC on June 30, 2015 requesting the review of the proposed project. The THC provided a review response dated July 10, 2015 indicating concurrence with the assessment that the proposed project will not likely affect any cultural resources. The proposed project is in compliance with Section 106 of the National Historic Preservation Act as well as the Antiquities Code of Texas.

The DWSRF loan is conditioned to read that if archaeological sites are discovered during construction, work will cease immediately in that area and the Authority will notify the THC and the TWDB of the discovery. The THC and the TWDB will then proceed in accordance with the regulations of the Advisory Council on Historic Preservation (36 CFR Part 800) prior to taking any action which would affect the cultural resources.

United States Army Corps of Engineers

The USACE, Galveston District was given the opportunity to review the project in accordance with Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899. Under Section 404 the USACE regulates the discharge of dredged and fill material in waters of the United States, including wetlands. The USACE responsibility under Section 10 regards regulation of any work in, or affecting, navigable waters of the United States. A review response from the USACE (Project Number SWG-1997-00999), dated August 25, 2015, indicates that a Department of the Army permit may be required to meet the need and purpose of the proposed project. The Authority has chosen to pursue a Nationwide Permit 39 for Commercial and Institutional Developments. CDM Smith, on behalf of the Authority, prepared a PCN for NWP 39 dated September 14, 2016. TWDB received a copy of the PCN for NWP 39 on September 16, 2016. The loan is conditioned to read that the Authority agrees to complete coordination with the USACE by submitting a PCN for NWP 39 to USACE and obtaining all necessary permits prior to construction.

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United States Department of Agriculture, Natural Resources Conservation Service

aci consulting, on behalf of the Authority, contacted the United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) on June 30, 2015 requesting the review of the proposed project. A response from USDA was sent to aci consulting on July 20, 2015. USDA NRCS reviewed the information regarding the proposed site as required by the Farmland Protection Policy Act (FPPA). The proposed project is considered to be “prior converted” and is exempt. The Farmland Conversion Impact Rating (Form AD-1006) indicating the exemption was provided. USDA NRCS encourages the use of accepted erosion control methods during the construction of the project.

General Land Office

aci consulting, on behalf of the Authority, contacted the Texas General Land Office (GLO) Coastal Management Program on June 29, 2015. On July 14, 2015, the GLO provided a response. The GLO response indicated that based on the information provided to the Texas Coastal Management Program on the project, it was determined that the proposed project will likely not have adverse impacts on coastal natural resource areas (CNRAs) in the coastal zone. However, siting and construction should avoid and minimize impacts to CNRAs.

Floodplain Administrator, National Flood Insurance Program

In a response dated October 14, 2015, the Floodplain Administrator concluded that there will be no significant and lasting adverse floodplain impacts within the proposed project area resulting from future onsite construction as described by the EID.

Texas Parks and Wildlife Department

The TPWD Wildlife Habitat Assessment Program reviewed the proposed project and provided a response dated August 4, 2015 (TPWD Project No. ERCS-11196). The TPWD response provided a list of recommendations. A response to the TPWD recommendations was sent September 23, 2015 where the applicant agreed to implement the following:

- As per agreement with TPWD, construction activities, such as, but not limited to, tree felling as well as vegetation, clearing, trampling, or maintenance should occur outside the April 1 – July 15 migratory bird nesting season. Should construction activities take place during the aforementioned dates, a nest survey will be conducted to be sure no nests or migratory birds will be impacted by the project.
- As per agreement with TPWD, the Authority agrees to coordinate with the Galveston District U.S. Army Corps of Engineers for compliance with the Clean

Water Act, which requires a permit. In meeting the federal permit requirements for compensatory mitigation of the aquatic resources located within the construction area, the TPWD recommendation for mitigation will be fulfilled.

- As per agreement with TPWD, the Authority agrees to reseed with species that are non-invasive and native to Texas, and Brazoria County, if possible.

U.S. Fish and Wildlife Service

The proposed project will result in “no effect” to federally listed threatened or endangered species or critical habitat. Therefore, no coordination was required.

U.S. Forest Service

According to the Land and Water Resources Conservation and Recreation Plan (LWRCRP) developed by TPWD, there are no national forests or grasslands within the proposed project area. The nearest national forest to the project area, Sam Houston Forest, is approximately 98 miles to the north within portions of Montgomery, San Jacinto, and Walker Counties, Texas. Therefore, coordination with the U.S. Forest Service is not required.

U.S. National Park Service

According to the LWRCRP developed by TPWD, there are no national parks within the project area. Therefore, coordination with the U.S. National Park Service is not required.

Environmental Justice

In accordance with Executive Order 12898 pertaining to Environmental Justice (EJ), potential environmental impacts to low-income and minority communities have been assessed. The U.S. Environmental Protection Agency (EPA) defines environmental justice as conveyed by the Executive Order as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. The goal of fair treatment is not to shift risks among populations, but to identify potential disproportionately high and adverse human health and environmental effects on minority populations and low-income populations and to identify alternatives to mitigate those impacts.

NEPAssist is a tool that facilitates the environmental review process and project planning in relation to environmental considerations. It is a web-based application that draws data from EPA Geographic Information System databases and web services and provides immediate screening of environmental assessment indicators for a user-defined area of interest. NEPAssist includes demographics analysis that provides user-defined, site-specific U.S. Census demographic data compiled on U.S. Census Bureau, ASC 2008 – 2012. Data include population, percent of minority residents, per capita income, etc. for comparison with data for the county and state.

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The U.S. Census Bureau characterizes ‘Hispanic Origin’ as a minority group, but not a separate race. Racial groups include: White, African-American, Asian/Pacific Islander, American Indian, Other Race, and Multiracial. The calculation for ‘Percent Minority’ includes all minority groups and races except non-Hispanic, white persons. The terms ‘Living Below the Poverty Level’ is equivalent to the term ‘Economically Stressed’ and includes, according to the 2014 U.S. Census, a four-person family with an annual income at or below \$24,230.

The EJ Analysis was performed on July 5, 2016 for the project area. The results are indicated below with data from the U.S. Census for the State and Brazoria County, included for comparison.

Area	Population (2015)	% Minority (2008-2012)	% Below Poverty Level / Median Household Income (2008-2012)
Texas	27,469,114	56%	17.5% / \$51,714
Brazoria County	346,312	42.8%	11.8% / \$66,337
Project Area (0.5 mile buffer)	617	39%	27.0% / \$47,610

According to the EJ Analysis, the annual per capita income of the project area (a 0.5 mile buffer around the proposed footprint) from 2010 – 2014 was \$47,610. According to the U.S. Census data for 2008-2012, the per capita income for the county was \$66,337. The state-wide average was \$51,714. These results show that there is not a measurable effect on low-income populations within relatively close proximity to the proposed project area. The proposed work does not pose a disproportionate risk for impacts to low-income or minority residents. The entire population of the project area would be the recipients of benefits derived from the proposed improvements primarily through improved quantity and reliability of drinking water supplied to residents throughout the service area. Because the project will not result in the relocation of households or significant changes in land uses or land values and because the project area income and demography are consistent with this portion of the region, the project will not disproportionately impact low-income populations.

DOCUMENTATION, COORDINATION, AND PUBLIC PARTICIPATION

The proposed project is consistent with local, regional, and statewide planning. Coordination with the appropriate governmental agencies has been made and no adverse comments have been received.

The notice for a public meeting was advertised in the *Brazosport Facts*, a newspaper of general circulation in the service area. The notice was published on May 22, 2015 and contained information regarding availability of planning documents, including the EID, for public review at the Lake Jackson Public Library Information Desk. State and federal agencies were sent a written notice of the meeting and the availability of the document for review.

Public participation during facilities planning included a public hearing held on Tuesday, June 23, 2015 from 2:00 to 3:00 pm at the Richwood City Council chambers at 1800 N. Brazosport Boulevard, Richwood, Texas. No adverse comments were voiced at the public meeting or received during the 30-day public review period.

RECOMMENDATION

Based upon a detailed review of the Drinking Water State Revolving Fund planning information, the Environmental Information Document, this Environmental Assessment, and other documentation, the Water Treatment Plant Improvements projects proposed by the Authority are considered to be environmentally sound with the following conditions.

- The Authority agrees to complete coordination with the United States Army Corps of Engineers by submitting a Pre-Construction Notification for Nationwide Permit 39 for Commercial and Institutional Developments and obtaining all necessary permits prior to construction (USACE Project No. SWG-1997-00999);
- As per agreement with the Texas Parks and Wildlife Department (TPWD Project No. ERCS-11196), construction activities such as, but not limited to, tree felling as well as vegetation clearing, trampling, or maintenance should occur outside of the April 1 – July 15 migratory bird nesting season. To comply with the Migratory Bird Treaty Act (MBTA), if these activities occur within the nesting season, the proposed site should be surveyed for migratory bird nest sites prior to construction. Since raptors nest in late winter and early spring, all construction activities as identified above should be excluded from a minimum zone of 100 meters around any raptor nest during the period of February 1 – July 15;
- Standard emergency discovery condition for threatened and endangered species; and,
- Standard emergency discovery condition for cultural resources.

Therefore, it is recommended that a Finding of No Significant Impact be issued.

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Appendix A: Figures

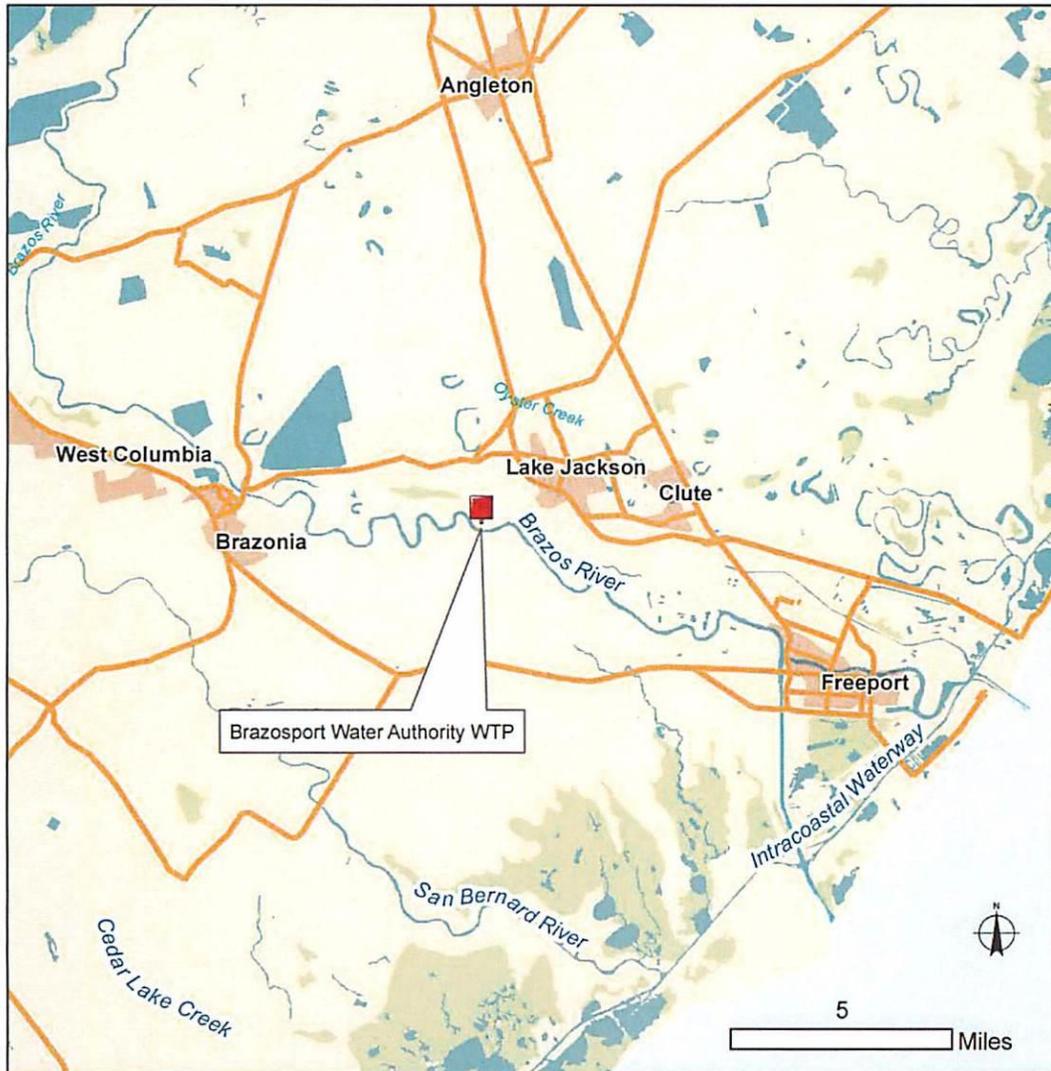
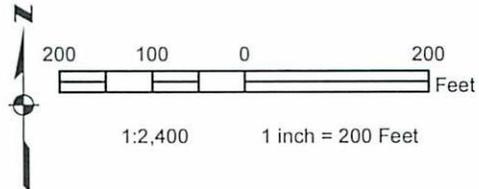


Figure 1- General location of BWA WTP



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community, Esri, HERE, DeLorme, MapmyIndia, © OpenStreetMap contributors

This map is intended for planning purposes only. All map data should be considered preliminary. All boundaries and designations are subject to confirmation.



- Proposed Project Area
- Proposed New Construction



Brazosport Water Authority WTP
Figure 2 - Existing and proposed WTP.