

AIRLINE IMPROVEMENT DISTRICT WATER WASTEWATER PLANNING STUDY

Table of Contents

TAB	SECTION	PAGE NUMBER
1	GENERAL	
	1.1 Location	1
	1.2 History	1
	1.3 Characteristics of the Area	2
	1.4 Demographics	3
	1.5 Planning Grant	3
	1.6 Plan Objective	4
2	EXECUTIVE SUMMARY	5
3	DATA ACQUISITION	
	3.1 City of Houston Water and Wastewater Master Planning Materials:	9
	3.2 Houston Galveston Area Council: Wastewater Planning Studies	9
	3.3 Texas Commission on Environmental Quality (TCEQ)	9
	3.3.1 Existing and proposed public water systems	9
	3.3.2 Existing and proposed wastewater treatment plants	9
	3.4 Harris-Galveston Subsidence District: Well Radius Listing	10
	3.5 Ground Water Reduction Plans: Regulations Affecting Groundwater	10
	3.6 Failing or Inadequate wastewater systems	12
	3.6.1 Septic and Water Well violations	12
	3.6.2 Presence of One-Site systems, water wells and status of public systems	13
	3.7 Texas Water Development Board (TWDB)	13
	3.7.1 Harris County Grant Information	13
	3.7.2 Regional Surface Water Plant Feasibility Study	14
	3.7.3 West Harris County Surface Water Supply Corporation Implementation Plan Summary	14
	3.8 Census Data: 10, 20 & 30 – Year Projections	15
	3.9 Aldine Improvement District Study: Construction of Water and/or	15
4	MAPPING DOCUMENTATION	
	4.1 Locations of Existing Neighborhoods	16
	4.2 Location of Existing Utilities	16
	4.3 Location of Existing Water and Sewer certificated areas	16
	4.4 Proposed Water Service Area Improvements	16
	4.5 Proposed Public Service Area Wastewater Service Area	17
	4.6 Location of Existing Water Wells	17
	4.7 Location of TCEQ Texas Pollution Discharge Elimination System	17
	4.8 Location of Flood Plain Areas and Floodway	17

AIRLINE IMPROVEMENT DISTRICT WATER WASTEWATER PLANNING STUDY

Table of Contents

5	ANALYSIS	
5.1	Existing On-Site Sewage Facilities	19
5.2	Existing Private Water Wells	20
5.3	Houston Water Master Plan Projections - 10, 20, 30 year periods	21
5.4	Service Area Water Use Projections – 10, 20, 30 year periods	21
5.5	Existing Water and Sewer Infrastructure	22
5.6	TECQ Violations Records	23
5.7	Existing Utility District Facilities	24
5.8	30-Year Water and Sewer Requirements	24
6	SERVICE PLAN	
6.1	General	25
6.2	Water Transmission Infrastructure Plan	25
6.3	Water Distribution Plan	25
6.4	Sanitary Sewage Collections Plan	26
	6.4.1 General	26
	6.4.2 Service Zones	26
6.5	Wastewater Trunk Line and Treatment Plant Service Plan	30
6.6	Water and Wastewater Phasing Plan	30
7	COST ESTIMATES, FINANCING AND RATE DETERMINATION	
7.1	Design and Construction Cost Estimate	31
7.2	City of Houston Capital Cost Requirements	31
	7.2.1 Funding From Taxes, Assessments and Fees	31
	7.2.2 Funding From Grants and Loans	32
	7.2.3 Technical Assistance	35
	7.2.4 Potential Future Sources of Funding	35
7.3	Infrastructure Funding Sources	37
	7.3.1 Impact of the Water and Sewer Rates	38
8	RECOMMENDATIONS	
8.1	General	39
8.2	Capital Costs Schedule for 10-Year Plan	40
8.3	Capital Costs Schedule for 20-Year Plan	40
8.4	Capital Costs Schedule for 30-Year Plan	41
8.5	City of Houston Contract Negotiations	41
8.6	New Legislation Action	42
9	TABLES	
10	EXHIBITS	
11	APPENDIX	

AIRLINE IMPROVEMENT DISTRICT WATER & WASTEWATER PLANNING STUDY

SECTION 1 GENERAL

1.1 Location

The Airline Improvement District (Airline ID) is located completely within unincorporated Harris County and is within a portion of the 77037 zip code. It is an area of approximately 4 square miles, or 2,809.60 acres, located north of Downtown Houston. Airline ID is partially surrounded by the City of Houston, but is entirely outside its corporate limits. Airline ID is generally bounded by West Road, Airline Drive (including the properties along the east side of Airline Drive), and Aldine Mail Road (including the properties on the north side of Aldine Mail Road) to the north; by the Hardy Toll Road, Bauman Road and the City of Houston corporate limits to the east; by East Canino Road and Carby Road to the south; and by Sweetwater Lane to the west.

1.2 History

Airline ID was created by House Bill 1458, in the 79th Regular Session of the Texas Legislature, which became effective on June 17, 2005.

In 2005, the Harris County Community and Economic Development Department (HCEDD), now known as the Harris County Community Services Department (HCCSD), along with State Representative Kevin Bailey, Harris County Precinct One County Commissioner El Franco Lee, and area business leaders and community leaders, began working on a planning process for the Airline Community's revitalization. The group, now referred to as the Airline Drive District Community Plan Vision Team, held a series of public meetings conducted by area business and community leaders that helped develop a revitalization plan and established priorities for Airline ID.

Airline ID's mission is to supplement government services in order to improve the overall quality of Airline ID and improve its desirability for residents, consumers and businesses.

AIRLINE ID WATER & WASTEWATER PLANNING STUDY

1.3 Characteristics of the Area

Airline ID is predominantly an urban area with faces of a suburban and rural landscape. While there are many typically sized single family residential lots averaging 6000 to 10,000 square feet, there are also many lots larger than 0.5 acres, especially in the eastern portion of Airline ID, and mobile home communities are clustered along major thoroughfares and other arterials in the community. Airline ID has a number of abandoned properties and vacant lots that would be ideal for re-development into community centers, parks, or single-family affordable housing communities, such as those which are routinely erected by Houston Habitat for Humanity.

Water and sewer service is the most seriously deficient public infrastructure item in Airline ID, and although the majority of the housing units have complete plumbing facilities, roughly 45% of the residential properties, both vacant and developed, are without access to public water or sewage services. Many housing units use private water wells and on-site sewage facilities (OSSFs). Residential homes in the Northline Terrace subdivision, which lies in the central west portion of Airline ID, have public water and sewer service provided by Sunbelt Freshwater Supply District (Sunbelt FWSD). The Bellmar area, in the south central part of Airline ID, has public water and sewer service provided by Nitsch & Son Utility Company, which operates as an investor owned utility. Another investor owned utility, Champs Water, also provides public water service, but not sanitary sewer service, to homes on the south side of Madding Lane and the north side of Memory Lane in the northwest portion of Airline ID. The majority of the rest of the properties in Airline ID either have water and sewer services provided by well and septic tanks or privately maintain their own water tanks, although some of the mobile home communities and apartment complexes have their own private utility companies or their own water and/or wastewater system(s).

Airline's storm drainage system consists of ditches, driveway culverts, road crossing culverts and few gutters. The Airline community is primarily void of sidewalks. There are large portions of Airline ID, particularly near Halls Bayou and some of the larger Harris County Flood Control ditches, which are either in the floodway or in the 100 year flood plain.

AIRLINE ID WATER & WASTEWATER PLANNING STUDY

1.4 Demographics

The Airline Community is inhabited by more than 16,500 residents. This population estimate has increased approximately 30% since the 1990 census. More than 60% of the Airline population is Hispanic or Latino, a population which grew by 187% between the 1990 and 2000 censuses.

Census data suggest that, in broad terms, the residents of Airline ID tend toward being young, with approximately 26% being 19 younger, and generally faced with complex socioeconomic challenges. It is possible that many of the challenges result from a lack of high school and higher level education. The data show that approximately 52% of the Airline residents that are 25 years of age or older are not high school graduates, and only 3.95% of the high school graduates have a bachelor's degree or higher. Roughly 17% of the Airline residents live below poverty level, with the greatest percentage below poverty level being children under the age of five. The median household income is \$35,701.00, which is approximately \$7,000.00 less than the median household income of Harris County. English appears to be the primary language spoken in Airline ID. Approximately 74 percent of all children ages 5 to 17 are reported to speak English very well, and more than 67 percent of all adults of all ages speak English well also.

More than 75% of the community reside in owner occupied housing. Of those owner occupied dwellings, about 73% are single family detached homes, and 24% are mobile or pre-manufactured homes. About 25% reside in renter occupied housing.

The demographic data in this section was obtained from the "Airline Community Neighborhood Revitalization Strategy Area" report located on the Harris County website at www.co.harris.tx.us/CmpDocuments.

1.5 Planning Grant

When Airline ID was being developed in the 1950s and 1960s, the area was more rural than urban, and was considered an outlying part of the greater Houston area. Today this area is surrounded by the City of Houston, and the development which now encircles

AIRLINE ID WATER & WASTEWATER PLANNING STUDY

Airline ID may have had a negative impact on the quality of the groundwater many of the residents rely on as their only source of potable water. The majority of the property owners in Airline ID do not have access to public alternatives to their private systems. Since many do not have the financial ability to properly maintain or repair their wells and on-site sewage facilities, or replace them when they fail, they frequently continue to operate inadequately, adversely impacting the quality of life and discouraging economic growth and development within Airline ID.

Fortunately, Airline ID received a grant from the Texas Water Development Board (TWDB) for a Water and Wastewater Planning Study to further investigate the need for public water and wastewater systems within Airline ID, and the economic and technical feasibility of providing public potable water supply and wastewater collection systems to Airline ID's residents and businesses. State Representative Kevin Bailey supports the project. He is ever mindful that the failure of on-site sewage facilities and private water wells can create and perpetuate a downward spiral in the community, and stated that "our concern is that some neighborhoods are facing a public health crisis".

The grant required a 50% percent match, which was realized through the contribution of in-kind services valued at \$70,000 in engineering, field inspection and other support by Harris County, by Airline ID's cash contribution of \$25,000, and by the contribution of in-kind services valued at \$29,000 in legal services by Bracewell & Giuliani. Various other local groups contributed their services free of charge.

1.6 Plan Objective

The plan objective is fourfold. The first objective is to determine the exact nature of the need for public water and wastewater facilities. The second objective is to perform an analysis to determine the most efficient and effective alternatives to meet regional water supply and wastewater facility needs, and the cost associated with implementing those alternatives. The third objective is to identify the institutional arrangements needed to provide regional water supply and wastewater services. The final objective is to identify potential sources of funding available which could be used for the design and construction of public water and wastewater infrastructure to serve Airline ID's many communities.

AIRLINE ID WATER & WASTEWATER PLANNING STUDY

SECTION 2 EXECUTIVE SUMMARY

Location and Description

Airline ID is a roughly 2800 acre area located completely within unincorporated Harris County, and adjacent to the City of Houston corporate limits. Area roadways that border Airline ID are West Road, Sweetwater Lane, Canino Road and Hardy Toll Road. Please refer to Exhibit 1 for location and Airline ID boundary.

Existing Condition of Water and Wastewater Systems

Several neighborhoods could be facing a serious public health threat as they are without adequate water and/or sewer service. About half of the developed properties treat their wastewater with on-site sewage facility (OSSF) and obtain their potable water via domestic water well. Based on field inspections and records research, it appears that many properties have improperly designed or constructed OSSFs, and OSSFs which encroach into the minimum setback radii of their own or neighboring water wells, making them vulnerable to contamination from raw sewage.

Projected Population

The population for this area is projected to increase 40% over the next 30 years. However, this projection is based on the existing substandard water and sewer infrastructure and the lack of other essential public services. With needed improvements in public services, Airline ID has the potential to fully develop in the next 30 years.

Projected Water and Sewer Demand

The projected year 2038 average water demand is 3.53 MGD with a peak daily demand of 5.30 MGD. Should the City of Houston agree to become a service provider to Airline ID, water supply will be available both from the existing City of Houston water distribution system located to the west and south of Airline ID, and from the extension of proposed

AIRLINE ID WATER & WASTEWATER PLANNING STUDY

water transmission lines that are described in the Aldine Improvement District Water and Wastewater Planning Study (December 2004), as indicated in Appendix 11.2.

If the City of Houston agrees to provide wastewater service, the wastewater collection system available to serve Airline ID will have a capacity of 3.53 MGD. Connection points to the City of Houston system have been determined by the City of Houston Public Infrastructure Department based on existing flows in their system and the proposed service area indicated in this report (refer to Appendix 3).

For the purposes of this study, it is assumed that the City of Houston will be the water and wastewater service provider.

It should be noted that both the water distribution system and the sewage collection system were designed based on Airline ID being fully developed, and took into consideration the potential need to include tracts of land now served by existing utility districts and privately owned utility companies, should that become necessary. Development of land currently designated to be in the Floodway, as indicated on the FEMA Flood Insurance Rate Map (48201C0470L) dated June 18, 2007 (refer to Appendix 11.4) cannot be encouraged under current Harris County policy, therefore property located completely within the floodway was not included in the water distribution and sanitary sewer infrastructure plan.

Proposed Water Distribution System

The water distribution system will connect to the City of Houston system and the proposed surface water transmission lines proposed for Airline ID. No pumping station or water storage tanks are included in the design of the system. Please refer to Exhibit 9.

Proposed Wastewater Collection and Treatment System

This wastewater collection system is divided into five (5) zones based on currently available collection points on the City of Houston system. No additional wastewater

**AIRLINE ID
WATER & WASTEWATER PLANNING STUDY**

treatment plants are included in the design of this system. Please refer to Exhibit 1 and 1A through 1E.

Harris County Water and Wastewater Regionalization Policy

Effective May 1, 2008, the “Water and Wastewater Regionalization Policy for Harris County and Harris County Flood Control District” defines the policy on the issue of water and wastewater regionalization and establishes guidelines for achieving regionalization. The result will be a reduction of groundwater withdrawal and small, sub-regional wastewater treatment plants. Therefore, as mentioned above, additional wastewater treatment plants are not recommended in this report. Please refer to Appendix 11.5 to review the Harris County Regionalization Policy.

Estimated Construction Costs for Phased Development

- Water Distribution System Project Costs are estimated to be \$20,597,306.00.
- Wastewater Collection System Project Costs are estimated to be \$51,542,580.00.
- Surface Water Transmission Costs are estimated to be \$13,021,980.00.

The recommended phased development over the next 30 years is indicated below on Table 2.1.

10-Year Plan	2008-2018	\$36,158,075.00
20-Year Plan	2018-2028	\$28,755,889.00
30-Year Plan	2028-2038	\$20,247,902.00
	TOTAL	\$85,161,866.00

Please note that all construction estimates are based on current (2008) construction costs, and includes survey, geotechnical and design costs.

AIRLINE ID WATER & WASTEWATER PLANNING STUDY

Implementation and Funding

Implementation is highly dependent upon grant funds and low interest loans in addition to existing District tax revenue. Funding is discussed in Section 7.2, "Overview of Airline ID's Funding Availability". Both Airline ID and Harris County have confirmed their commitment to aggressively seek funding for this water and wastewater infrastructure, and to implement these recommendations as quickly and thoroughly as possible.

**AIRLINE ID
WATER & WASTEWATER PLANNING STUDY**

SECTION 3 DATA ACQUISITION

3.1 City of Houston Water and Wastewater Master Planning Materials: Houston Water Master Plan

The Houston Water Master Plan does not include water demands for Airline ID area. However, if the City of Houston becomes the water service provider, water supply will be furnished by surface water transmission lines from the Northeast Water Treatment Plant at Lake Houston.

3.2 Houston Galveston Area Council: Wastewater Planning Studies

The latest draft of the Gulf Coast Region Water Quality Management Plan, date June 15, 2007, is tied to the State's water quality assessments that identify priority water quality problems. The purpose of the plan is to examine population forecasts and projected wastewater treatment plant needs over the next 25 years. The report is designed to assist the Water Quality and Technical Analysis Division of the TCEQ to help guide the planning and implementation measures that control and/or prevent water quality problems.

3.3 Texas Commission on Environmental Quality

3.3.1 Existing Utility Districts

There is one existing utility district that serves Airline ID:

- Sunbelt Fresh Water Supply District
410 West Gulf Bank Road

3.3.2 Existing TCEQ Permitted Wastewater Treatment Plants in Airline ID Vicinity

The existing TCEQ Permitted Wastewater Treatment Plants in Airline ID Vicinity are represented on the next page on Table 3.3.2.

**AIRLINE ID
WATER & WASTEWATER PLANNING STUDY**

TABLE 3.3.2 Existing TCEQ Permitted Wastewater Treatment Plants

TREATMENT PLANT	PLANT ID NUMBER
IMPERIAL VALLEY	TX0020478
TRICON PRECAST	TXG110315
ROYAL COACH	TX00886950
ALDINE VILLAGE	TX0070769
COLONIAL HILLS	TX0027707
HARVEST COMMUNITIES	TX0032255
REX TEMPLE	TX0122190
SUNBELT NORTHLINE	TX0021261
PIN OAK MHP	TX0119610
NITSCH & SONS	TX0070611
WESTFIELD MHP	TX0090492
ALDINE OAKS	TX0124265
MELROSE MHP	TX0084671
CARBY RD	TX0123579
LINDA HARTZOG	TX0095508
FATIMA VILLAGE	TX0095656
ASHBROOK SIMON-HARTLEY	TX0007650

3.4 Harris Galveston Subsidence District (HGSD): Well Radius Listing

The Well Radius Listing is illustrated in Table 6.

3.5 Groundwater Reduction Plans: Regulations Affecting Groundwater Use

In 1985, Harris Galveston Subsidence District (HGSD) developed a Regulatory Plan to curtail the subsidence created in part by pumping groundwater which divided its district into eight regulatory areas, with the main focus on the coastal areas. The coastal areas

AIRLINE ID WATER & WASTEWATER PLANNING STUDY

were defined as Area 1, the immediate coastal frontage area and Area 2 as the low elevation area, with requirements to reduce groundwater pumpage to no more than 10% and 20% of total water demand, respectively. Subsidence stabilized in the 1990s in Galveston County (Area 1) and Southeastern Harris County (Area 2). However, North and West Harris County began to subside at an increasing rate. Subsidence rates increased from one-tenth to one-quarter a foot per year.

In 1992, HGSD revised the Regulatory Plan, re-dividing Airline ID into seven regulatory areas with focus on central, north, and west Harris County. That plan was soon overhauled to accommodate the significant differences between the coastal and the non-coastal areas within Airline ID, and instead of seven areas, HGSD opted for three.

The north and west parts of Harris County contain approximately 400 municipal utility districts (MUDs), in addition to the City of Houston and a few other smaller cities. North and west Harris County became Regulatory Area 3 to allow for the MUDs and cities to work together to reduce groundwater pumpage as Area 1 and Area 2 had successfully done in the past.

The current Regulatory plan, created in 1999, uses an innovative method for regulating groundwater. By combining Area 3 into one area and providing clear groundwater reduction goals of 30% by 2010, 70% by 2020, and 80% by 2030, HGSD allowed entities to work together in ways that would fit their individual needs while collectively solving the regional subsidence problem. Permittees in Area 3 are allowed to join into groups to submit Groundwater Reduction Plans (GRPs) which would meet HGSD's goals with efficient and effective plans. The Plan also established a Distinctive Fee to ensure compliance with Airline ID's goals. The Fee is currently \$3.00 per every 1,000 gallons pumped if the permittee pumps more than 10,000,000 gallons from a well in any one year, its purpose being to reduce the reliance on groundwater by providing a "disincentive" for its overuse.

AIRLINE ID WATER & WASTEWATER PLANNING STUDY

3.6 Inadequate Existing Private Wastewater and Water Systems

3.6.1 On-Site Sewage System (OSSF) Violations

In order to determine which, if any, properties within Airline ID suffer current possible OSSF violations, staff from the Harris County Engineering Department Permits Wastewater Division and from the Public Infrastructure Department Watershed Protection Group performed on-site inspections. The inspections ranged in intensity from street-side reviews, to property walks, to detailed property and system investigations which included full system documentation and diagrams. Every property was viewed; even those known to be within the service areas of utility districts or utility service providers, and about 40% were walked. Fifteen (15) properties, representing about 1% of all of the properties within Airline ID which have OSSFs, were fully diagrammed and documented. See section 5.1 for more information on the 15 comprehensive inspections.

In addition to the field investigation of each District property, historic violation records dating from 1991 through 2007 were researched, and OSSF violations within Airline ID were tabulated. The following are the collective results of the comprehensive OSSF review. The figures represent the percentage of possible current violations and past violations out of all the properties in each area. For example, if the area shows 10% current and 20% cumulative, that would indicate that of all the properties in that given area, even ones that are not developed or do not have an OSSF, 10% have a possible current OSSF violation, and 20% in total have either had a past violation or have a possible current violation.

Panhandle: 13% current, 29% cumulative (current plus past violations)

Bounds: West, Sweetwater, Airline, Halls Bayou

Northeast: 10% current, 26% cumulative

Bounds: Halls Bayou, east district boundary, north district boundary, east side of Airline

Southwest: 8% current, 20% cumulative

Bounds: Sweetwater, Canino, Sunbelt service areas

AIRLINE ID WATER & WASTEWATER PLANNING STUDY

Southeast: 2% current, 18% cumulative

Bounds: Halls Bayou, east district boundary, south district boundary, east side of Airline

The field surveys which identified possible current violations were performed in dry weather in order to establish a baseline for the data collected. In Harris County, however, wet weather can cause an 80% or higher OSSF failure rate, as the soil in much of the area contains too much clay and the water table is naturally too high for absorption to outpace even a moderate rainfall.

3.6.2 Private Water Wells

While the comprehensive inspection of several OSSFs indicated that a large majority of private water wells may be too close to OSSFs (see section 5.1), the well water sampling event did not present any indication of fecal contamination (see section 5.2). Although on its face, that seems to be a positive finding, the fact remains that hundreds of private, unregulated water wells have the potential to expose more people to potential contaminants than a single regulated and monitored public water distribution system does. Furthermore, the wells could be contaminated with contaminants not tested for under the scope of this study, and could become contaminated with fecal material during any heavy rain or flood event.

With all of these things considered, this study recommends that public water distribution and wastewater collection systems be installed in order to reduce or eliminate reliance on OSSF and private water well use.

3.7 Texas Water Development Board (TWDB)

3.7.1 Grant / Loan Program Eligibility

The Airline ID has never received a grant from the TWDB. However, there are two programs available to the Region that the Airline ID is located within.

AIRLINE ID WATER & WASTEWATER PLANNING STUDY

The Groundwater District Loan Program (GDLP) is a 3-year note loan program that provides loans to finance the start-up costs of Groundwater Conservation Districts. The program is authorized under Water Code Chapter 38, Subchapter L, and governed by TWDB rules Chapter 363 Subchapter H. It is available to Groundwater Districts or Authority with the authority to regulate the spacing of water wells, the production from water wells or both.

State Loan Program (Development Fund II) is a source of funding from which the TWDB makes state loans that do not receive federal subsidies. The program includes loans for water supply, water quality enhancement, flood control and municipal solid waste.

3.7.2 Regional Surface Water Plant Feasibility Study

The TWDB performed a Regional Surface Water Plant Feasibility Study which included Brazoria, Fort Bend and West Harris Counties. The projections offered in the study were for Harris County in its entirety. Therefore, water projections for this study area only were not available.

3.7.3 West Harris County Surface Water Supply Corporation Implementation Plan Summary

The water conservation plan is to develop a water conservation contingency plan in accordance with TWDB guidelines. The plan also calls for the requirement of contract customers to follow the plan. If the plan is followed, reduction in water demands and possible delays in capital projects must be reported.

Water demands within the planning area were determined and evaluated utilizing results from the City of Houston Water Master Plan (HWMP) as of 1988. The demands were determined utilizing the modified growth projections by the HWMP which assumes no growth between 1985 and 1990.

**AIRLINE ID
WATER & WASTEWATER PLANNING STUDY**

3.8 Population Projections from Census Data

10, 20 & 30 – Year Projections as shown in Section 9, Table 1.

TABLE 1

YEAR	PROJECTED POPULATION
2010	14,700
2015	16,300
2020	17,300
2025	18,300
2030	19,000
2035	19,900
2040	20,600

Note: Census Data was obtained from the Houston Galveston Area Council (HGAC).

3.9 Aldine Improvement District Study

The Aldine Improvement District Water and Wastewater Planning Study prepared by Water Engineers, Inc. dated December, 2004 (the Aldine Study) included area which currently comprises the Airline ID for limited purposes, such as the identification of water and wastewater service providers which operate in the area, and the investigation into whether or not the area might benefit from the continuation of proposed trunk water lines from the Aldine Improvement District (now known as the East Aldine Management District, or EAMD). This study is important to Airline ID and relevant to this study, as the two districts neighbor each other, and there is an opportunity for sharing infrastructure improvements and expenses to achieve the common goal of improving the water and wastewater services to eliminate related public health issues, encourage economic growth and development, and enhance the quality of life for Airline ID's residents.

AIRLINE ID WATER & WASTEWATER PLANNING STUDY

SECTION 4 MAPPING DOCUMENTATION

4.1 Location of Existing Neighborhoods

There are many individual neighborhoods located within Airline ID boundaries. Some, such as Northline Terrace, are large, developer planned communities, which provided for public water and wastewater services when they were created. Most, however, are smaller unrecorded subdivisions which were created by acreage tract owners rather than by developers. In nearly every example, public water and wastewater service was not provided for during the creation of these owner-developed subdivisions. There are several possible reasons for this, including their distance from existing public facilities, the cost associated with construction of infrastructure, or the absence of any body to own and operate systems. It is also possible that at the time of their creation, which was largely prior to any OSSF regulation, the owner-developers perceived that public water and wastewater systems were simply not wanted or needed.

Please refer to Exhibit 11 for locations of existing neighborhoods.

4.2 Location of Existing Utilities

Refer to Exhibits 4 and 5 to view existing Water Distribution Systems and Wastewater Collection systems, respectively.

4.3 Location of Existing Water and Sewer Certificated Areas

Based on TCEQ records, all Certificate of Convenience and Necessity (CCN) areas within or adjacent to Airline ID are indicated on Exhibits 2 & 3.

4.4 Proposed Water Service Area Improvements

The most recent City of Houston Water Master Plan does not address Airline ID's future water demands or include a water distribution system to serve areas within Airline ID. However, the City of Houston indicated that water would be available to serve Airline ID,

AIRLINE ID WATER & WASTEWATER PLANNING STUDY

and would be made available for Airline ID's use if a service agreement between the City and Airline ID were reached.

4.5 Proposed Wastewater Service Area Improvements

The City of Houston has no proposed plans for wastewater collection lines within Airline ID. However, it was determined that collection line capacity appeared to be available in locations adjacent to Airline ID, as indicated on Appendix 11.3, and would be made available for Airline ID's use if a service agreement between the City and Airline ID were reached.

4.6 Location of Existing Water Wells

Refer to Exhibit 8 for water well locations obtained from the TCEQ database.

4.7 Location of Existing TCEQ Texas Pollution Discharge Elimination System

Refer to Section 9, Table 5 for the location of the existing TCEQ TPDES. The location of wastewater treatment plants are graphically shown in Section 10, Exhibit 7.

4.8 Location of Existing Floodplain Areas and Floodway

Refer to Appendix 11.4 for the location of the floodplain and floodway as determined by the FEMA Flood Insurance Rate Maps for Halls Bayou within Airline ID's boundary.

4.9 Properties included in the Harris County Flood Control District Buyout Plan

Harris County Flood Control operates a program which, under specific circumstances, offers the victims of repetitive flood loss the opportunity to sell their property to Harris County. Properties located within the FEMA designated floodway are more likely to be included for eligibility in this program, as they are more likely than properties which are not in the floodway to suffer repeated significant flooding. Several properties within Airline ID have been purchased under this program, and more may become eligible at any time

**AIRLINE ID
WATER & WASTEWATER PLANNING STUDY**

since it is statistically probable that the properties within the floodway will suffer flooding with some regularity. As this is the case, development in the FEMA designated floodway is discouraged under current Harris County policy, and this study recommends against the construction of infrastructure to serve properties which lie wholly within the floodway.

AIRLINE ID WATER & WASTEWATER PLANNING STUDY

SECTION 5 ANALYSIS

5.1 Status of Existing On-Site Sewage Facilities (OSSF)

Although Harris County currently regulates the installation of OSSFs*, there were no county OSSF regulations in the county until 1988, so installations prior to that were not regulated. Many properties with OSSFs within Airline ID were developed prior to 1988.

With that in mind, Harris County staff performed a detailed field inspection of the OSSFs on a representative sample of 15 properties, most under a third of an acre, and all under half an acre in size, throughout Airline ID. This inspection included locating each system's components with a probe rod, determining its size, measuring its distance from buildings, plants, fences and water wells, assessing its functional utility for installation, and assessing the overall ability of the lot to support an OSSF, without regard to the present OSSF installation, as though the homeowner were applying for an OSSF permit. The purpose of the inspections was 1) to determine what kind of OSSFs serve the properties, 2) to determine if they are functioning as necessary to treat the waste from the homes they serve, and 3) to determine if the properties are fit to support an OSSF of any kind under present regulations, without benefit of a variance.

Harris County found that of the 15 OSSFs investigated, four were not operating properly, 11 were in direct violation of current regulations by virtue of being too close to their own or neighboring non-pressure cemented water wells (note that only 13 of the 15 properties had water wells), and two were reported to be on lots unsuitable to support an OSSF under current regulations for various reasons (one of which was also one of the 11 too close to a water well). In summary, 12 of the 15 properties were deemed to be non-compliant with current OSSF regulation, and four were deemed to be out of proper working order.

If this trend is, as believed, illustrative of the whole District, it suggests that perhaps 80% of all residential properties which are under a third of an acre in size and which do not have access to a public water source would be unable to meet current OSSF regulations if

AIRLINE ID WATER & WASTEWATER PLANNING STUDY

they had to replace a failed OSSF or to install a new one to serve new development. It also suggests that about one-quarter of existing OSSFs in Airline ID are not operating properly and need to be serviced, repaired, replaced, or rendered unnecessary with the installation of a public wastewater collection system.

*See www.eng.hctx.net/permits/onsite_sewerage.htm for current Harris County OSSF regulations.

5.2 Status of Existing Private Water Wells

Of the 13 lots which have private water wells and OSSFs that were diagrammed, 11 did not meet the current minimum separation requirements between water wells and OSSFs. Although an OSSF being too close to a water well is not by itself a citable violation, there is a valid public health concern with shallow individual water wells constructed in close proximity to a conventional OSSF absorption field or tank.

Sampling and testing of the well water from the wells from 21 out of 30 selected residences was completed by Terracon (Project No. 92087191) on April 21, 2008. Some of wells sampled were from the 11 which were shown to be too close to an OSSF. Refer to Appendix 11.1.

The objective of the sampling and testing was to assess the presence of nitrates and Escherichia Coli (E. Coli) in the selected domestic water wells to determine the likelihood of contamination by untreated sewage. The results of the testing at the selected locations did not detect E. Coli above the laboratory reporting limit or nitrates above the United

AIRLINE ID WATER & WASTEWATER PLANNING STUDY

States Environmental Protection Agency Maximum Containment Level (MCL) for drinking water. This indicates that, at the time the samples were taken, it is unlikely that the water in the wells sampled had come into contact with untreated sewage. It is important to note, however, that this is a snapshot in time of the water quality, and these results cannot be projected across time or across geography. It is also important to be aware that the contaminants tested for were limited to nitrates and E. coli, and did not include testing for other harmful organic contaminants such as arsenic, or for chemicals, heavy metals and other pollutants which can be introduced into groundwater from activities such as heavy manufacturing, industrial cleaning and descaling, dry cleaning, and vehicle repair, painting and salvage.

5.3 Surface Water Master Plan Projections

A Water Transmission plan was developed for the Aldine Improvement District that included the Airline ID boundary. A proposed 24-inch transmission line at Aldine Mail Route would be extended west across the Hardy Toll Road and a proposed 18-inch transmission would be extended from the planned Aldine ID surface water infrastructure, across the Hardy Toll Road near Carby Street to connect to Airline ID's water distribution system.

5.4 Service Area Water Use Projections

The projected total water demand in Airline ID is indicated in Section 9, Table 4. These calculations include existing utility districts and IOU demands but exclude floodway areas, as indicated. The projected water demand for Airline ID when completely developed is 3.53 MGD (5.30 MGD Peak Flow).

The current source for groundwater supply within Airline ID is individually owned wells for the areas not served by the Water and Sewer Districts. Please refer to Exhibit 2 (Existing

AIRLINE ID WATER & WASTEWATER PLANNING STUDY

Sewer CCN Areas) and Exhibit 3 (Existing Water CCN Areas). The City of Houston does not serve any area within Airline ID.

The City of Houston water source is treated surface water from the Northwest Water Treatment Plant on Lake Houston. Existing Surface Water Transmission lines are in Hirsch Road, East of Airline ID and east of US Highway 59.

With the continuing conversion to surface water in compliance with Houston Galveston Coastal Subsidence District (HGHCSD) regulations, land subsidence is on the decline. It is not a significant issue in the continued improvements planned for Airline ID. Regionalization and conversion to surface water supplied by the City of Houston is expected to further reduce area subsidence.

5.5 Existing Water and Sewer Infrastructure

The existing water and sewer infrastructure with Airline ID is owned and operated by the following Municipal Utility Districts and Investor Owned Utilities (Refer to Tables 5.5.1 and 5.5.2 below and Exhibits 2 and 3 in Section 10):

TABLE 5.5.1 EXISTING WATER INFRASTRUCTURE

WATER	CCN	10833	SUNBELT F.W.S.D
WATER	CCN	10972	CHAMPS WATER CO. INC.
WATER	CCN	11124	NITSCH & SON UTILITY COMPANY, INC.
WATER	CCN	11740	SOUTHWEST UTILITIES, INC
WATER	CCN	11782	WESTFIELD M.H.P., INC.
WATER	CCN	12085	C & P UTILITIES, INC.
WATER	CCN	12590	COUNTRY LIVING APARTMENTS

TABLE 5.5.2 EXISTING SEWER INFRASTRUCTURE

SEWER	CCN	20347	SUNBELT F.W.S.D
SEWER	CCN	20446	NITSCH & SON UTILITY COMPANY, INC.
SEWER	CCN	20596	WESTFIELD M.H.P., INC.
SEWER	CCN	20581	SOUTHWEST UTILITIES, INC
SEWER	CCN	20658	C & P UTILITIES, INC.

AIRLINE ID WATER & WASTEWATER PLANNING STUDY

The potential for utilizing existing infrastructure owned by investor owned utilities (IOU) was not explored due to the limited capacity of these systems and conflict with standard funding sources.

There is no City of Houston water or sewer infrastructure located within the Airline ID boundary.

5.6 TCEQ Violations Records (source: TCEQ Enforcement Division)

The following table lists a summary of the TCEQ Violations. Please refer to Table 5.6 below.

TABLE 5.6 TCEQ Violations

TPDES ID	EPA ID	PERMITEE NAME	PARAMETER	MONITORING END DATE
10236001	TX0021253	SUNBELT	NITROGEN, AMMONIA TOTAL (AS N)	7/31/2006
10825001	TX0032255	HARVEST	CHLORINE, TOTAL RESIDUAL	7/31/2006
11670001	TX0063479	SUNBELT	NITROGEN, AMMONIA TOTAL (AS N)	1/31/2006
10419001	TX0070611	NITSCH & SONS	SOLIDS, TOTAL SUSPENDED	4/30/2006
1041901	TX0070611	NITSCH & SONS	SOLIDS, TOTAL SUSPENDED	2/28/2007
1041901	TX0070611	NITSCH & SONS	CHLORINE, TOTAL RESIDUAL	1/31/2007
11791001	TX0071382	SUNBELT	FLOW, IN CONDUIT OR THRU TREATMENT PLANT	9/30/2006
12882001	TX0094986	SOLHJOU	NITROGEN, AMMONIA TOTAL (AS N)	3/31/2006
12882001	TX0094986	SOLHJOU	NITROGEN, AMMONIA TOTAL (AS N)	11/30/2006
13767001	TX0095656	FATIMA	SOLIDS, TOTAL SUSPENDED	3/31/2007

AIRLINE ID WATER & WASTEWATER PLANNING STUDY

5.7 Existing Utility District Facilities

The only Utility District located within Airline ID is the Sunbelt Fresh Water Supply District. They provide public water and sewer service to the Northline Terrace subdivision. Record drawings of their facilities can be found on Exhibits 3, 4 and 5 in Section 10 of this report.

Although Sunbelt FWSD has expressed a willingness to discuss providing service to certain unserved areas near Northline Terrace, they have less ability to serve large areas than the City of Houston does. Since the City of Houston has also expressed a willingness to provide water and wastewater service district wide, it is recommended that the City of Houston be given first consideration as service providers.

5.8 30-Year Water and Sewer Requirements

Although the population of Airline ID is expected to increase by more than 41% by the year 2040, the current lack of public water and wastewater facilities discourages growth and development, and the residential and commercial properties located within Airline ID are not projected to fully develop. However, when public water and wastewater services are made available, the quality of life in Airline ID will improve, and the area will likely become a prime location for residential and commercial in-fill development due to the availability of land, good school district, and the close proximity to established areas of commerce such as downtown Houston, the Galleria Area, Greenspoint, and Intercontinental Airport.

Please proceed to the next section for information on how to meet the water and wastewater needs of Airline ID.

AIRLINE ID WATER & WASTEWATER PLANNING STUDY

SECTION 6 SERVICE PLAN

6.1 General

The proposed service plan has been prepared based on both available infrastructure and plans with capacity to provide water and sewer service to Airline ID. Based primarily on available connection points on the City of Houston wastewater collection system which the City has determined has sufficient remaining capacity, five (5) service zones were established. Please refer to Exhibits 1A through 1E.

6.2 Water Transmission Infrastructure Plan

The Aldine Improvement District Water and Wastewater Planning Study outlined a water transmission plan to serve this general area by including provisions to extend the transmission line into Airline ID service area. The transmission plan is included on their Exhibit 5, which has been included for reference in this report on Exhibit 9. The surface water transmission lines will connect at Airline ID boundary at two (2) locations, as indicated on Appendix 2. The construction cost estimate is based on Airline ID funding 100% of the cost of all infrastructures beyond the EAMD boundary, plus a pro-rata share of the total surface water transmission infrastructure cost within EAMD, based on acreage served.

6.3 Water Distribution Plan

The proposed Water Distribution Plan (Exhibit 9) will provide potable water service and fire protection to the unserved areas of Airline ID. This plan relies on receiving water supply from the adjacent City of Houston distribution system, primarily on the west and south boundaries of Airline ID, and from an extension of the surface water transmission lines planned by EAMD. Refer to Exhibit 9, Proposed Water Distribution Plan and Appendix 2, which is a copy of Exhibit 5, Proposed Water Transmission and Distribution Plan from the Aldine Improvement District Study.

AIRLINE ID WATER & WASTEWATER PLANNING STUDY

Groundwater supply plants with ground storage and booster planning facilities are not included as part of this plan. The recently adopted “Water and Wastewater Regionalization Policy for Harris County and Harris County Flood Control District” establishes guidelines to achieve regionalization. Consolidation of water and wastewater systems to form regional facilities is now Harris County policy.

Some dead end streets within Airline ID would require water line lengths that exceed current City of Houston design standards. This proposed water distribution system will require some modification during the design phase to minimize dead end water lines, where possible, by acquiring easements or right-of-way to comply with applicable design standards.

6.4 Sanitary Sewage Collection Plan

6.4.1 General

This wastewater collection plan was developed to provide the most economically plausible system, and was based primarily on available connection points identified by the City of Houston Public Infrastructure Department.

It is anticipated that Sunbelt Fresh Water Supply District could service limited adjacent areas on a temporary basis only. However, this sanitary sewer infrastructure will ultimately be included in the regional conveyance system, and the proposed design was prepared accordingly.

6.4.2 Service Zones

Airline ID has been divided into five (5) service zones, based primarily on available connection points from existing utility systems and on topography.

Service Zone 1 (Exhibit 1A)

AIRLINE ID WATER & WASTEWATER PLANNING STUDY

Service Zone 1 is in the northwest portion of Airline ID, generally referred to as the “panhandle” area. It has frontage on Sweetwater Drive, Airline Drive, and West Road, and is north of Halls Bayou.

This area has a relatively large number of residential lots, and has no public water or wastewater service with the exception of Memory Lane and Madding Lane, which have service from Champs Water Co for potable water only.

The City of Houston has a 10 inch gravity sanitary sewer located in Sweetwater Drive. The line consists of two (2) sections, both of which flow to Blue Bell lift station #472, located near the intersection of Blue Bell Road and Sweetwater Drive. The City of Houston has advised that, although the Blue Bell lift station is undersized relative to the pipe capacities which feed it, the existing capacity of the lift station will serve up to 193 Equivalent Single Family Residences (ESFR) for this “panhandle” area. However, if the lift station were upgraded to match to pipe capacity, it would increase the available service to 341 ESFR.

Connection to the Blue Bell Lift Station is an interim solution to provide sanitary sewer service to Service Zone 1. Ultimately, all areas within Airline ID located North of Halls Bayou (Service Zones 1 & 2) will be served by the Imperial Valley Wastewater Treatment Plant, which is located north of and outside of Airline ID boundaries, near Lilja Road approximately 4,000 feet north of West Road.

Service Zone 2 (Exhibit 1B)

Service Zone 2 is the area north of Halls Bayou bounded by the Hardy Toll Road and Sweetwater Road, exclusive of Service Zone 1. The primary residential area is located south and east of the intersection of Aldine Mail Route and Airline Drive. The remainder of Service Zone 2 is not fully developed, and the lots are generally larger.

There are no public water or wastewater systems located within Service Zone 2. The only connection to the City of Houston system is the Imperial Valley Wastewater Treatment Plant, which is located approximately 11,000 feet north of the Airline Service Zone 2.

AIRLINE ID WATER & WASTEWATER PLANNING STUDY

Due to the slope of this land adjacent to Halls Bayou, and the distance to the Imperial Valley Waste Water Treatment Plant; two (2) sewage lift stations are included in this proposed long range plan. Unfortunately, the cost of the lift stations and force main which will be necessary to deliver Zone 2's wastewater to the Imperial Valley Wastewater Treatment Plant adds considerable expense to serving the area. Ultimately, however, the area will be prime for commercial redevelopment, as Aldine Mail Road is scheduled to be widened to a four-lane thoroughfare by Harris County in 2009, which may present opportunities for cost sharing with prospective developers.

One alternate solution is to construct an interim wastewater treatment plant in the vicinity of the proposed Lift Station #2, with effluent discharge into Halls Bayou. This would allow the gravity collection system to be designed and constructed to function with both the interim WWTP or with the ultimate long range requirement to utilize the Imperial Valley WWTP. There are considerable drawbacks to this solution, however, which should be carefully considered before carrying it through. First, constructing and operating a small, temporary WWTP conflicts with the Harris County Water and Wastewater Regionalization policy, which seeks to discourage or eliminate the use and construction of small, sub-regional WWTPs. As such, it is highly likely that any project which proposed to construct the interim WWTP or utilize it for wastewater disinfection would not be eligible for CDBG funding, one of the most powerful funding mechanisms available to Airline ID. Second, it presents an ownership and operation challenge, as it is highly unlikely that the City of Houston would agree to own, operate or maintain it, leaving ownership and operation to Airline ID. This would be a major hardship for Airline ID if the collection lines were owned and being operated by the City of Houston, as Airline ID would have no sewer service revenue from customers with which to cover the costs associated with operating and maintaining the plant

Service Zone 3 (Exhibit 1C)

Service Zone 3 is located in the southwest corner of Airline ID and is bounded by the eastern boundary of the Northline Terrace subdivision (which is also the eastern boundary of the Sunbelt FWSD service area), Halls Bayou, Sweetwater Drive and Canino Rd. As

AIRLINE ID WATER & WASTEWATER PLANNING STUDY

indicated on Exhibit 1C, the north and east areas of Zone 3 are provided water and sanitary sewer service by Sunbelt FWSD. The Country Living Apartments have their own water system (CCN 12590). Sanitary Sewer service to these apartments appears to be provided by Sunbelt FWSD.

The unserved areas of Service Zone 3 have access to City of Houston wastewater collection lines located in both Sweetwater Drive and Canino Road.

Exhibit 1C indicates that the Zone 3 Service Area has two (2) collection systems. The north collection system connects to the City of Houston's 10 inch sanitary sewer line located in Sweetwater Drive. This system is located north of Harris County Flood Control District Unit P118-27-01 and north of the Mitchell Lift Station, located at Sweetwater Drive and Mitchell Lane. The south collection system connects to the existing City of Houston 10 inch sanitary sewer located in Canino Road.

Based on the information from the City of Houston, the Mitchell Lift Station will require upgrading to handle the additional flows from the north portion of Zone 3 and the additional flows from Service Zone 1.

Service Zone 4 (Exhibit 1D)

Service Zone 4 serves the south central area of Airline ID, which is generally located on either side of Airline Drive south of Halls Bayou. Exhibits 3 and 4 indicate the location of the Nitsch & Son Utility Company, Inc., service area, which furnishes both water and sanitary sewer service to the southwest portion of Zone 4. Also, the Westfield MHP, Inc., provides water and sanitary sewer service to their development located between Louise Road and Halls Bayou, east of Airline Drive.

A 12-inch sanitary sewer trunk line in Airline Drive is proposed to serve Zone 3. The City of Houston designated connection point for this area is at Carla Lane and Little York, which currently has enough peak capacity available (5.2 MGD) to serve Zone 4 without upgrades. A lift station will be required near the south end of Zone 4 along Airline Drive.

AIRLINE ID WATER & WASTEWATER PLANNING STUDY

Service Zone 5 (Exhibit 1E)

Service Zone 5 is located in the northeast corner of the portion of Airline ID south of Halls Bayou. This area is in close proximity to the City of Houston Iroquois Lift Station, located at the north end of Iroquois Street.

The City of Houston Public Infrastructure Department has indicated that they have enough peak capacity available (1.2 MGD) at the 8 inch force main connection to the 24 inch sanitary sewer at Little York and McGallion. However, an upgrade of the Iroquois Lift Station is required to handle the additional flow from Zone 5.

6.5 Wastewater Treatment Plant Service

A wastewater treatment plant is not included in any of the planned construction within Airline ID. The recently adopted “Water and Wastewater Regionalization Policy for Harris County and Harris County Flood Control District” (Appendix 11.5) strongly encourages the use of regional facilities. Airline ID wastewater system will either connect to the adjacent City of Houston gravity collection system or the Imperial Valley WWTP.

6.6 Water and Wastewater Phasing Plan

A water and wastewater phasing plan is outline in sections 8.1 though 8.4 for the 10-year Plan, 20-Year Plan and 30-Year Plan.

**AIRLINE ID
WATER & WASTEWATER PLANNING STUDY**

SECTION 7 CAPITAL COST ESTIMATES, FINANCING, RATER DETERMINATION

7.1 Design and Construction Cost Estimate

The total project estimate for the proposed water supply and wastewater collection facilities to serve Airline ID are included in Table 8. The total estimated project cost estimate, based on last quarter 2007 first quarter 2008 construction costs, is \$85,161,866.00. This figure includes all costs associated with the surveying, designing, and construction of the proposed water and wastewater improvements and infrastructure. It includes upgrades to existing City of Houston infrastructure which will be required in order to facilitate their ability to accept additional flows from Airline ID's Service Zones.

This cost estimate also includes the costs associated with removing and replacing street paving on narrow rights-of-way. Although it will be avoided where possible, it is inevitable that some infrastructure will have to be placed under existing paving in narrow rights-of-way due to general lack of available space and conflicts with existing utilities, which will maintain senior rights of placement and will not relocate to make room for proposed water and wastewater infrastructure.

7.2 Overview of Airline ID's Funding Availability

This section provides an overview of the financing tools available to Airline ID as well as other sources that may provide funding as grants and low interest loans.

7.2.1 Funding From Taxes, Assessments and Fees

Airline ID has the ability to utilize the following financial tools for water and sewer services:

Sales Tax: As allowed by statute, voters in Airline ID approved a one percent sales tax.

Property Tax: An ad valorem tax may also be imposed if approved by a majority vote.

Bonds: Airline ID may issue bonds upon approval by the City of Houston.

Special Assessments: Projects, such as water and sewer development, may be financed through special assessments imposed by Municipal Management Districts (MMDs) upon

AIRLINE ID WATER & WASTEWATER PLANNING STUDY

property in the area where the benefits from the project are utilized. Such assessments may only be imposed after a petition is submitted to the MMD board and then it is subject to notice and hearing requirements.

Impact Fees: MMDs may also impose impact fees through the procedures provided in Chapter 395 of the Local Government Code. Additionally, general obligation and revenue bonds may be issued for improvement projects and services.

Fees: Through its Municipal Utility District powers, Airline ID may collect all necessary charges and fees for the services provided.

7.2.2 Funding From Grants and Loans

Potential sources for grant funds or low-interest loans:

Supplement Environmental Project (SEP) Funds: Airline ID can apply for SEP related grants to assist in the design, development and construction of its water and wastewater collection systems. The Texas Water Code allows an entity that is regulated by the Texas Commission on Environmental Quality (TCEQ) to contribute funds to qualifying SEPs to offset penalties or to otherwise allow the entity to enter into a negotiated agreement about a project impacting the environment. Airline ID should apply to both the TCEQ and Harris County SEP programs to seek funding for its water and wastewater systems.

Texas Community Development Block Grant Program: Every year, the U.S. Department of Housing and Urban Development (HUD) provides federal Community Development Block Grant funds (CDBG) directly to states, which in turn, provide the funds to cities and counties for various projects, including improving water and wastewater services. Harris County is an entitlement County and receives CDBG funds from HUD annually. Airline ID anticipates applying for CDBG funds to help design, develop and construct its water and wastewater collection systems and to assist residential owners to connect to those systems.

Community Resource Group, Inc. (CRG): CRG is a regional partner for the Rural Community Assistance Partnership (or RCAP). CRG primarily operates in the southern

AIRLINE ID WATER & WASTEWATER PLANNING STUDY

states, including Texas. CRG was established in 1975 to provide opportunities for rural communities and low-income families to build assets and secure a better future. CRG, among other things, will lend funds to water systems for capital improvements. Loan amounts can range up to \$150,000. Eligible applicants are nonprofit corporations or local governmental entities (e.g., cities, districts, etc.) who, among other things, serve significant numbers of low-income customers in communities of less than 20,000. Additional information regarding CRG can found at www.crg.org.

Revolving Loans: The Clean Water State Revolving Fund (CWSRF) Loan Program and the Drinking Water State Revolving Fund (DWSRF) Loan Program both offer loans to low-income areas, i.e., Disadvantaged Communities.

Under the DWSRF, a community is a disadvantaged community if it presently meets the definition of a disadvantaged community or, if as a result of a proposed project, the community becomes a disadvantaged community. A "disadvantaged community" means the service area of a public water system that has an adjusted median household income which is no more than 75% of the median state household income for the most recent year for which statistics are available; and (A) if the service area is not charged for sewer services, has a Household Cost Factor for water rates that is greater than or equal to 1.0%; or (B) if the service area is charged for water and sewer services, has a Combined Household Cost Factor for water and sewer rates that is greater than or equal to 2.0%. 31 TAC §§ 371.24(b)(1), (2).

Under the CWSRF, a "disadvantaged community" means a political subdivision that meets the criteria for a disadvantaged community and has a population less than or equal to 25,000.

Both DWSRF and CWSRF require the submittal of worksheets in order for Airline ID to be considered for the disadvantaged community funding option. Until Airline ID completes and submits the necessary worksheets for the disadvantaged community funding, Airline ID is unable at this time to determine whether it meets the criteria for a disadvantaged community under both DWSRF and CWSRF.

AIRLINE ID WATER & WASTEWATER PLANNING STUDY

The CWSRF Loan Program: This program is administered by the TWDB and provides loans at interest rates lower than the market rate to political subdivisions with the authority to own and operate a wastewater system. The CWSRF also includes Federal (Tier III) and Disadvantaged Communities funds that provide even lower interest rates for those meeting the respective criteria.

Loans can be used for planning, design, and construction of wastewater treatment facilities, wastewater recycling and reuse facilities, collection systems, storm water pollution control projects; and non-point source pollution control projects. The CWSRF offers fixed and variable rate loans at subsidized interest rates. The maximum repayment period for a CWSRF loan is 20 years from the completion of project construction. Additionally, Disadvantaged Communities funds will offer loans to eligible communities with populations under 25,000 at interest rates of 0% and 1%. As of February, 2007, the maximum repayment period for a CWSRF loan is 30 years from the completion of construction.

The DWSRF Loan Program: This program, like the CWSRF Loan Program, is administered by the TWDB and provides loans at interest rates lower than the market offers to finance projects for public drinking water systems that facilitate compliance with primary drinking water regulations or otherwise significantly further the health protection objectives of the federal Safe Drinking Water Act (SDWA). Projects must also be consistent with the 2002 State Water Plan.

Applicants may be political subdivisions of the state, nonprofit water supply corporations, privately-owned water systems, or state agencies.

Loans can be used for the planning, design, and construction of projects to upgrade or replace water supply infrastructure, to correct exceedances of SDWA health standards, to consolidate water supplies and to purchase capacity in water systems. Additionally, DWSRF loan proceeds can be used to purchase land integral to the project

The DWSRF offers a net long-term interest lending rate of 1.2 percent below the rate the borrower would receive on the open market at the time of loan closing. The maximum

AIRLINE ID WATER & WASTEWATER PLANNING STUDY

repayment period for most DWSRF loans is 20 years from the completion of construction. A limited amount of funding is available each year at even greater subsidies to applicants which qualify as Disadvantaged Communities. Disadvantaged communities may also receive a 30-year loan term.

7.2.3 Technical Assistance

The following sources are available for technical assistance in obtaining grants:

Texas Leadership Institute: www.texasleadership.org

The Rensselaerville Institute: www.rinstitute.org

Community Resources Group, Inc.: www.crg.org

Environmental Finance Center Network: The Environmental Protection Agency (EPA) sponsors a center in each EPA Region. This center may be a resource for assistance in grant and loan applications.

7.2.4 Potential Future Sources of Funding

The Economically Distressed Areas Program (EDAP): EDAP provides grants and loans to fund the construction, acquisition, improvement and necessary associated engineering work for water and wastewater collection systems to meet the minimal needs of residents. EDAP funds are available for projects located in economically distressed areas within affected counties. Affected counties are any county that has an economically distressed area which has a median household income that is not greater than 75% of the median state household income. As of March 2008, EDAP has granted or loaned over \$534 million to communities for water and wastewater construction projects. EDAP's current construction commitments range from \$305,739 to over \$100 million.

AIRLINE ID WATER & WASTEWATER PLANNING STUDY

Economic Development Grants for Public Works and Development Facilities: The Economic Development Administration, U.S. Department of Commerce, provides grants to economically distressed areas for public works projects, including water and wastewater facilities. The Projects must promote economic development; create long-term jobs; and/or benefit low-income persons or the long-term unemployed. Eligible entities, including political subdivisions, must have an adequate share of local funds; evidence firm commitment and availability of matching funds; be capable of starting and completing projects in a timely manner; and undertake projects that are consistent with the Overall Economic Development Program for the area.

Development Fund II: The Development Fund II refers to the source of funding from which the TWDB makes state loans. This is essentially a pure state loan program that does not receive Federal subsidies. The program includes loans for water supply, water quality enhancement, flood control and municipal solid waste. This Development Fund II serves the purposes previously served by Development Fund (Development Fund I), but separates the State Loan Program from the State Participation Program component. Also, the Economically Distressed Areas component of the Program is separate. Generally, funding is available for all Political Subdivisions of the State (at tax exempt rates) and Water Supply Corporations (at taxable rates) with eligible water, wastewater, flood and municipal solid waste projects.

Cost Sharing with the City of Houston: The City of Houston (City) provides sharing agreements between the City and developers for the cost of certain in-city utility development and extensions. Subject to funds allocated by City Council, the City's ordinance provides that a developer may be reimbursed for 30 percent, 50 percent or 70 percent of the construction costs dependant upon the development. City of Houston Ordinance 47-164. Seventy percent reimbursement is allowed for single-family homes within the city limits. Low or moderate single-family homes receive additional assistance such as a \$3,000 dollar per lot reimbursement for storm sewer drainage cost. The City's reimbursement program is limited to developments within the city limits, and therefore, is not directly applicable to areas in the unincorporated areas of Harris County. This program should be considered, however, as a precedent for redeveloping older areas outside of the city limits that may be annexed in the future.

**AIRLINE ID
WATER & WASTEWATER PLANNING STUDY**

7.3 Rate Structure for Monthly Water and Sewer Service

The proposed connection to the City of Houston water and wastewater facilities will allow Airline ID residents to pay the City of Houston water and sewer rates. The 2008 water and sewer rates for a single family residence with meters up to 3” are listed below on Table 7.3 below:

City of Houston 2008 Water & Sewer Rates Single - Family Residential Accounts
(Table 7.3)

Meter Size (Inches)	Consumption (Gallons)	Water Charge	Sewer Charge
5/8” through 3” meters	0 – 1,000	\$3.28	\$6.20
	2,000	\$7.77	\$6.20
	3,000	\$7.77	\$6.20
	4,000	\$15.23	\$15.01
	5,000	\$18.04	\$17.82
	6,000	\$20.85	\$3.76 per 1,000 gallons + \$1.09 service fee
	7,000 – 12,000	\$20.85 + \$2.78 per additional 1,000 gallons over 6,000	\$3.76 per 1,000 gallons + \$1.09 service fee
	Over 12,000	\$37.53 + \$5.02 per additional 1,000 gallons over 12,000	\$3.76 per 1,000 gallons + \$1.09 service fee

EXAMPLES:

1,000 gallons
(low-user rate) \$3.28 Water
 \$6.20 Sewer
 \$9.48 Total / Month

7,000 gallons \$23.63 Water
 \$27.41 Sewer (1.09 fee included)
 \$51.04 Total / Month

14,000 gallons \$47.57 Water
 \$53.73 Sewer (\$1.09 fee included)
 \$101.30 Total / Month

Source: www.publicworks.houstontx.gov/resource/ucs/rates_2008.htm

**AIRLINE ID
WATER & WASTEWATER PLANNING STUDY**

7.3.1 Impact of the Water and Sewer Rates

The City of Houston Rate Schedule is the most economical available to Airline ID customers. Some residents that currently use well water for landscaping and gardening are expected to be more conservative in water usage. However, for a majority of Airline ID customers, these water and sewer rates are expected to have no adverse impact, and will likely be largely offset with the savings that most residents will see due to lower electric bills from not operating their wells, and elimination of costs associated with OSSF maintenance.

**AIRLINE ID
WATER & WASTEWATER PLANNING STUDY**

SECTION 8 RECOMMENDATIONS

8.1 General

We have prepared this phased implementation plan based on the need for water and wastewater services, along with the availability of water and sewer connections to serve Airline ID. We recognize that priorities may change and the availability of funding will play a major role in the actual implementation schedule.

TABLE 8.1 CAPITAL COSTS SCHEDULE							
YEAR PLAN	PHASE	SERVICE ZONE	DESCRIPTION	WASTE WATER	WATER	* SURFACE WATER TRANSMISSION	TOTAL
10 YEAR	1	1	ALL SERVICE ZONE 1 (EXCEPT AIRLINE)	\$ 6,993,072.00	\$ 2,155,165.00	\$ 1,362,533.00	\$10,510,770.00
	2	2	NORTH	\$12,828,077.00	\$ 4,581,889.00	\$ 2,896,751.00	\$20,306,717.00
	3	3	SOUTH OF MITCHELL ROAD	\$ 3,114,880.00	\$ 1,363,610.00	\$ 862,098.00	\$ 5,340,588.00
20 YEAR	2	3	NORTH OF MITCHELL ROAD	\$ 4,302,853.00	\$ 1,253,517.00	\$ 792,496.00	\$ 6,348,866.00
	3	4	ALL ZONE 4	\$11,020,575.00	\$ 6,172,482.00	\$ 3,902,352.00	\$ 21,095,409.00
	2	1	AIRLINE DRIVE	\$ 663,150.00	\$ 397,290.00	\$ 251,174.00	\$ 1,311,614.00
30 YEAR	1	2	SOUTH	\$ 7,491,067.00	\$ 2,484,184.00	\$ 1,570,545.00	\$11,545,796.00
	2	5	ALL ZONE 5	\$ 5,128,906.00	\$ 2,189,169.00	\$ 1,384,031.00	\$ 8,702,106.00
TOTAL				\$51,542,580.00	\$20,597,306.00	\$13,021,980.00	\$85,161,866.00

* SURFACE WATER TRANSMISSION CONSTRUCTION COSTS ARE ASSIGNED AND DISTRIBUTED TO EACH PHASE OF DEVELOPMENT BASED ON A PRO-RATED SHARE OF THE WATER DISTRIBUTION SYSTEM.

NOTES:

1. SURFACE WATER TRANSMISSION COSTS INCLUDE A PRO-RATA SHARE OF THE EAST ALDINE MANAGEMENT DISTRICT (EAMD) INFRASTRUCTURE, ADJUSTED FOR INFLATION, AND 100% OF THE COST OF THE SURFACE WATER TRANSMISSION LINES EXTENDED TO SERVE ONLY AIRLINE ID.

2. COSTS ALLOCATED FOR THE CONSTRUCTION OF SURFACE WATER TRANSMISSION ARE LISTED IN TABLE 9. THIS CONSTRUCTION WILL BE FUNDED WHEN WATER TRANSMISSION SERVICES ARE AVAILABLE IN THE AIRLINE ID BOUNDARY.

**AIRLINE ID
WATER & WASTEWATER PLANNING STUDY**

8.2 Capital Cost Schedule for 10-Year Plan

Phase 1 – Service Zone 1

(Except Airline Drive)

- Midland Drive
- Northville
- Berwyn
- Blue Bell Road
- Mading Lane
- Memory Lane
- Shane Drive
- Raymac Street
- Turney Drive
- Frazer Lane
- Service Zone 3

Phase 2 – Service Zone 2

(North)

- Airline Drive
- West Lorino Street
- Helms Road
- West Mount Houston Road
- Aldine Mail Route
- Hawkins Avenue
- Nicar Avenue
- Lorino Avenue
- East Helms Road
- Lilza Road
- Amsler Road
- Kershaw Street
- South Stoneshire Street
- Faber Road

Phase 3 – Service Zone 3

(South of Mitchell Road)

- Berwyn Drive
- Cheswick Drive
- Yale Road

8.3 Capital Cost Schedule for 20-Year Plan

Phase 1 – Zone 3

(North of Mitchell Road)

- Gulf Bank Road
- Nelda Road
- Merianne Street
- Bertrand Street
- Nellis Street
- Louis Road
- Havner Court
- Yale Road
- Cheswick Drive
- Berwyn Drive

Phase 2 – Zone 4

- Airline Drive
- Carby Road
- Margie Lane
- Tina Lane
- Mitchell Road
- Turner Place
- Louise Road
- Gulf Bank Road
- Airway Avenue
- Meadowshire Street
- Meadowview Street

Phase 3 – Zone 1

- Airline Drive

AIRLINE ID WATER & WASTEWATER PLANNING STUDY

8.4 Capital Cost Schedule for 30-Year Plan

Phase 1 – Zone 2

(South)

- Airline Drive
- Hill Road
- Scoregga Lane
- Robertsvale Road
- Courrage Lane
- Woodmoss Drive

Phase 2 – Zone 5

- Gulf Bank Road
- Louise Road
- Mitchell Road
- Glenda Street
- Breezeway Street
- Televista Street
- Walla Lane

8.5 City of Houston Contract Negotiations

Airline ID and the Harris County Public Infrastructure Department had a preliminary meeting with City of Houston (City) wastewater and water engineering officials to discuss the City's possible participation and cooperation with Airline ID's wastewater and water efforts. The City is generally agreeable to entering into an Interlocal Agreement with Airline ID which will outline the terms under which Airline ID will be allowed to connect to City wastewater and water pipelines once the construction of Airline ID's infrastructure is complete.

The general idea of the agreement between Airline ID and the City would be that Airline ID would see that the water and wastewater infrastructure was constructed to City standards and at no cost to the City, and upon completion of construction, the City would accept the infrastructure into its system, whereby it would own it, maintain it and operate it at its own cost. The property owners which connected to the systems would become water and wastewater customers of the City, and would be billed by the City for the services rendered, at the same rates that were billed to the City's municipal customers.

This is a mutually beneficial partnership which was pioneered in 2006 by EAMD and the City. Airline ID should consider basing the proposed Interlocal Agreement on the

AIRLINE ID WATER & WASTEWATER PLANNING STUDY

framework of the Interlocal Agreement by and between EAMD and the City, as that is an agreement with which the City is familiar, and it has already been utilized successfully with the transfer of the Tasfield Sanitary Sewer improvements constructed by Harris County and EAMD to the City for their ownership and operation.

Cooperation and participation by the City and Harris County will ensure that Airline ID becomes an asset to the greater North Houston community, providing a quality place to live, work, and do business. Although the City cannot expend funds to unreasonably enhance areas outside its municipal limits, their cooperation and participation will help to ensure the long term value and quality of these projects.

8.6 New Legislation

House Bill (HB) 3862 was introduced in March 2007 during the Texas Legislature's Regular 80th session. It was printed and distributed to the Senate Committee on May 20, 2007, but died in committee. In simple terms, as it was written, the 80th Legislature's HB 3862 would apply to areas where a municipality provides sewer service but another entity provides water service. Under this bill, the water service provider would be required to discontinue water service to customers who were delinquent in their sewer payments by more than 90 days, upon notice of such delinquency by the municipality.

Airline ID should support the reintroduction of a bill with similar substance as the 80th Legislature's HB 3862 for the 81st Regular Session of the Texas Legislature. One of the strongest options for providing affordable water and sewer service to unserved areas of Airline ID is for Airline ID, by an Interlocal Agreement, to transfer the ownership and maintenance of such pipelines to the City of Houston (City). By supporting the reintroduction and passage of a bill similar to the 80th Legislature's HB 3862, Airline ID greatly enhances the likelihood that the City will enter into the Interlocal Agreement, as it would grant the City the ability to enforce the collection of delinquent sewer service payments in areas where water service is already being provided by another entity which does not have the ability or desire to provide sanitary sewer service.

**AIRLINE ID
WATER & WASTEWATER PLANNING STUDY**

SECTION 9 TABLES

- 1 30 Year Census Data Projections
- 2 Summary of Existing Public Water Systems in Airline ID
- 3 Computation of Service Zone Land Areas
- 4 Projected Total Water Demand
- 5 TCEQ Discharge Permits
- 6 HGSCD Permitted Wells in Airline ID Vicinity
- 7 Sanitary Sewer System Design Calculations
- 8 Sanitary Sewer and Water Distribution System Cost Estimate
- 9 Surface Water Transmission Line Cost Estimate

TABLES CONTAINED WITHIN REPORT, SECTIONS 1-8

- 2.1 Phased Development Construction Costs
- 3.3.2 Existing TCEQ Permitted Wastewater Treatment Plants
- 5.5.1 Existing Water Infrastructure
- 5.5.2 Existing Sewer Infrastructure
- 5.6 TCEQ Violations
- 8.1 Capital Costs Schedule

**AIRLINE ID
WATER & WASTEWATER PLANNING STUDY**

SECTION 10 EXHIBITS

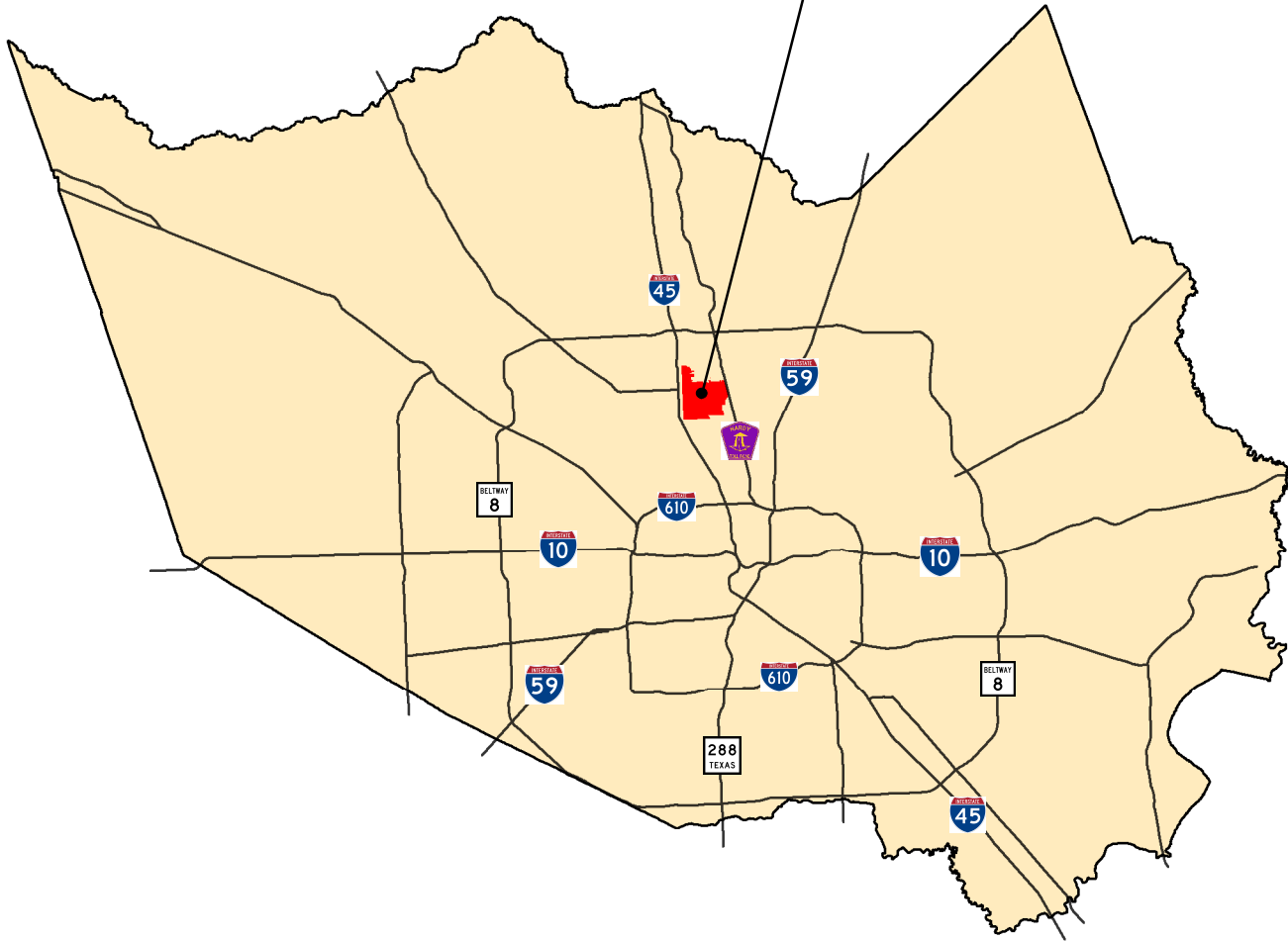
- 1 Airline ID Study Area and Service Zones Map
 - 1A Service Zone 1
 - 1B Service Zone 2
 - 1C Service Zone 3
 - 1D Service Zone 4
 - 1E Service Zone 5
- 2 Airline ID Existing Sewer CCN Areas
- 3 Airline ID Existing Water CCN Areas
- 4 Airline ID Existing Water Distribution System
- 5 Airline ID Existing Wastewater Collection System
- 6 Airline ID Existing Lift Stations
- 7 Airline ID Existing Treatment Plants
- 8 Airline ID Existing Permitted Water Wells
- 9 Proposed Water Distribution System
- 10 Proposed Wastewater Collection System
- 11 Airline ID Neighborhoods

**AIRLINE ID
WATER & WASTEWATER PLANNING STUDY**

SECTION 11 APPENDIX

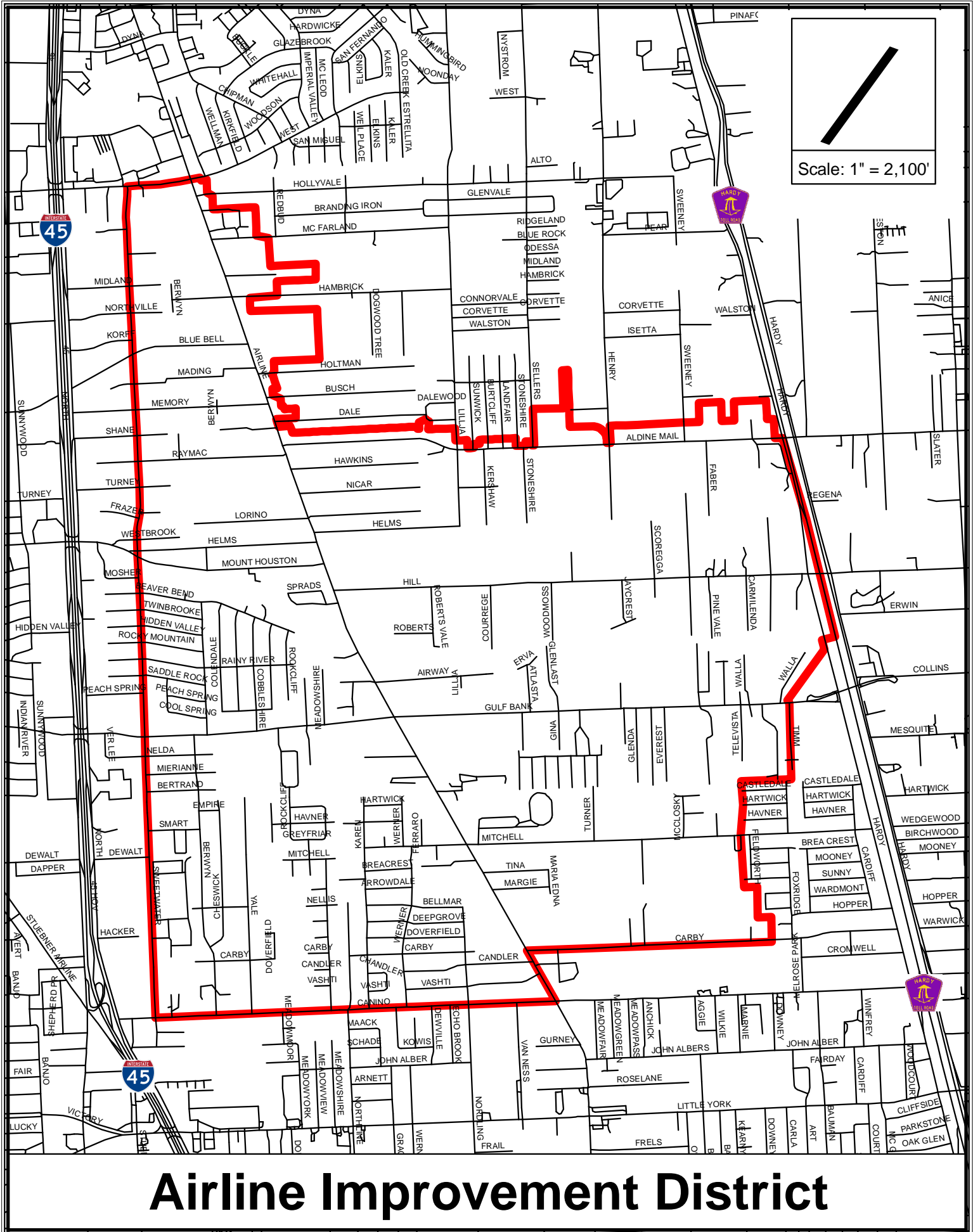
- 1 Water Well Sampling Report
- 2 Aldine Improvement District Water Transmission Plan
- 3 Proposed City of Houston Sewer Connections
- 4 FEMA Flood Insurance Rate Map
- 5 Harris County Water & Wastewater Regionalization Policy
- 6 Public Meeting Notices
- 7 Public Meeting Minutes
- 8 OSSF Survey Location Map

Airline Improvement District



**Harris County
Vicinity Map**





Scale: 1" = 2,100'

Airline Improvement District