

Houston-Galveston Area Wastewater Infrastructure Regionalization Summary

Regionalization refers to a wastewater infrastructure development process or policy under which the wastewater infrastructure needs of new development are coordinated or combined in regional facilities, or existing facilities are consolidated. This approach to managing the wastewater infrastructure network of an area has been proposed, in various forms, as a potential tool for the 13-county Houston-Galveston region (region). This summary document is intended to provide background for the discussion of regionalization by offering a brief review of wastewater infrastructure regionalization policy and/or implementation in the region. These examples include previous investigations of regionalization by H-GAC, applicable state and local policies, and select past and current local applications of regionalization. This document is not intended to be an exhaustive account of wastewater regionalization, but it should provide adequate background on its status in the region to foster further discussion.

Past H-GAC Studies

Under contract with TCEQ, H-GAC has maintained a Regional Water Quality Management Plan (WQMP) for over 30 years. Under this and other programs, H-GAC has evaluated many aspects of the region's wastewater infrastructure network. In the early 1970s, three studies were conducted to assess both the need for wastewater treatment facilities for the rapidly growing Houston area and the issue of regionalization. The *Eight County Regional Sewer Study* was written in 1971, the *Area-wide Waste Treatment Management Plan for the Greater Houston Area* (commonly known as the 208 Plan) was written in 1975, and the *Gulf Coast State Planning Region Waste Treatment Management Study* was written in 1976. These examples indicate that discussion of the regional nature of wastewater infrastructure planning and the potential for regionalization have long been considerations for the region's decision-makers.

In 2000, H-GAC produced a white paper evaluating domestic wastewater regionalization. Since that time, it has served as a primary source on regionalization in the area, as several entities have cited this document as their main reference on regionalization. H-GAC has continued to update the white paper, and the most recent version was produced in late 2009. The purpose of the white paper is to address a perceived need for wastewater regionalization, caused by specific issues arising from the patterns and character of wastewater infrastructure development in the region. Rapid population expansion and lack of regional coordination of facility development has led to an abundance of wastewater treatment facilities. The large number of small facilities and aging facilities, accompanied by continued reliance on aging and/or poorly maintained OSSFs in

unincorporated areas have created the potential for an appreciable impact on the water quality in local waterways. The white paper identified disadvantages to a network primarily composed of smaller plants, including a loss of economy of scale, due to a higher average cost of treatment, higher life cycle costs, and bearing higher financing costs for upgrades and repairs. Larger facilities have a diminishing incremental cost of providing service as volumes increase.

The white paper identifies large anticipated growth as another reason to consider regionalization of wastewater treatment facilities; however, it follows by identifying four distinct hurdles to implementation. Financial hurdles include lack of regional funding mechanisms. Statewide infrastructure funding programs exist, but there is a lack of regional coordination similar to the Regional Water Planning Groups, and funding is finite. This often leads to individual entities funding or pursuing projects without coordination with others, which frequently results in short-term incentives to pursue localized, small-scale plants. Until there is a regionally-oriented mechanism to fund large regional plants, small-scale plants will continue to be the primary mode of development based on existing funding considerations. Cost of redevelopment was another financial hurdle identified due to the high costs associated with retrofitting developed land, which often increases with density. A lack of incentive to consolidate was another primary financial hurdle identified in the white paper. As was the case with the nonexistent regional funding mechanism, there is also no incentive for developers to choose to pursue a long-term wastewater treatment option. Small package plants are often a more cost effective short-term treatment solution, and they do not require coordination with local political subdivisions. Lack of a coordinating body specific to this purpose exacerbates this issue.

Three other types of hurdles the study identified involve: developmental, control, and coordination issues. Growth in some areas is often rapid and not necessarily concurrent, which leaves coordination of regional wastewater treatment a difficult option. Communities are generally built by different developers, and development does often not follow the same pace of the growth of wastewater infrastructure. Owners of small treatment plants are often disinclined to voluntarily give up operational control and maintenance responsibilities to a larger regional facility due to concerns, real or perceived, of loss of control over vital services. Without a regionally coordinated entity, there is less likelihood that cooperation can be expected between the large amount of owners, operators, and developers in a region.

Potential solutions identified by the white paper to overcome hurdles to regionalization include both voluntary and mandatory measures, as well as a hybrid of the two. Voluntary measures rely on utilizing previous efforts while still moving forward to create a regional guiding effort. This effort could be based on developing financial and political incentives for the development of regional facilities, and providing a forum for coordination. However, voluntary measures require buy-in from affected parties and additional funding sources. Mandatory measures would potentially include state regulation and/or local ordinances and policies that require regionalization as an aspect of wastewater development. While TCEQ does require the feasibility of regionalization to be assessed before new treatment facilities are permitted, further mandatory

measures are likely to be met with some degree of political resistance at both the state and local level. To account for the potential drawbacks for both voluntary and mandatory measures, the white paper emphasizes the prospective benefits that could be yielded by a regional wastewater authority as a coordinating and incentivizing entity¹.

TCEQ Policy on Wastewater Regionalization²

The Texas Commission on Environmental Quality's policy on regionalization states that regionalization is feasible unless:

- no other systems are reasonably close;
- request has been denied for service from neighboring systems;
- an exception based on cost, rates, and financial, managerial, and technical capabilities of the current system should be granted.

When applying for a new certificate of convenience and necessity (CCN), an evaluation of feasibility must be completed. Sufficient evidence must be provided to TCEQ staff to determine if any of the three criteria applies to the planned system. According to state law, 'reasonably close' is defined as 2 miles for new CCNs. The evaluation is not required for systems that do not require a CCN. The regionalization review was created mainly for new systems; however, a similar review applies to systems that were constructed without appropriate approval, has a history of noncompliance, and/or has been subject to a TCEQ enforcement action.

The TCEQ's stated goal is to encourage regionalization of water and wastewater systems in order to ensure both cost effective and long-term quality water for the State of Texas. It is becoming more difficult for water and wastewater systems to both meet demand and stay in compliance with the Safe Drinking Water Act and Clean Water Act. The cost of meeting those compliance requirements increases as the system size decreases. By applying this policy, the goal is to decrease the number of existing and potential new systems that are unable to maintain the ability to provide continuous, adequate, and environmentally sensitive service to its customers.

¹ Houston-Galveston Area Council. 2009. *A Regional Approach to Wastewater Infrastructure Planning*. White Paper. Community and Environmental Planning Department. Revised November 2009.

² TCEQ. 2003. *The Feasibility of Regionalizing Water and Wastewater Utilities: A TCEQ Policy Statement*. Water Supply Division. RG-357. January 2003.

Harris County and the Harris County Flood Control District Water and Wastewater Regionalization Policy³

Harris County and the Harris County Flood Control District developed a policy to affirm their position on the issue of water and wastewater regionalization. The policy is in compliance with both entities' NPDES storm water permits, and its goal is to reduce the total number of treatment plants and their subsequent pollutant loads into the local waterways. According to the policy, when regionalization is applied properly, it is believed that treatment efficiency is improved, unit cost for treatment is improved, number of wastewater discharges is reduced, amount of groundwater extraction is reduced, liability from regulatory oversight, permitting, and fines is reduced, ambient water quality is improved by improved treatment, and overall maintenance cost is reduced.

Eighteen months after the adoption of the policy, all existing Harris County and Harris County Flood Control District wastewater systems were to be reviewed to determine the feasibility of regionalization. The criteria for determining feasibility included the cost of conveyance to the nearest available system and the impact to areas of historical and cultural significance, environmental sensitive areas, or highly-developed areas. In addition to existing systems, all future systems and systems that are modified using grant funding from either entity must provide evidence that regionalization was considered using the same two criteria.

City of Houston Wastewater Treatment Plant Consolidation Plan⁴

The City of Houston developed its consolidation plan in order to eliminate several wastewater treatment plants in favor of more efficient, regional facilities. The plan outlined a specific diversion plan for each facility, along with various scenarios that allow flow to be diverted to the regional plants. The city planned to utilize the regionalization effort to produce a more efficient wastewater collection and treatment process, which in many cases could eliminate the need for lift stations. About twenty facilities were under consideration for abandonment or diversion, and they were grouped into near, intermediate, and long term projects. The City of Houston currently operates and maintains 40 WWTFs, which treat an average of 277 million gallons per day⁵.

³ Harris County Public Infrastructure Department. 2008. *Water and Wastewater Regionalization Policy for Harris County and Harris County Flood Control District*. May 1, 2008.

⁴ City of Houston. *Wastewater Treatment Plant Consolidation*.

⁵ City of Houston. 2011. *Wastewater Operations*. Public Works and Engineering. <http://www.publicworks.houstontx.gov/utilities/wwops.html>. Accessed 4/11/11.

Aldine Improvement District Water and Wastewater Planning Study⁶

The Aldine Improvement District (Aldine ID) published its Water and Wastewater Planning Study in 2004, which presented a plan for both quantifying water supply and wastewater treatment needs and providing public water and sewer services for its service area. The Aldine ID is bound by Little York Road, the Hardy Toll Road, Aldine Bender Road, Homestead Road, and Hirsch Road, which makes up an area of 14.79 square miles north of downtown Houston. In this plan, wastewater regionalization was identified as a necessary tool for providing adequate sewer services for the area.

The plan cited a City of Houston study from 1979, which called for the need of two regional wastewater facilities to provide service for the Aldine area. One site is now the location of the North Belt Regional WWTF, and the other area was subsequently determined to be too small to support a regional facility. The City now has no intentions of developing a WWTF on that site. A City of Houston study in 1988 stated that it is more economical to operate wastewater treatment facilities that are more than 5 MGD capacity, and smaller facilities should be abandoned. Wastewater should then be diverted to a regional treatment facility.

The City of Houston is now in negotiations to provide wastewater treatment for the Aldine ID with the North Belt Regional WWTF. That facility is near the northeastern corner of the desired service area, and is operating at only 30 percent of its designed flow capacity.

City of Sugar Land 2007-2010 Capital Improvement Program⁷

The City of Sugar Land's wastewater master plan indicated that increased treatment capacity would be needed to accommodate continued development in the city. The New Territory plant was identified as the most appropriate site for regionalized wastewater treatment. In 2008, the facility was expanded from 2.5 to 4.0 MGD and the City diverted flow from the North WWTF to the New Territory WWTF. An estimated \$8 million in funds were allocated to expand the facility again from 4.0 to 6.0 MGD in 2009.

TWDB Regional Facility Planning Grants⁸

The TWDB recently authorized the execution of contracts totaling approximately \$470,000 for the development of regional water and wastewater facility plans in 2011. Of the six applications









⁶ Aldine Improvement District. 2004. *Aldine Improvement District Water and Wastewater Planning Study*. Prepared by WaterEngineers, Inc. December 2004.

⁷ City of Sugar Land. *2007-2011 Capital Improvement Program Summary – Wastewater*.



⁸ Meesey, David. 2001. *Award of Fiscal Year (FY) 2011 Grants for Solicited Regional Facility Planning Grant Applications*. Memorandum. Texas Water Development Board. March 9, 2011.

that were submitted to the TWDB for funding, three involved developing plans for a regional wastewater facility. The City of Hutto is planning to study the feasibility of a regional wastewater system and the beneficial use of its treated effluent. The Greens Bayou South Reach area currently has 32 permitted wastewater treatment plants in its area. The Gulf Coast Waste Disposal Authority plans to study the feasibility of developing a wastewater treatment facility to consolidate existing facilities and to accommodate the needs of anticipated future industrial development. The third application involving the development of a regional wastewater facility was submitted by the City of Sugar Land, who plans to study the feasibility of a regional wastewater reuse system for areas within the City and its ETJ.

1. What sector do you represent?

		Response Percent	Response Count
NGO / Non-profit		3.4%	1
State / Regional government		10.3%	3
Local government (City, County, etc)		41.4%	12
MUD or other Special District		24.1%	7
Land Development / Real Estate		6.9%	2
Private Utility		6.9%	2
Private Contractor / Service		13.8%	4
Private Citizen		6.9%	2
	Other (please specify)		3
		answered question	29
		skipped question	2

2. Do you own or operate a WWTF?

		Response Percent	Response Count
Yes		29.0%	9
No		71.0%	22
		answered question	31
		skipped question	0




3. If so, what size(s)?

		Response Percent	Response Count
<0.5 MGD		12.5%	2
<1 MGD		0.0%	0
1-5 MGD		12.5%	2
>5 MGD		25.0%	4
N/A		56.3%	9
Other (please specify)			3
answered question			16
skipped question			15




4. What is your familiarity with regionalization?

		Response Percent	Response Count
Not familiar with regionalization		12.9%	4
Familiar, but don't deal with it		38.7%	12
Occasionally deal with it		25.8%	8
Deal with regionalization regularly		22.6%	7
Other (please specify)			0
answered question			31
skipped question			0




5. Have you been involved with a regional facility?

		Response Percent	Response Count
Yes		58.1%	18
No		29.0%	9
N/A		12.9%	4
answered question			31
skipped question			0

6. Has your organization considered consolidating existing infrastructure?

		Response Percent	Response Count
Yes		41.9%	13
No		19.4%	6
N/A		38.7%	12
answered question			31
skipped question			0

7. If you have considered consolidating, did you do it?

		Response Percent	Response Count
Yes		28.6%	8
No		21.4%	6
N/A		50.0%	14
answered question			28
skipped question			3

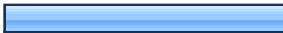


8. If you DID consolidate existing infrastructure, what was your reason(s)?

		Response Percent	Response Count
Economy of Scale		31.8%	7
Aging Infrastructure		27.3%	6
Regulatory Mandate		4.5%	1
Eliminating Problem Facilities		27.3%	6
N/A		63.6%	14
	Other (please specify)		1
answered question			22
skipped question			9




9. If you did NOT consolidate existing infrastructure, what was your reason(s)?

		Response Percent	Response Count
Cost		31.0%	9
Lack of Opportunity (nearby facilities)		20.7%	6
Lack of Available Funds		13.8%	4
Potential of Losing Operational Control		3.4%	1
Timing Issues		3.4%	1
N/A		55.2%	16
	Other (please specify)		2
answered question			29
skipped question			2





10. Has your organization considered coordinating wastewater infrastructure for new development with other new developments or existing regional facilities?

		Response Percent	Response Count
Yes		41.9%	13
No		16.1%	5
N/A		41.9%	13
answered question			31
skipped question			0






11. If you have considered such a coordination effort, did you do it?

		Response Percent	Response Count
Yes		32.3%	10
No		9.7%	3
N/A		58.1%	18
answered question			31
skipped question			0

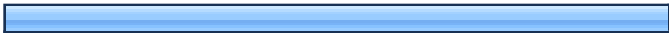
12. If you DID participate in the coordination effort, what was the reason(s)?

		Response Percent	Response Count
Economy of Scale		22.2%	6
There was already an available regional facility		18.5%	5
'Turn-Key' solution (allow another entity to manage)		11.1%	3
N/A		63.0%	17
	Other (please specify)		4
answered question			27
skipped question			4



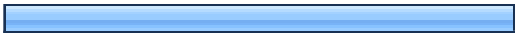
13. If you did NOT participate in the coordination effort, what was the reason(s)?

		Response Percent	Response Count
Lack of available land		0.0%	0
Coordination timing		8.0%	2
Lack of funding		12.0%	3
Control		8.0%	2
No adjacent developments		0.0%	0
Cost		8.0%	2
N/A		68.0%	17
	Other (please specify)		0
answered question			25
skipped question			6






14. Can regionalization be a potentially effective tool for managing wastewater infrastructure?

		Response Percent	Response Count
Yes		100.0%	30
No		0.0%	0
answered question			30
skipped question			1



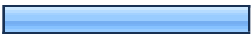

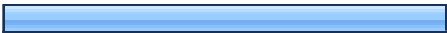

15. What form(s) of regionalization do you perceive as a potentially valuable tool?

		Response Percent	Response Count
Coordinating infrastructure development		13.3%	4
Consolidation of existing facilities		10.0%	3
Both		76.7%	23
Neither		0.0%	0
Other (please specify)			0
answered question			30
skipped question			1

16. What is the most desirable effect of regionalization?

		Response Percent	Response Count
Eliminate problem facilities		63.3%	19
Meet regulatory mandates		23.3%	7
Decrease environmental impact		46.7%	14
Improve cost and/or operation efficiency		66.7%	20
Coordinated development of new infrastructure		23.3%	7
	Other (please specify)		1
		answered question	30
		skipped question	1

17. What benefits do you perceive that regionalization CAN have?

		Response Percent	Response Count
Cost		56.7%	17
Efficiency		76.7%	23
Coordinated development of new infrastructure		36.7%	11
Meeting regulatory requirements		50.0%	15
Eliminate problem facilities		66.7%	20
Environmental		43.3%	13
	Other (please specify)		1
		answered question	30
		skipped question	1

18. What disadvantages do you perceive that regionalization CAN have?

		Response Percent	Response Count
Cost		50.0%	15
Timing		16.7%	5
Lack/loss of full control		30.0%	9
Funding		70.0%	21
Lack of adequate land/space		30.0%	9
Reliance on proximity to others		36.7%	11
	Other (please specify)		1
answered question			30
skipped question			1

19. Under CURRENT CONDITIONS, where can wastewater infrastructure regionalization best be applied in the H-GAC 13-county region?

		Response Percent	Response Count
Densely developed urban areas		33.3%	9
Urban residential		25.9%	7
Suburban		48.1%	13
Rural / developing		51.9%	14
Nowhere		0.0%	0
	Other (please specify)		5
answered question			27
skipped question			4

20. Which of these would make regionalization a more viable / feasible option?

		Response Percent	Response Count
More / easier access to funding		55.6%	15
Assistance with coordination		33.3%	9
Increased political support		40.7%	11
Regulatory requirement		37.0%	10
Regional wastewater policy		48.1%	13
	Other (please specify)		2
answered question			27
skipped question			4

21. Assuming the availability of the above options, where COULD regionalization best be applied in the H-GAC 13 county region?

		Response Percent	Response Count
Densely developed urban areas		39.3%	11
Urban residential		42.9%	12
Suburban		53.6%	15
Rural / developing		46.4%	13
Nowhere		0.0%	0
	Other (please specify)		3
answered question			28
skipped question			3




22. Would you support a regional wastewater policy?

		Response Percent	Response Count
Yes		37.9%	11
Yes - depending on scope / scale		51.7%	15
No		3.4%	1
No - sufficient policy already exists		6.9%	2
	Other (please specify)		1
answered question			29
skipped question			2


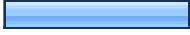


23. What entity should be responsible for making and implementing decisions concerning regionalization?

		Response Percent	Response Count
Individual plant owner / operators		17.2%	5
Local governments (City, County, etc)		37.9%	11
Regional authorities		34.5%	10
State / Federal governments		10.3%	3
	Other (please specify)		2
answered question			29
skipped question			2

24. Would you support a regional wastewater authority?

		Response Percent	Response Count
Yes		37.9%	11
No		24.1%	7
Depending on its role		37.9%	11
answered question			29
skipped question			2

25. If a regional wastewater authority was created, what would be its preferred role?

		Response Percent	Response Count
Advisory / facilitating		72.4%	21
Regulatory		27.6%	8
Funding		37.9%	11
None		6.9%	2
Other (please specify)			0
answered question			29
skipped question			2

26. Please share any additional opinions and/or comments that you feel could be useful. The goal of this survey and workshop is to gather information to make a recommendation to the TCEQ concerning the potential of wastewater infrastructure regionalization.

	Response Count
	3
answered question	3
skipped question	28

Prefix	LastName	FirstName	Organization	Department	Title
Mr.	Barnett	Thomas O.	Texas Commission on Environmental Quality	Region 12	Water Section, Environmental Investigator
Mr.	Beyer, PE	David	Storm Water Solutions, LP	Turnkey SWPPP Management	President
Ms.	Blake	Susie	City of League City	Public Works Department	Wastewater, Pretreatment Coordinator/ Laboratory Supervisor
Mr.	Bloom, PE, CFM, BCEE	Michael F.	Atkins	Infrastructure, Water & Environment	Associate Vice President
Mr.	Blount, PE	John R.	Harris County	Public Infrastructure Department	Director, Architecture & Engineering Division, Designated Representative
Mr.	Bower	Justin	Houston-Galveston Area Council	Community & Environmental Planning	Senior Environmental Planner
Ms.	Broach	Linda H.	Texas Commission on Environmental Quality	Region 12	Aquatic Scientist
Ms.	Casenave	Adriana	Peach Creek Preservation Association		President
Mr.	Chang, PE	Jun	City of Houston	Public Works & Engineering	Deputy Director, Public Utilities
Mr.	Chapin	Richard Jay	City of Houston	Public Works & Engineering	Planning and Development Services, Office of the City Engineer, Engineering Services Section, Senior Project Manager
Mr.	Cosbey	Russ	Huilt-Zollars, Inc.	Public Works	Project Manager
Ms.	Dominguez	Cathy	Brazos River Authority	Lower Basin	Government & Customer Relations Manager
Mr.	Eckhardt	Gregg	San Antonio Water System		Environmental Scientist
Ms.	Elliott	Catherine A.	Harris County Flood Control District	Operations Division, Environmental Services Department	Stormwater Quality Department Manager
Mr.	Elmer, PE	Scott	City of Missouri City	Public Works Department	Director of Public Works, City Engineer
Ms.	Elms	Jennifer	Edminster, Hinshaw, Russ and Associates, Inc.		
Mr.	Froehlich	Mark	Brown & Gay Engineers, Inc.	North Houston Association Board Chairman	Director
Mr.	Gehman	Gerald	Ponderosa Joint Power Agency	A & S Engineers, Inc.	Project Engineer
Ms.	Haddock, PE	Carol A. Ellinger	City of Houston	Public Works & Engineering	Planning & Development Services Division, Planning Branch, Senior Assistant Director
Ms.	Hallimore, PE	Angela "Angie"	R.G. Miller Engineers, Inc.	Land Development/Municipal Utility Districts	Project Manager
Mr.	Harris, III, PE	Teague G.	Pate Engineers, Inc.	Land Development & Districts	Senior Vice President, Utility District Services
Mr.	Heisch	Rodney	Brown & Gay Engineers, Inc.	Land Development	Manager, District Services

Prefix	LastName	FirstName	Organization	Department	Title
Mr.	Helton	Rick "Rickey"	City of Pasadena	Public Works Department	Utilities Superintendent
Mr.	Hoffman	William F.	Houston-Galveston Area Council	Community & Environmental Planning	Clean Rivers Program Data Manager, Environmental Planner
Mr.	Holley	Jonathan W.	Harris County Flood Control District	Environmental Services	Stormwater Quality Design Project Manager
Mr.	Hupp	Stephen, M.S.	Bayou Preservation Association, Inc.		Water Quality Director
Mr.	Iken	Jason	City of Houston	Public Works & Engineering	Public Utilities, Wastewater Operations Division, Managing Engineer
Mr.	Kaleyatodi	Ravi	City of Houston	Public Works & Engineering	Engineering and Construction Division, Engineering Branch, Senior Assistant Director
Mr.	Kilambi	Madhu	HDR Engineering, Inc.	Civil Engineering	Vice President
Ms.	Kirk	Liza	AEI Engineering, LLC	Consulting Civil Engineers	
Ms.	Lamont	Carole J.	Harris County	Commissioner Precinct 3	Office of Commissioner Steve Radack, Community Aide
Mr.	Maguire	Charles W.	Texas Commission on Environmental Quality		
Ms.	Maloney	Heather	Texas Commission on Environmental Quality	Region 12	Environmental Investigator
Ms.	Max	Alisa S.	Harris County	Public Infrastructure Department	Watershed Protection Group, Manager, Authorized Agent
Mr.	Merrell	Will	Houston-Galveston Area Council	Community & Environmental Planning	Clean Rivers Intern
Mr.	Murray	Jeff	Houston-Galveston Area Council	Community & Environmental Planning	Environmental Planner
Ms.	Patel	Snehal R.	Harris County	County Attorney's Office	Chief, Environmental & Regulatory Affairs Section
Mr.	Pavlovich	Raymond	Nottingham Country Municipal Utility District	HRC Heritage Research Consultants	President
Mr.	Pearson	Mark	Texas Water Development Board	Project Finance	Outreach Specialist
Ms.	Phan	Jennifer	City of Pearland	Public Works Department	Assistant Director of Public Works
Ms.	Phillips	Aubin	Houston-Galveston Area Council	Community & Environmental Planning	Senior Environmental Planner
Ms.	Powers	Rachel Decker	Houston-Galveston Area Council	Community & Environmental Planning	Senior Environmental Planner
Ms.	Purzer, PE	Mary L.	AECOM		Project Manager
Mr.	Rabbi, PE, CFM	Fazle	URS Corporation	Engineering & Infrastructure	Manager, Municipal Water Resources

Prefix	LastName	FirstName	Organization	Department	Title
Mr.	Rudloff, PE	John	HDR Engineering, Inc.	Vice President	City Engineer for Humble
Mr.	Running	Todd	Houston-Galveston Area Council	Community & Environmental Planning	Clean Rivers Program Manager
Ms.	Saibara	Mari	KPFT 90.1 FM		
Ms.	Saibara-Naritomi	Nancy	KPFT 90.1 FM		
Mr.	Smith	Gabriel	Brazos River Authority	Lower Basin	Business Development Manager
Mr.	Snoza	Robert E.	Harris County Flood Control District	Operations Division, Environmental Services Department	Water Quality Project Manager
Ms.	Steelquist	Diana	City of Santa Fe	Community Services	Community Services Director
Mr.	Synatschk	Tobin	Jones & Carter, Inc.	Public Works	Public Works Practictee Leader
Mr.	Taebel	Jeff	Houston-Galveston Area Council	Community & Environmental Planning	Director
Ms.	Traweek	Lori	Gulf Coast Waste Disposal Authority		Manager of Operations
Ms.	Wei	Ying	City of Houston	Public Works & Engineering	Braeswood Laboratory, Clean Rivers Program Manager
Ms.	White	Carolyn	Harris County Flood Control District	Operations Division, Environmental Services Department	Project Manager
Mr.	Wood, PE	Paul	Lockwood, Andrews & Newnam, Inc.		
Mr.	Young, PE	Donald Ray	WaterEngineers, Inc.		President