



REGION H WATER PLANNING GROUP

Senate Bill 1 - Texas Water Development Board

c/o San Jacinto River Authority

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Agricultural

Robert Bruner
Pudge Wilcox

November 9, 2010

Counties

John Blount
Judge Mark Evans, Chair
Judge Art Henson

Kevin Ward, Executive Administrator
Texas Water Development Board
P.O. Box 13231
Austin, Texas 78711

Electric Generating Utilities

Ted Long

Re: Region H Water Planning Group; 2011 Regional Water Plan Errata

Environmental

John R. Bartos

Dear Mr. Ward:

Industries

Genã Leathers
Glyna Leiper

The Region H Water Planning Group wishes to express its appreciation to the staff of the Texas Water Development Board for their helpfulness and professionalism during their review of the 2011 Region H Water Plan.

Municipalities

Jun Chang
Robert Istre

During this review, a few minor errors and inconsistencies were identified. In response to TWDB staff recommendations, the Region H consultant team has prepared the attached errata addressing the identified errors. The attached errata shall be made part of the Final 2011 Region H Regional Water Plan.

Public

Roosevelt Alexander

Sincerely,

River Authorities

John Hofmann
Danny F. Vance
Reed Eichelberger, Secretary

Mark Evans, Chair

Small Businesses

Judge Bob Hebert
John Howard
Steve Tyler

Water Districts

Marvin Marcell
Ron Neighbors, Vice-Chair
Jimmy Schindewolf

Water Utilities

James Morrison
William Teer
C. Harold Wallace

TWDB Liaison

Temple McKinnon

NOV 09 2010

TWDB

**Region H
2011 Regional Water Plan Errata**

The following items reflect minor clarifications and corrections to the 2011 Region H Regional Water Plan (RWP) as identified by TWDB. Materials below should be considered to supplement or supersede relevant portions of the RWP as indicated for each item.

(1) Volumes for three City of Houston Water Management Strategies (WMS) are clarified in the tables below. These corrections are applicable to *Table ES-7* and *Table 4A-6* in the Plan.

Water Management Strategy	Project Volume in RWP (ac-ft/yr)					
	2010	2020	2030	2040	2050	2060
COH Distribution Expansion	TBD	TBD	TBD	TBD	TBD	TBD
COH Treatment Expansion	Varies	Varies	Varies	Varies	Varies	Varies
COH GRP	TBD	TBD	TBD	TBD	TBD	TBD

Water Management Strategy	Corrected Project Volume (ac-ft/yr)					
	2010	2020	2030	2040	2050	2060
COH Distribution Expansion	-	280,000	128,000	64,000	48,000	48,000
COH Treatment Expansion	16,000	280,000	128,000	64,000	48,000	48,000
COH GRP	3,762	11,417	16,809	19,870	22,399	24,990

(2) An "Interim Strategies" WMS was applied to a number of WUGs in Brazoria, Chambers, Galveston, Harris, and Montgomery Counties to address Year 2010 needs when no other viable WMS could be applied to meet the highest demands expected under drought of record conditions. For the WUGs assigned this WMS (excluding Dickinson and Livestock in Galveston County), the WMS is intended to reflect the temporary overdrafting of groundwater. This overdrafting would not be expected to be continuous but would occur under severe drought conditions. For some WUGs overdrafting may be offset by overconversion credits in years of lesser demand.

(3) The following table is intended to supplement the data in Tables ES-7, 4-4, 4A-6, and 4C-1 in order to meet the TWDB requirement for "a single table listing all recommended WMS including WMS names, implementation dates, total yield of WMS by decade, total cap costs, and estimated unit costs in first and last decade of implementation."

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Recommended Strategy	Supply Listed in Other WMS?	First Decade of Water Strategy	Allocated Volume						Total Capital Cost (\$)	First Decade Estimated Annual Average Unit Cost (\$/acre-foot/year)	Year 2080 Estimated Annual Average Unit Cost (\$/acre-foot/year)	Comments
			2010	2020	2030	2040	2050	2080				
Conservation Strategies												
Industrial Conservation	N	2020	0	558	558	558	558	558	-	-	-	
Irrigation Conservation	N	2010	71,275	71,275	71,275	71,275	77,881	77,881	757,436	100	100	
Municipal Conservation - Small WUG	N	2010	9,655	18,366	24,016	28,274	33,219	38,589	-	202	202	
Municipal Conservation - Medium WUG	N	2010	2,658	4,377	5,062	5,684	6,384	7,189	-	311	311	
Municipal Conservation - Large WUG	N	2010	31,612	38,940	42,664	46,276	50,073	54,484	-	213	213	
Municipal Conservation - Other WUG	N	2010	1,680	3,635	3,954	4,269	4,716	5,232	-	213	213	
Reuse Strategies												
Fulshear Reuse	N	2020	0	287	430	430	430	430	566,625	566	453	
Houston Indirect Reuse	N	2040	0	0	0	66,420	114,679	128,801	721,822,850	725	799	
Montgomery MUD 8/9 Indirect Reuse	N	2020	0	657	816	1,120	1,120	1,120	12,245,687	1,387	436	
NHCRWA Indirect Reuse	N	2040	0	0	0	7,300	16,300	16,300	66,778,694	822	589	
Wastewater Reuse for Industry	N	2060	0	0	0	0	0	67,200	332,051,761	893	893	
Wastewater Reclamation for Mun. Irrigation	N	2030	0	0	7,272	15,425	25,561	36,388	48,043,249	568	520	
Groundwater Strategies												
Expanded Use of Groundwater	N	2020	0	40,159	62,297	68,916	80,337	90,617	165,928,999	238	175	
Interim Strategies	N	2010	503	0	0	0	0	0	1,155,965	369	-	
Interim Strategies - Temporary Overdrafting	N	2010	45009	0	0	0	0	0	85,545,570	303	-	
New Groundwater Wells for Livestock	N	2020	0	41	41	41	41	41	18,635	61	21	
Permit and Other Strategies												

Recommended Strategy	Supply Listed in Other WMS?	First Decade of Water Strategy	Allocated Volume					Total Capital Cost (\$)	First Decade Estimated Annual Average Unit Cost (\$/acre-foot/year)	Year 2060 Estimated Annual Average Unit Cost (\$/acre-foot/year)	Comments
			2010	2020	2030	2040	2050				
BRA System Operations Permit	N	2020	0	6,621	18,870	25,350	25,350	25,350	-	-	1
Houston Bayou Permit	N	2020	0	0	0	0	0	0	20,956,000	-	
Brazoria Co. Interruptible Supplies for Irr.	N	2010	104,977	86,759	64,000	64,000	64,000	64,000	-	-	
Freeport Desalination Plant	N	2050	0	0	0	0	33,600	33,600	255,699,000	854	854
Reservoir Strategies											
Allens Creek Reservoir	N	2020	0	57,393	55,096	87,781	99,650	99,650	222,752,400	326	39
Brazoria Off-Channel Reservoir	N	2060	0	0	0	0	0	24,000	173,898,602	1,206	1,206
Dow Off-Channel Reservoir	N	2020	0	21,800	21,800	21,800	21,800	21,800	124,468,000	481	389
Fort Bend Off-Channel Reservoir	N	2050	0	0	0	0	90	45,943	202,514,788	484,074	948
GCWA Off-Channel Reservoir	N	2030	0	0	39,500	39,500	39,500	39,500	197,448,012	827	827
Groundwater Reduction Plans											
CHCRWA GRP	Y	2010	2,375	4,146	4,789	4,806	4,806	4,806	-	-	2
Missouri City GRP (WWP-level)	Y	2020	0	5,182	9,431	13,149	13,149	17,562	92,070,990	1,110	131
Missouri City GRP - ASR	N	2020	0	4,147	4,147	4,147	4,147	4,147	-	-	3
Missouri City GRP - Participation	Other	2020	0	1,004	1,860	1,896	1,896	1,896	6,618,706	378	248
Missouri City GRP - Reuse	N	2020	0	640	640	640	640	640	-	-	3
COH GRP (COH GRP Participation)	Other	2010	3,762	11,417	16,809	19,870	22,399	24,990	58,235,873	378	214
Fort Bend MUD 25 GRP (Reuse)	N	2020	0	589	589	589	589	589	776,145	568	453
Fort Bend WCID #2 GRP	Y	2020	0	2,296	5,753	5,753	5,753	5,753	24,828,857	571	200
NFBWA GRP (GRP Participation)	Other	2020	0	106	258	295	466	687	1,638,063	380	241

Recommended Strategy	Supply Listed in Other WMS?	First Decade of Water Strategy	Allocated Volume					Total Capital Cost (\$)	First Decade Estimated Annual Average Unit Cost (\$/acre-foot/year)	Year 2060 Estimated Annual Average Unit Cost (\$/acre-foot/year)	Comments	
			2010	2020	2030	2040	2050					2060
NHCRWA GRP (GRP Participation)	Other	2010	761	2,933	4,243	5,573	6,664	8,088	17,814,585	377	206	5
Pecan Grove GRP	Y	2010	866	866	1,731	1,731	1,731	1,731	15,960,000	2,150	544	
Richmond Rosenberg GRP (WFB SWTP)	Y	2010	7,500	7,500	7,500	7,500	7,500	7,500	117,220,150	887	2,325	
River Plantation GRP (Reuse)	N	2010	168	368	368	368	368	368	484,926	568	453	
SJRA WRAP	Y	2020	0	36,377	55,538	62,517	92,677	129,010	900,000,000	1,172	269	
SJRA WRAP - Participation (Groundwater)	Other	2,020	0	21,441	27,020	30,247	28,720	26,896	89,604,231	235	282	4
SJRA WRAP - Participation (Lake Conroe)	N	2,020	0	36,377	55,538	54,582	53,581	52,534	128,252,622	136	125	
Sugar Land GRP	Y	2020	0	1,587	7,987	8,656	8,915	9,796	161,360,049	11,066	357	
Sugar Land GRP - Reuse	N	2020	0	560	5,040	5,040	5,040	5,040	-	-	-	3
Sugar Land GRP - Participation	Other	2020	0	480	1,763	2,380	2,381	2,155	6,360,101	379	223	
WHCRWA GRP (GRP Participation) ²	Other	2010	2,488	7,689	10,105	11,683	13,340	15,104	35,268,970	378	219	5
Infrastructure Strategies												
Brazos Saltwater Barrier	N	2020	0	0	0	0	0	0	44,470,739	-	-	
CHCRWA Internal Distribution	Y	2010	2,375	4,146	4,789	4,806	4,806	4,806	-	-	-	
CHCRWA Transmission	Y	2010	2,375	4,146	4,789	4,806	4,806	4,806	-	-	-	
CLCND West Chambers County System	N	2020	0	1,691	1,978	2,235	2,511	2,804	20,380,000	1,171	73	
COH Distribution Expansion	Y	2020	0	280,000	128,000	64,000	48,000	48,000	261,040,000	80	54	
COH Treatment Expansion	Y	2010	16,000	280,000	128,000	64,000	48,000	48,000	2,045,672,161	479	1,867	
Harris County MUD 50 WTP	Y	2010	560	560	560	560	560	632	6,131,600	1,382	427	
Huntsville WTP	Y	2010	11,200	11,200	11,200	11,200	11,200	11,200	61,023,906	904	429	

Recommended Strategy	Supply Listed In Other WMS?	First Decade of Water Strategy	Allocated Volume					Total Capital Cost (\$)	First Decade Estimated Annual Average Unit Cost (\$/acre-foot/year)	Year 2060 Estimated Annual Average Unit Cost (\$/acre-foot/year)	Comments
			2010	2020	2030	2040	2050				
LLWSSSC Surface Water Project	Y	2010	954	954	954	954	954	3,087,974	561	279	
Luce Bayou Transfer	Y	2020	0	128,259	206,276	207,629	270,742	253,916,914	248	36	
NFBWA 2025 Shared Transmission (w/ WHCRWA)	Y	2020	0	21,878	39,405	52,595	71,876	213,000,000	56	-	
NFBWA Internal Distribution	Y	2010	35,009	61,021	70,363	84,943	106,402	225,000,000	184	16	
NHORWA Internal 2010 Distribution	Y	2010	34,714	34,714	34,714	34,714	34,714	153,149,640	429	44	
NHORWA Internal 2020 Distribution	Y	2020	0	91,167	91,167	91,167	91,167	345,292,192	368	38	
NHORWA Internal 2030 Distribution	Y	2030	0	0	117,755	117,755	117,755	37,439,584	31	3	
NHORWA Transmission 2010	Y	2010	34,714	34,714	34,714	34,714	34,714	80,690,624	226	23	
NHORWA Transmission 2020	Y	2020	0	91,167	91,167	91,167	91,167	172,558,512	184	19	
NHORWA Transmission 2030	Y	2030	0	0	117,755	117,755	117,755	-	-	-	
Pearland SWTP	Y	2010	6,720	6,720	6,720	13,420	13,420	265,000,000	1,656	544	
Sealy GW Treatment Expansion	Y	2020	0	360	360	360	888	6,450,000	2,176	289	
WHCRWA 2020 Shared Transmission (w/ NFBWA)	Y	2010	21,678	52,274	66,761	73,196	78,839	290,084,193	202	37	
WHCRWA Internal Distribution	Y	2010	21,678	52,274	66,761	73,196	78,839	552,472,000	607	70	
WWP to WWP Contracts											
BRA to Brazosport Water Authority Contract	Y	2020	0	116	124	1,557	5,435	-	-	-	
BRA to GCWA Contract	Y	2020	0	17,779	40,008	50,205	65,564	-	-	-	
BRA to NRG Contract	Y	2060	0	0	0	0	8,500	-	-	-	
BRA to Richmond-Rosenberg Contract	Y	2040	0	0	0	1,091	5,645	-	-	-	
BRA to Sugar Land Contract	Y	2020	0	1,027	2,947	3,616	4,756	-	-	-	

Recommended Strategy	Supply Listed in Other WMS?	First Decade of Water Strategy	Allocated Volume					Total Capital Cost (\$)	First Decade Estimated Annual Average Unit Cost (\$/acre-foot/year)	Year 2060 Estimated Annual Average Unit Cost (\$/acre-foot/year)	Comments
			2010	2020	2030	2040	2050				
COH to Baytown Area Water Authority Contract	Y	2020	0	26	262	398	535	692	-	-	
COH to BRA Contract	Y	2020	0	27,498	25,201	57,886	69,755	69,755	-	-	
COH to CHRWA Contract	Y	2020	0	1,771	2,414	2,431	2,431	2,431	-	-	
COH to City of Pasadena Contract	Y	2010	1,865	2,278	2,865	3,153	3,579	4,068	-	-	
COH to NFBWA Contract	Y	2020	0	444	17,971	31,161	41,172	50,442	-	-	
COH to NHRWA Contract	Y	2020	0	56,453	83,041	83,041	78,041	83,041	-	-	
COH to North Channel Water Authority Contract	Y	2010	1,954	2,392	2,869	3,511	4,157	4,912	-	-	
COH to SJRA Contract	Y	2020	0	36,377	55,538	54,582	53,581	52,534	-	-	
COH to WHCRWA Contract	Y	2010	1,241	31,837	46,324	52,759	55,549	58,402	-	-	
GCWA to City of Galveston Contract	Y	2020	0	7,262	7,262	7,262	7,262	7,262	-	-	
GCWA to Fort Bend County WCID #2 Contract	Y	2020	0	491	1,092	1,092	1,092	1,092	-	-	
GCWA to Galveston County WCID #1 Contract	Y	2020	0	766	909	940	975	1,014	-	-	
GCWA to Missouri City Contract	Y	2020	0	713	6,330	10,661	10,911	15,435	-	-	
SJRA to COH Contract	Y	2030	0	0	1,356	5,300	3,872	2,428	-	-	
TRA to COH Transfer	N	2030	0	0	116,738	123,524	123,524	123,524	-	-	
TRA to SJRA Transfer	N	2040	0	0	0	7,935	39,096	76,476	302,781,597	4,676	140
WWP to WUG Contracts											
Baytown Area Water Authority to WUG Contracts	Y	2030	0	0	191	349	496	496	900,444	180	122
BRA to WUG Contracts	Y	2020	0	49,416	35,211	62,308	100,156	145,264	652,480,634	704	514
Brazosport Water Authority to WUG Contracts	Y	2010	7,750	7,866	7,874	9,307	10,933	13,185	24,465,863	193	94

Recommended Strategy	Supply Listed in Other WMS?	First Decade of Water Strategy	Allocated Volume					Total Capital Cost (\$)	First Decade Estimated Annual Average Unit Cost (\$/acre-foot/year)	Year 2060 Estimated Annual Average Unit Cost (\$/acre-foot/year)	Comments	
			2010	2020	2030	2040	2050					2060
CLCND to WUG Contracts	Y	2020	0	1,691	1,978	2,235	2,511	2,804	30,827,919	1,383	635	
CHCRWA to WUG Contracts	Y	2020	0	1,771	1,991	2,220	2,299	2,214	3,916,269	196	50	
City of Galveston to WUG Contracts	Y	2020	0	7,262	7,262	7,262	7,262	7,262	10,542,328	172	46	
COH to WUG Contracts	Y	2020	0	21,109	36,229	35,191	40,395	41,022	247,316,705	596	428	
City of Pasadena to WUG Contracts	Y	2020	0	967	1,941	2,765	3,317	3,317	2,918,547	65	72	
Expand/Increase Current Contracts	N	2010	7,750	142,599	100,714	86,446	77,143	66,367	-	-	-	1
Fort Bend County WCID #1 to WUG Contracts	Y	2020	0	148	824	940	1,016	1,016	1,815,739	259	60	
Fort Bend County WCID #2 to WUG Contracts	Y	2020	0	491	1,092	1,092	1,092	1,092	2,049,847	233	49	
Galveston County WCID #1 to WUG Contracts	Y	2020	0	766	909	940	975	1,014	1,807,960	207	60	
GCWA to WUG Contracts	Y	2020	0	29,970	85,481	89,994	93,566	99,530	277,297,628	406	223	
LNVA to WUG Contracts	Y	2010	16	23	26	29	33	37	405,835	1,392	642	
Missouri City to WUG Contracts	Y	2020	0	713	6,330	10,661	10,911	15,435	4,807,747	100	12	
New Contracts from Existing Supplies	N	2010	36,847	48,370	58,730	77,694	80,570	83,558	-	-	-	1
NFBWA to WUG Contracts	Y	2020	0	444	13,085	27,315	38,155	38,155	44,984,481	176	85	
NHCRWA to WUG Contracts	Y	2020	0	56,453	83,041	64,491	34,726	27,478	42,207,965	68	50	
North Channel Water Authority to WUG Contracts	Y	2030	0	0	2,088	3,078	3,852	3,852	3,632,614	55	84	
NRG to WUG Contracts	Y	2060	0	0	0	0	0	8,500	-	-	-	
Reallocation of Existing Supplies	Other	2010	59,614	56,931	54,011	66,006	76,391	152,895	275,269,912	351	148	4
Richmond-Rosenberg to WUG Contracts	Y	2040	0	0	0	1,091	3,060	5,645	-	-	-	
SJRA to WUG Contracts	Y	2010	23,008	27,754	37,090	62,712	93,901	131,325	308,768,406	829	206	

Recommended Strategy	Supply Listed in Other WMS?	First Decade of Water Strategy	Allocated Volume					Total Capital Cost (\$)	First Decade Estimated Annual Average Unit Cost (\$/acre-foot/year)	Year 2060 Estimated Annual Average Unit Cost (\$/acre-foot/year)	Comments	
			2010	2020	2030	2040	2050					2060
Sugar Land to WUG Contracts	Y	2020	0	910	2,687	3,356	3,615	4,496	4,436,591	257	29	
Dow to WUG Contracts	Y	2020	0	21,800	21,800	21,800	21,800	21,800	155,206,615	745	646	
TRA to WUG Contracts	Y	2010	13,823	17,083	19,972	22,888	25,732	28,672	249,479,472	1,044	620	
WHCRWA to WUG Contracts	Y	2020	0	31,837	46,324	40,241	43,031	38,961	44,753,636	90	55	

1. Cost reflected under individual WWTP to WUG contracts.
2. Transmission infrastructure as listed elsewhere
3. Cost reflected under main WWTP strategy
4. The volume shown reflects the redistribution of water from contributing WUGs to receiving WUGs. The net supply created by the strategy is zero.
5. The volume shown reflects the redistribution of water from contributing WUGs to receiving WUGs. The net supply created by the strategy is zero. Note that the volume listed for the GRP in summary tables ES-7, 4-4, 4A-6, and 4C-1 also reflects recursive surface water increases for the Authority.

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