

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
Stockpiling			Contractor (Note (Note: Samuels Avenue Dam and Marine Creek Low Water Dam)							
(Note: Per Estimator)										
USR HAUL-03 Hauling, 12 CY truck, 5 mile haul, soil	330.00	LCY	Dam General Contractor (Note (Note: Samuels Avenue Dam and Marine Creek Low Water Dam)	0.87 287	2.50 823	0.00 0	0.00 0	3.36 1,110	3.36 1,110	4.22 1,392
(Note: Based on crew CTDHB34C.)										
USR 023707001100 Erosion control, silt fence, polypropylene, adverse conditions, 3' high	1,000.00	LF	Dam General Contractor (Note (Note: Samuels Avenue Dam and Marine Creek Low Water Dam)	0.19 192	0.00 0	0.34 340	0.00 0	0.53 532	0.53 532	0.67 667
USR 023707001250 Erosion control, hay bales, staked	20.00	LF	Dam General Contractor (Note (Note: Samuels Avenue Dam and Marine Creek Low Water Dam)	0.32 6	0.22 4	2.25 45	0.00 0	2.79 56	2.79 56	3.50 70
USR EROSION-01 Straw Wattles	40.00	LF	Dam General Contractor (Note (Note: Samuels Avenue Dam and Marine Creek Low Water Dam)	0.72 29	0.44 18	2.00 80	0.00 0	3.16 126	3.16 126	3.96 159
(Note: Cost per Estimator.)										
Earthwork	1.00	LS	Dam General Contractor (Note (Note: Samuels Avenue Dam and Marine Creek Low Water Dam)	18,150	29,596	20,800	0	68,546	68,546	85,972
USR EARTH-09 Excavate, load,	8,100.00	CY	Dam General	1.47 11,941	2.32 18,813	0.00 0	0.00 0	3.80 30,753	3.80 30,753	4.76 38,572

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
and haul, medium material, wheeled loader, hwy hauler (1.6 cyc/hr)			Contractor (Note (Note: Samuels Avenue Dam and Marine Creek Low Water Dam)							
(Note: Based on 023154260265 and 023154901100.)										
RSM 022405001700 Dewatering, sump hole construction, pit with gravel collar, corrugated, 12" gravel collar, 12" corr. pipe, 16 ga, includes excavation and gravel pit	400.00	LF	Dam General Contractor (Note (Note: Samuels Avenue Dam and Marine Creek Low Water Dam)	4.94 1,974	1.77 709	16.30 6,520	0.00 0	23.01 9,203	23.01 9,203	28.86 11,543
(Note: 10 sumps each at 40' deep.)										
USR EARTH-10 Fill for embankments, load, 1 mile haul, spread w/dozer, compact w/vibrating roller	960.00	CY	Dam General Contractor (Note (Note: Samuels Avenue Dam and Marine Creek Low Water Dam)	0.82 784	1.67 1,601	0.00 0	0.00 0	2.48 2,384	2.48 2,384	3.12 2,991
(Note: Based on 023155100020 and COMP-01.)										
USR 023704500100 Rip-rap, random, broken stone, machine placed by hydraulic excavator for slope protection	560.00	LCY	Dam General Contractor (Note (Note: Samuels Avenue Dam and Marine Creek Low Water Dam)	6.16 3,451	15.13 8,473	25.50 14,280	0.00 0	46.79 26,205	46.79 26,205	58.69 32,867
Retaining Walls	1.00	LS	Dam General Contractor (Note (Note: Samuels Avenue Dam and Marine Creek Low Water Dam)	2,016,447	236,292	2,463,238	756,000	5,471,977	5,471,977	6,863,123
USR CONC-08 Concrete footing/slab on grade - lock structure	3,725.00	CY	Dam General Contractor (Note (Note: Samuels Avenue Dam and Marine Creek Low Water Dam)	175.00 651,875	20.00 74,500	105.00 391,125	0.00 0	300.00 1,117,500	300.00 1,117,500	376.27 1,401,603
(Note: Per Estimator. Cost based on previous work of similar scope. Assumes concrete pumping.)										
				225.00	20.00	130.00	0.00	375.00	375.00	470.34

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
USR CONC-03 Concrete walls - lock structure	1,855.00	CY	Dam General Contractor Note (Note: Samuels Avenue Dam and Marine Creek Low Water Dam)	417,375	37,100	241,150	0	695,625	695,625	872,474
(Note: Per Estimator. Cost based on previous work of similar scope. Assumes concrete pumping.)										
USR CONC-05 Reinforcing bar - 175 lbs/cy - lock structure	897,750.00	LB	Dam General Contractor Note (Note: Samuels Avenue Dam and Marine Creek Low Water Dam)	0	0	493,763	0	493,763	493,763	619,292
(Note: Per Estimator)										
USR CONC-08 Concrete footing/slab on grade - Marine Creek Dam	1,330.00	CY	Dam General Contractor Note (Note: Samuels Avenue Dam and Marine Creek Low Water Dam)	232,750	26,600	139,650	0	399,000	399,000	500,438
(Note: Per Estimator. Cost based on previous work of similar scope. Assumes concrete pumping.)										
USR CONC-03 Concrete walls - lock structure - Marine Creek Dam	3,030.00	CY	Dam General Contractor Note (Note: Samuels Avenue Dam and Marine Creek Low Water Dam)	681,750	60,600	393,900	0	1,136,250	1,136,250	1,425,120
(Note: Per Estimator. Cost based on previous work of similar scope. Assumes concrete pumping.)										
USR CONC-05 Reinforcing bar - 175 lbs/cy - lock structure - Marine Creek Dam	763,000.00	LB	Dam General Contractor Note (Note: Samuels Avenue Dam and Marine Creek Low Water Dam)	0	0	419,650	0	419,650	419,650	526,338
(Note: Per Estimator)										
USR CONC-06 Precast concrete revetment	37,800.00	SF	Dam General Contractor Note (Note: Samuels Avenue Dam and Marine Creek Low Water Dam)	0	0	0	756,000	756,000	756,000	948,199

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
(Note: Per Estimator. Cost based on previous work of similar scope.)										
USR CONC-04 Roller compacted concrete, sloped, nonformed, placement, surface prep, joint bedding placement, and water cure	6,000.00	CY	Dam General Contractor (Note (Note: Samuels Avenue Dam and Marine Creek Low Water Dam)	5.45 32,697	6.25 37,492	64.00 384,000	0.00 0	75.70 454,189	75.70 454,189	94.94 569,658
Flood Control Structures	1.00	LS	Low Water Dam)	0	0	165,000	1,300,000	1,465,000	1,465,000	1,837,448
USR 04-05 Lock gates w/controls	1.00	LS	Dam General Contractor (Note (Note: Samuels Avenue Dam and Marine Creek Low Water Dam)	0	0	0	1,300,000	1,300,000	1,300,000	1,630,500
(Note: Per Estimator.)										
USR 04-06 Lock stop logs	1.00	EA	Dam General Contractor (Note (Note: Samuels Avenue Dam and Marine Creek Low Water Dam)	0.00 0	0.00 0	165,000.00 165,000	0.00 0	165,000.00 165,000	165,000.00 165,000	206,948.12 206,948
(Note: Per Estimator.)										
Electrical	1.00	LS	Low Water Dam)	0	0	0	80,000	80,000	80,000	100,338
USR ELEC-07 Electrical	1.00	LS	Dam General Contractor (Note (Note: Samuels Avenue Dam and Marine Creek Low Water Dam)	0	0	0	80,000	80,000	80,000	100,338
(Note: Per Estimator)										
06 Fish and Wildlife Facilities	1.00	LS	General	153,155	202,581	142,103	6,416,460	6,914,300	6,942,391	9,638,017

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
General Contractor										
10 Riverside Oxbow/Gateway	1.00	LS	Contractor	28,299	46,955	465	6,416,460	6,492,180	6,492,180	9,013,445
Bypass Channel and Levees General Contractor										
Mobilization and Demobilization	1.00	LS	Contractor	1,418	2,425	0	0	3,844	3,844	4,821
USR MOBIL-01 Mobilization and Demobilization of Heavy Equipment	4.00	EA	Bypass Channel and Levees General Contractor	141.82 567	263.18 1,053	0.00 0	0.00 0	404.99 1,620	404.99 1,620	507.96 2,032
USR MOBIL-02 Mobilization and Demobilization of Medium Equipment	6.00	EA	Bypass Channel and Levees General Contractor	141.82 851	228.79 1,373	0.00 0	0.00 0	370.60 2,224	370.60 2,224	464.82 2,789
General Contractor										
Earthwork	1.00	LS	Contractor	26,881	44,530	465	6,416,460	6,488,336	6,488,336	9,008,625
USR 06-01 Ecosystem improvements (Note: Per Estimator.)	1.00	LS	General Contractor	0	0	0	6,316,460	6,316,460	6,316,460	8,769,986
USR EARTH-03 Excavate, load, and haul medium material (1.6 cycles per hour) (Note: Based on 023154260180 and 023154901100.)	13,500.00	CY	General Contractor	1.97 26,654	3.30 44,508	0.00 0	0.00 0	5.27 71,162	5.27 71,162	7.32 98,804
USR REST-03 Rock cluster riffle structure (Note: Per Estimator.)	4.00	EA	General Contractor	0.00 0	0.00 0	0.00 0	25,000.00 100,000	25,000.00 100,000	25,000.00 100,000	34,710.84 138,843
USR 023707001100 Erosion control, silt fence, polypropylene, adverse conditions, 3' high	1,000.00	LF	General Contractor	0.19 192	0.00 0	0.34 340	0.00 0	0.53 532	0.53 532	0.74 739
USR 023707001250 Erosion control, hay bales, staked	20.00	LF	General Contractor	0.32 6	0.22 4	2.25 45	0.00 0	2.79 56	2.79 56	3.87 77
USR EROSION-01 Straw Wattles (Note: Cost per Estimator.)	40.00	LF	General Contractor	0.72 29	0.44 18	2.00 80	0.00 0	3.16 126	3.16 126	4.39 175

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
05 Rockwood Park	1.00	LS	General Contractor	124,856	155,626	141,638	0	422,120	450,211	624,572
Mobilization and Demobilization	1.00	LS	General Contractor	1,418	2,425	0	0	3,844	3,844	4,821
USR MOBIL-01 Mobilization and Demobilization of Heavy Equipment	4.00	EA	Bypass Channel and Levees General Contractor	141.82 567	263.18 1,053	0.00 0	0.00 0	404.99 1,620	404.99 1,620	507.96 2,032
USR MOBIL-02 Mobilization and Demobilization of Medium Equipment	6.00	EA	Bypass Channel and Levees General Contractor	141.82 851	228.79 1,373	0.00 0	0.00 0	370.60 2,224	370.60 2,224	464.82 2,789
Earthwork	1.00	LS	General Contractor	82,983	134,480	465	0	217,927	217,927	302,578
USR EARTH-11 Excavate, load, haul, dump, spread, and compact medium material, wheeled loader, hwy hauler (1.6 cyc/hr) (Note: Based on 023154260265, 023154901100, 023151102360, and USR-COMP-01.)	50,000.00	CY	General Contractor	1.66 82,756	2.69 134,458	0.00 0	0.00 0	4.34 217,213	4.34 217,213	6.03 301,586
USR 023707001100 Erosion control, silt fence, polypropylene, adverse conditions, 3' high	1,000.00	LF	General Contractor	0.19 192	0.00 0	0.34 340	0.00 0	0.53 532	0.53 532	0.74 739
USR 023707001250 Erosion control, hay bales, staked	20.00	LF	General Contractor	0.32 6	0.22 4	2.25 45	0.00 0	2.79 56	2.79 56	3.87 77
USR EROSION-01 Straw Wattles (Note: Cost per Estimator.)	40.00	LF	General Contractor	0.72 29	0.44 18	2.00 80	0.00 0	3.16 126	3.16 126	4.39 175
Site Restoration	1.00	LS	Restoration Subcontractor	40,455	18,721	141,173	0	200,349	228,440	317,174
USR RESTOR-01 Grass seed bed preparation - turf grass (Note: Based on 029107103100, 029107104150, 029107100100.)	784.00	MSF	Restoration Subcontractor	11.83 9,277	4.73 3,709	8.90 6,978	0.00 0	25.46 19,963	29.03 22,762	40.31 31,604
USR REST-01 Seeding, bermuda grass, chewing with mulch and fertilizer, 3 lb. per M.S.F., tractor spreader	784.00	MSF	Restoration Subcontractor	6.80 5,333	7.31 5,732	16.55 12,975	0.00 0	30.66 24,040	34.96 27,410	48.54 38,058

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
(Note: Based on 029203202700. Material cost based on vendor quote per pound and 3 lb. per M.S.F. application rate.)										
USR RESTOR-02 Tree planting - woodlands	11.00	ACR	Restoration Subcontractor	2,349.54 25,845	843.71 9,281	11,020.00 121,220	0.00 0	14,213.25 156,346	16,206.10 178,267	22,501.09 247,512
(Note: Assumes tree density of 100 trees per acre. Planting trees of 1-1/2" to 2" caliper. Species including ash, maple, oak, redbud, and walnut.)										
Bridge and Roadway General Contractor - Henderson, Main, and White Settlement										
08 Roads, Railroads and Bridges	1.00	LS	Settlement	3,444,630	925,266	8,548,320	38,065,665	50,983,881	50,983,881	63,945,564
(Note: A. Henderson Bridge and Roadway Henderson Bridge will be a 6 lane standard bridge approximately 700 feet long with 10 feet wide concrete walks on both sides. Elevated embankments will lead up to the bridge on both sides of the future channel. The embankments will be supported by concrete retaining walls. The roadways will be constructed of concrete and include street lighting, pavement marking and signage. Construction of the roadway will require a temporary roadway detour. B. White Settlement Bridge and Roadway White Settlement Bridge will be a 4 lane standard bridge approximately 735 feet long with 10 feet wide concrete walks on both sides. Elevated embankments will lead up to the bridge on both sides of the future channel. The embankments will be supported by concrete retaining walls. The roadways will be constructed of concrete and include street lighting, pavement marking and signage. Construction of the roadway will require a temporary roadway. Installation of the final traffic signal for the White Settlement and Henderson Street intersection are included under this task. C. Main Street Bridge and Roadway Main Street Bridge will be a 4 lane designer (cable stayed) bridge approximately 406 feet long with 10 feet wide concrete walks on both sides. Elevated embankments will lead up to the bridge on both sides of the future channel. The embankments will be supported by concrete retaining walls. The roadways will be constructed of concrete. The roadways will be constructed of concrete and include street lighting, pavement marking and signage. Construction of the roadway will require a roadway detour onto an existing roadway. D. White Settlement at Water Feature Bridge and Roadway The White Settlement Bridge will be a 4 lane standard bridge approximately 450 feet long with 10 feet wide concrete walks on both sides. The bridge will cross the expanded Water Feature Elevated embankments will lead up to the bridge on both sides of the future channel. The embankments will be supported by concrete retaining walls. The roadways will be constructed of concrete. The roadways will be constructed of concrete and include street lighting, pavement marking and signage. E. Beech Street Bridge The existing Beech Street Bridge will be replaced with a 4 lane standard bridge approximately 115 feet long supported on drilled shafts. Elevated embankments will lead up to the bridge on both sides of the existing old oxbow channel. The interior embankments will be lined with concrete slope protection. The roadways will be constructed of concrete and pavement markings and signage. F. Park Roads and Bridge Costs are provided for over 4950 feet of two lane park entrance and roadways, 48,060 square feet of parking and one two lane park road bridge 103 ft in length. G. Other Street Modifications Additional costs were provided to perform modifications to the various local streets that will be affected by the construction of the channel. These modifications include providing turnouts, dead ends and patching of existing roads and drainage system.)										
Bridge and Roadway General Contractor - Henderson, Main, and White Settlement Bypass Channel and Levees General Contractor										
05 Henderson Bridge and Roadway	1.00	LS	Settlement	668,562	268,998	2,006,716	11,067,500	14,011,776	14,011,776	17,574,003
Mobilization and Demobilization	1.00	LS	Contractor	3,534	4,623	0	0	8,157	8,157	10,230
USR MOBIL-01 Mobilization and Demobilization of Heavy Equipment	10.00	EA	Bypass Channel and Levees General Contractor	141.82 1,418	263.18 2,632	0.00 0	0.00 0	404.99 4,050	404.99 4,050	507.96 5,080
				141.82	228.79	0.00	0.00	370.60	370.60	464.82

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
USR MOBIL-02 Mobilization and Demobilization of Medium Equipment	8.00	EA	Bypass Channel and Levees General Contractor	1,135	1,830	0	0	2,965	2,965	3,719
USR MOBIL-03 Mobilization and Demobilization of Large Self-Propelled Equipment	4.00	EA	Bypass Channel and Levees General Contractor	245.26 981	40.24 161	0.00 0	0.00 0	285.50 1,142	285.50 1,142	358.08 1,432
Earthwork	1.00	LS	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	81,279	146,727	465	0	228,471	228,471	286,555
USR EARTH-13 Backfill, spread and compact dumped gravel/fill, 6" layers	25,944.00	CY	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0.25 6,573	0.61 15,789	0.00 0	0.00 0	0.86 22,362	0.86 22,362	1.08 28,047
(Note: Backfill, spread dumped gravel/fill, 6" layers. Compaction w/ riding vibrating roller, 6" lifts. Based on 023151102360 and USR-COMP-01.)										
USR EARTH-12 Excavate, load, haul and dump with scraper (6 cycles per hour) and compact, medium material	45,000.00	CY	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0.80 35,992	1.83 82,132	0.00 0	0.00 0	2.62 118,125	2.62 118,125	3.29 148,155
(Note: Based on 023154520300, 023151102360, and USR-COMP-01.)										
HNC 023101000020 Fine grade, for roadway, base or leveling course - temporary by-pass road	40.50	MSY	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	233.10 9,441	223.85 9,066	0.00 0	0.00 0	456.95 18,506	456.95 18,506	573.12 23,211
RSM 023154520300 Excavation, bulk, bank measure, common earth, 1500' haul, 11 C.Y. bucket, elevating scraper, 1/4 push dozer - for access roads	2,200.00	BCY	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0.55 1,202	1.22 2,676	0.00 0	0.00 0	1.76 3,879	1.76 3,879	2.21 4,865

Print Date Mon 14 April 2008
 Eff. Date 10/31/2007

U.S. Army Corps of Engineers
 Project FWCC.PD: FWCC.UPD
 Fort Worth Central City

Time 14:51:29

Project Direct Costs Report Page 129

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
HNC 023101000020 Fine grade, for roadway, base or leveling course - for access roads	36.50	MSY	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	233.10 8,508	223.85 8,170	0.00 0	0.00 0	456.95 16,679	456.95 16,679	573.12 20,919
USR EARTH-10 Fill for embankments, load, 1 mile haul, spread w/dozer, compact w/vibrating roller - for access roads	2,200.00	CY	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0.82 1,796	1.67 3,669	0.00 0	0.00 0	2.48 5,464	2.48 5,464	3.12 6,853
(Note: Based on 023155100020 and USR-COMP-01.)										
RSM 023154520300 Excavation, bulk, bank measure, common earth, 1500' haul, 11 C.Y. bucket, elevating scraper, 1/4 push dozer - for detours	8,250.00	BCY	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0.55 4,509	1.22 10,037	0.00 0	0.00 0	1.76 14,545	1.76 14,545	2.21 18,243
HNC 023101000020 Fine grade, for roadway, base or leveling course - for detours	45.40	MSY	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	233.10 10,583	223.85 10,163	0.00 0	0.00 0	456.95 20,746	456.95 20,746	573.12 26,020
USR EARTH-10 Fill for embankments, load, 1 mile haul, spread w/dozer, compact w/vibrating roller - for detours	3,000.00	CY	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0.82 2,449	1.67 5,003	0.00 0	0.00 0	2.48 7,451	2.48 7,451	3.12 9,346
(Note: Based on 023155100020 and USR-COMP-01.)										
USR 023707001100 Erosion control, silt fence, polypropylene, adverse conditions, 3' high	1,000.00	LF	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0.19 192	0.00 0	0.34 340	0.00 0	0.53 532	0.53 532	0.67 667

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
USR 023707001250 Erosion control, hay bales, staked	20.00	LF	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0.32 6	0.22 4	2.25 45	0.00 0	2.79 56	2.79 56	3.50 70
USR EROSION-01 Straw Wattles	40.00	LF	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0.72 29	0.44 18	2.00 80	0.00 0	3.16 126	3.16 126	3.96 159
(Note: Cost per Estimator.)										
Pavement, Sidewalks, Curbs, and Gutter	1.00	LS	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	93,750	65,648	1,465,501	65,000	1,689,898	1,689,898	2,119,523
USR CONC-07 Asphaltic concrete pavement, 3" binder course, 1" wearing course - temporary by-pass road	40.50	MSY	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	454.79 18,419	354.92 14,374	8,628.33 349,448	0.00 0	9,438.05 382,241	9,438.05 382,241	11,837.49 479,418
(Note: Based on 027403100812 and 027403100850.)										
USR CONC-05 Concrete pavement, 8" thick, 12' pass, includes lime soil stabilization, const. joint, finishing, and curing	9,500.00	SY	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	2.85 27,113	2.28 21,646	35.86 340,696	0.00 0	41.00 389,455	41.00 389,455	51.42 488,467
(Note: Lime soil stabilization, 6% mix, 8" deep. Finishing small areas, belt dragged. 10" thick const. joint. Curing w/sprayed membrane. Based on 023405002220, 027503000100, 027503000702, 027503000745.)										
USR CONC-06 CIP reinforced concrete curb and gutter	1,700.00	LF	Bridge and Roadway General Contractor - Henderson, Main,	2.37 4,025	0.00 0	12.61 21,437	0.00 0	14.98 25,462	14.98 25,462	18.79 31,935

Description	Quantity	UOM	Contractor and White Settlement	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
(Note: Based on 027703000240 and 027703000300.)										
USR PVSWCG-01 Sidewalk, concrete, cast-in-place with 6 x 6 - W1.4 x W1.4 mesh, broomed finish, 3000 psi, 5" thick, excludes base	8,500.00	SF	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0.69 5,835	0.00 0	2.27 19,295	0.00 0	2.96 25,130	2.96 25,130	3.71 31,518
(Note: Cost and productivity based on RS MEANS 2008 Costworks Item 32 06 1010 0350.)										
RSM 028402000012 Guide/Guard rail, corrugated steel, galvanized steel posts, steel posts 6' - 3" O.C., W6x8 posts	1,700.00	LF	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0.65 1,110	0.33 560	16.45 27,965	0.00 0	17.43 29,635	17.43 29,635	21.86 37,169
USR 08-06 Pavement markings and signals - Henderson Road	1.00	LS	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0	0	0	20,000	20,000	20,000	25,085
(Note: Allowance per Estimator.)										
USR CONC-07 Asphaltic concrete pavement, 3" binder course, 1" wearing course - access roads	36.50	MSY	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	454.79 16,600	354.92 12,955	8,628.33 314,934	0.00 0	9,438.05 344,489	9,438.05 344,489	11,837.49 432,068
(Note: Based on 027403100812 and 027403100850.)										
USR 08-07 Pavement markings and signals - Henderson Road access roads	1.00	LS	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0	0	0	20,000	20,000	20,000	25,085
(Note: Allowance per Estimator.)										
USR CONC-07 Asphaltic concrete pavement, 3" binder course, 1" wearing course - detour	45.40	MSY	Bridge and Roadway General Contractor - Henderson, Main,	454.79 20,648	354.92 16,113	8,628.33 391,726	0.00 0	9,438.05 428,487	9,438.05 428,487	11,837.49 537,422

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
(Note: Based on 027403100812 and 027403100850.)			and White Settlement							
USR 08-08 Pavement markings and signals - Henderson Road detour	1.00	LS	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0	0	0	25,000	25,000	25,000	31,356
(Note: Allowance per Estimator.)										
Drainage	1.00	LS	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0	0	0	502,500	502,500	502,500	630,251
USR 08-02 Drainage	1.00	LS	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0	0	0	50,000	50,000	50,000	62,712
(Note: Per Estimator.)										
USR 08-16 Miscellaneous - drainage, material, and unforeseen conditions - Henderson Road	1.00	LS	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0	0	0	400,000	400,000	400,000	501,692
(Note: Allowance per Estimator.)										
USR 08-12 Storm sewer - Henderson Road access roads	1.00	LS	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0	0	0	25,000	25,000	25,000	31,356
(Note: Allowance per Estimator.)										
USR 08-13 Storm sewer - Henderson Road detours	1.00	LS	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0	0	0	27,500	27,500	27,500	34,491
(Note: Allowance per Estimator.)										
Bridges	1.00	LS	Bridge and	490,000	52,000	540,750	10,500,000	11,582,750	11,582,750	14,527,444

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
			Roadway General Contractor - Henderson, Main, and White Settlement							
USR 08-05 Bridge - Henderson Road	70,000.00	SF	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0.00 0	0.00 0	0.00 0	150.00 10,500,000	150.00 10,500,000	150.00 10,500,000	188.13 13,169,426
(Note: Estimate from bridge designer.)										
USR CONC-09 Concrete Footing - 2126 LF @ 1'-6" thick and 18'-0" wide - bridge approaches	1,900.00	CY	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	175.00 332,500	20.00 38,000	105.00 199,500	0.00 0	300.00 570,000	300.00 570,000	376.27 714,912
(Note: Per Estimator. Cost based on previous work of similar scope. Assumes concrete pumping.)										
USR CONC-03 Concrete walls - 2126 LF @ 1'-" thick and 10"-0" high - bridge approaches	700.00	CY	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	225.00 157,500	20.00 14,000	130.00 91,000	0.00 0	375.00 262,500	375.00 262,500	470.34 329,236
(Note: Per Estimator. Cost based on previous work of similar scope. Assumes concrete pumping.)										
USR CONC-05 Reinforcing bar - 175 lbs/cy - bridge approaches	455,000.00	LB	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0.00 0	0.00 0	0.55 250,250	0.00 0	0.55 250,250	0.55 250,250	0.69 313,871
(Note: Per Estimator.)										
10 White Settlement Bridge and Roadway	1.00	LS	Bridge and Roadway General Contractor - Henderson, Main, and White	565,789	178,411	1,099,061	8,831,500	10,674,760	10,674,760	13,388,615

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
Mobilization and Demobilization	1.00	LS	Settlement Bypass Channel and Levees General Contractor	3,534	4,623	0	0	8,157	8,157	10,230
USR MOBIL-01 Mobilization and Demobilization of Heavy Equipment	10.00	EA	Bypass Channel and Levees General Contractor	141.82 1,418	263.18 2,632	0.00 0	0.00 0	404.99 4,050	404.99 4,050	507.96 5,080
USR MOBIL-02 Mobilization and Demobilization of Medium Equipment	8.00	EA	Bypass Channel and Levees General Contractor	141.82 1,135	228.79 1,830	0.00 0	0.00 0	370.60 2,965	370.60 2,965	464.82 3,719
USR MOBIL-03 Mobilization and Demobilization of Large Self-Propelled Equipment	4.00	EA	Bypass Channel and Levees General Contractor	245.26 981	40.24 161	0.00 0	0.00 0	285.50 1,142	285.50 1,142	358.08 1,432
Earthwork	1.00	LS	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	45,574	95,798	465	0	141,837	141,837	177,896
USR EARTH-13 Backfill, spread and compact dumped gravel/fill, 6" layers	20,791.00	CY	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0.25 5,267	0.61 12,653	0.00 0	0.00 0	0.86 17,920	0.86 17,920	1.08 22,476
(Note: Backfill, spread dumped gravel/fill, 6" layers. Compaction w/ riding vibrating roller, 6" lifts. Based on 023151102360 and USR-COMP-01.)										
USR EARTH-12 Excavate, load, haul and dump with scraper (6 cycles per hour) and compact, medium material	35,000.00	CY	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0.80 27,994	1.83 63,881	0.00 0	0.00 0	2.62 91,875	2.62 91,875	3.29 115,232
(Note: Based on 023154520300, 023151102360, and USR-COMP-01.)										
HNC 023101000020 Fine grade, for roadway, base or leveling	3.50	MSY	Bridge and Roadway General	233.10 816	223.85 783	0.00 0	0.00 0	456.95 1,599	456.95 1,599	573.12 2,006

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
course - temporary by-pass road			Contractor - Henderson, Main, and White Settlement							
RSM 023154520300 Excavation, bulk, bank measure, common earth, 1500' haul, 11 C.Y. bucket, elevating scraper, 1/4 push dozer - for access roads	200.00	BCY	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0.55 109	1.22 243	0.00 0	0.00 0	1.76 353	1.76 353	2.21 442
HNC 023101000020 Fine grade, for roadway, base or leveling course - for access roads	0.60	MSY	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	233.10 140	223.85 134	0.00 0	0.00 0	456.95 274	456.95 274	573.12 344
USR EARTH-10 Fill for embankments, load, 1 mile haul, spread w/dozer, compact w/vibrating roller - for access roads	200.00	CY	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0.82 163	1.67 334	0.00 0	0.00 0	2.48 497	2.48 497	3.12 623
(Note: Based on 023155100020 and USR-COMP-01.)										
RSM 023154520300 Excavation, bulk, bank measure, common earth, 1500' haul, 11 C.Y. bucket, elevating scraper, 1/4 push dozer - for detours	6,750.00	BCY	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0.55 3,689	1.22 8,212	0.00 0	0.00 0	1.76 11,901	1.76 11,901	2.21 14,926
HNC 023101000020 Fine grade, for roadway, base or leveling course - for detours	20.25	MSY	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	233.10 4,720	223.85 4,533	0.00 0	0.00 0	456.95 9,253	456.95 9,253	573.12 11,606
USR EARTH-10 Fill for embankments, load, 1 mile haul, spread w/dozer, compact w/vibrating roller - for detours	3,000.00	CY	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0.82 2,449	1.67 5,003	0.00 0	0.00 0	2.48 7,451	2.48 7,451	3.12 9,346

Description	Quantity	UOM	Contractor and White Settlement	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
(Note: Based on 023155100020 and USR-COMP-01.)										
USR 023707001100 Erosion control, silt fence, polypropylene, adverse conditions, 3' high	1,000.00	LF	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0.19 192	0.00 0	0.34 340	0.00 0	0.53 532	0.53 532	0.67 667
USR 023707001250 Erosion control, hay bales, staked	20.00	LF	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0.32 6	0.22 4	2.25 45	0.00 0	2.79 56	2.79 56	3.50 70
USR EROSION-01 Straw Wattles	40.00	LF	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0.72 29	0.44 18	2.00 80	0.00 0	3.16 126	3.16 126	3.96 159
(Note: Cost per Estimator.)										
Pavement, Sidewalks, Curbs, and Gutter	1.00	LS	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	46,306	28,090	579,602	152,500	806,498	806,498	1,011,535
USR CONC-07 Asphaltic concrete pavement, 3" binder course, 1" wearing course - temporary by-pass road	3.50	MSY	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	454.79 1,592	354.92 1,242	8,628.33 30,199	0.00 0	9,438.05 33,033	9,438.05 33,033	11,837.49 41,431
(Note: Based on 027403100812 and 027403100850.)										
USR CONC-05 Concrete pavement, 8" thick, 12' pass, includes lime soil stabilization,	8,275.00	SY	Bridge and Roadway General Contractor -	2.85 23,617	2.28 18,855	35.86 296,764	0.00 0	41.00 339,236	41.00 339,236	51.42 425,480

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
const. joint, finishing, and curing			Henderson, Main, and White Settlement							
(Note: Lime soil stabilization, 6% mix, 8" deep. Finishing small areas, belt dragged. 10" thick const. joint. Curing w/sprayed membrane. Based on 023405002220, 027503000100, 027503000702, 027503000745.)										
USR CONC-06 CIP reinforced concrete curb and gutter	1,800.00	LF	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	2.37 4,262	0.00 0	12.61 22,698	0.00 0	14.98 26,960	14.98 26,960	18.79 33,814
(Note: Based on 027703000240 and 027703000300.)										
USR PVSWCG-01 Sidewalk, concrete, cast-in-place with 6 x 6 - W1.4 x W1.4 mesh, broomed finish, 3000 psi, 5" thick, excludes base	9,000.00	SF	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0.69 6,178	0.00 0	2.27 20,430	0.00 0	2.96 26,608	2.96 26,608	3.71 33,372
(Note: Cost and productivity based on RS MEANS 2008 Costworks Item 32 06 1010 0350.)										
RSM 028402000012 Guide/Guard rail, corrugated steel, galvanized steel posts, steel posts 6' - 3" O.C., W6x8 posts	1,800.00	LF	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0.65 1,175	0.33 593	16.45 29,610	0.00 0	17.43 31,378	17.43 31,378	21.86 39,355
USR 08-09 Pavement markings and signals - White Settlement Road	1.00	LS	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0	0	0	20,000	20,000	20,000	25,085
(Note: Allowance per Estimator.)										
USR CONC-07 Asphaltic concrete pavement, 3" binder course, 1" wearing course - access roads	0.60	MSY	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	454.79 273	354.92 213	8,628.33 5,177	0.00 0	9,438.05 5,663	9,438.05 5,663	11,837.49 7,102
(Note: Based on 027403100812 and 027403100850.)										
USR 08-10 Pavement markings and signals - White Settlement	1.00	LS	Bridge and Roadway General	0	0	0	5,000	5,000	5,000	6,271

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
Road access roads			Contractor - Henderson, Main, and White Settlement							
(Note: Allowance per Estimator.)										
USR 08-14 Storm sewer - White Settlement Road access roads	1.00	LS	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0	0	0	5,000	5,000	5,000	6,271
(Note: Allowance per Estimator.)										
USR CONC-07 Asphaltic concrete pavement, 3" binder course, 1" wearing course - detour	20.25	MSY	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	454.79 9,210	354.92 7,187	8,628.33 174,724	0.00 0	9,438.05 191,120	9,438.05 191,120	11,837.49 239,709
(Note: Based on 027403100812 and 027403100850.)										
USR 08-11 Pavement markings and signals - White Settlement Road detours	1.00	LS	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0	0	0	100,000	100,000	100,000	125,423
(Note: Allowance per Estimator.)										
USR 08-15 Storm sewer - White Settlement Road access roads	1.00	LS	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0	0	0	22,500	22,500	22,500	28,220
(Note: Allowance per Estimator.)										
			Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0	0	0	300,000	300,000	300,000	376,269
Drainage	1.00	LS	Settlement	0	0	0	300,000	300,000	300,000	376,269
USR 08-02 Drainage	1.00	LS	Bridge and Roadway General Contractor - Henderson, Main, and White	0	0	0	50,000	50,000	50,000	62,712

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
(Note: Per Estimator.)			Settlement							
USR 08-17 Miscellaneous - drainage, material, and unforeseen conditions - White Settlement Road	1.00	LS	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0	0	0	250,000	250,000	250,000	313,558
(Note: Allowance per Estimator.)										
Bridges	1.00	LS	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	470,375	49,900	518,994	8,379,000	9,418,269	9,418,269	11,812,685
USR 08-05 Bridge - White Settlement Road	55,860.00	SF	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0.00	0.00	0.00	150.00	150.00	150.00	188.13
(Note: Estimate from bridge designer.)										
USR CONC-09 Concrete Footing - 2100 LF @ 1'-6" thick and 18'-0" wide - bridge approaches	1,820.00	CY	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	175.00	20.00	105.00	0.00	300.00	300.00	376.27
(Note: Per Estimator. Cost based on previous work of similar scope. Assumes concrete pumping.)										
USR CONC-03 Concrete walls - 2100 LF @ 1'-" thick and 10"-0" high - bridge approaches	675.00	CY	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	225.00	20.00	130.00	0.00	375.00	375.00	470.34
(Note: Per Estimator. Cost based on previous work of similar scope. Assumes concrete pumping.)										
USR CONC-05 Reinforcing bar - 175 lbs/cy - bridge approaches	436,625.00	LB	Bridge and Roadway General Contractor - Henderson, Main,	0.00	0.00	0.55	0.00	0.55	0.55	0.69

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
(Note: Per Estimator.)			and White Settlement							
15 Main Street Bridge and Roadway	1.00	LS	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	500,780	86,428	974,435	12,537,400	14,099,043	14,099,043	17,683,456
Mobilization and Demobilization	1.00	LS	General Contractor	3,534	4,623	0	0	8,157	8,157	10,230
USR MOBIL-01 Mobilization and Demobilization of Heavy Equipment	10.00	EA	Bypass Channel and Levees General Contractor	141.82 1,418	263.18 2,632	0.00 0	0.00 0	404.99 4,050	404.99 4,050	507.96 5,080
USR MOBIL-02 Mobilization and Demobilization of Medium Equipment	8.00	EA	Bypass Channel and Levees General Contractor	141.82 1,135	228.79 1,830	0.00 0	0.00 0	370.60 2,965	370.60 2,965	464.82 3,719
USR MOBIL-03 Mobilization and Demobilization of Large Self-Propelled Equipment	4.00	EA	Bypass Channel and Levees General Contractor	245.26 981	40.24 161	0.00 0	0.00 0	285.50 1,142	285.50 1,142	358.08 1,432
Earthwork	1.00	LS	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	4,619	10,572	465	0	15,655	15,655	19,636
USR EARTH-13 Backfill, spread and compact dumped gravel/fill, 6" layers	17,335.00	CY	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0.25 4,392	0.61 10,550	0.00 0	0.00 0	0.86 14,941	0.86 14,941	1.08 18,740
(Note: Backfill, spread dumped gravel/fill, 6" layers. Compaction w/ riding vibrating roller, 6" lifts. Based on 023151102360 and USR-COMP-01.)										
USR 023707001100 Erosion	1,000.00	LF	Bridge and	0.19 192	0.00 0	0.34 340	0.00 0	0.53 532	0.53 532	0.67 667

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
control, silt fence, polypropylene, adverse conditions, 3' high			Roadway General Contractor - Henderson, Main, and White Settlement							
USR 023707001250 Erosion control, hay bales, staked	20.00	LF	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0.32 6	0.22 4	2.25 45	0.00 0	2.79 56	2.79 56	3.50 70
USR EROSION-01 Straw Wattles	40.00	LF	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0.72 29	0.44 18	2.00 80	0.00 0	3.16 126	3.16 126	3.96 159
(Note: Cost per Estimator.)										
Pavement, Sidewalks, Curbs, and Gutter	1.00	LS	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	40,127	23,233	474,720	45,000	583,080	583,080	731,318
USR CONC-07 Asphaltic concrete pavement, 3" binder course, 1" wearing course - detour	15.00	MSY	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	454.79 6,822	354.92 5,324	8,628.33 129,425	0.00 0	9,438.05 141,571	9,438.05 141,571	11,837.49 177,562
(Note: Based on 027403100812 and 027403100850.)										
USR 08-19 Pavement markings and signals - Main Street detour	1.00	LS	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0	0	0	25,000	25,000	25,000	31,356
(Note: Allowance per Estimator.)										
USR CONC-05 Concrete pavement, 8" thick, 12' pass,	7,600.00	SY	Bridge and Roadway General	2.85 21,691	2.28 17,317	35.86 272,557	0.00 0	41.00 311,564	41.00 311,564	51.42 390,774

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
includes lime soil stabilization, const. joint, finishing, and curing			Contractor - Henderson, Main, and White Settlement							
(Note: Lime soil stabilization, 6% mix, 8" deep. Finishing small areas, belt dragged. 10" thick const. joint. Curing w/sprayed membrane. Based on 023405002220, 027503000100, 027503000702, 027503000745.)										
USR CONC-06 CIP reinforced concrete curb and gutter	1,800.00	LF	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	2.37 4,262	0.00 0	12.61 22,698	0.00 0	14.98 26,960	14.98 26,960	18.79 33,814
(Note: Based on 027703000240 and 027703000300.)										
USR PVSWCG-01 Sidewalk, concrete, cast-in-place with 6 x 6 - W1.4 x W1.4 mesh, broomed finish, 3000 psi, 5" thick, excludes base	9,000.00	SF	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0.69 6,178	0.00 0	2.27 20,430	0.00 0	2.96 26,608	2.96 26,608	3.71 33,372
(Note: Cost and productivity based on RS MEANS 2008 Costworks Item 32 06 1010 0350.)										
RSM 028402000012 Guide/Guard rail, corrugated steel, galvanized steel posts, steel posts 6' - 3" O.C., W6x8 posts	1,800.00	LF	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0.65 1,175	0.33 593	16.45 29,610	0.00 0	17.43 31,378	17.43 31,378	21.86 39,355
USR 08-21 Pavement markings and signals - Main Street	1.00	LS	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0	0	0	20,000	20,000	20,000	25,085
(Note: Allowance per Estimator.)										
Drainage	1.00	LS	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0	0	0	150,000	150,000	150,000	188,135
USR 08-02 Drainage	1.00	LS	Bridge and Roadway General	0	0	0	50,000	50,000	50,000	62,712

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
(Note: Allowance per Estimator.)			Contractor - Henderson, Main, and White Settlement							
USR 08-18 Miscellaneous - drainage, material, and unforeseen conditions - Main Street	1.00	LS	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0	0	0	100,000	100,000	100,000	125,423
(Note: Allowance per Estimator.)			Bridge and Roadway General Contractor - Henderson, Main, and White Settlement							
Bridges	1.00	LS	Settlement	452,500	48,000	499,250	12,342,400	13,342,150	13,342,150	16,734,138
USR 08-20 Main Street Bridge	30,856.00	SF	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0.00	0.00	0.00	400.00	400.00	400.00	501.69
(Note: Estimate from bridge designer.)				0	0	0	12,342,400	12,342,400	12,342,400	15,480,221
USR CONC-09 Concrete Footing - 688 LF @ 1'-6" thick and 18'-0" wide - bridge approaches	1,750.00	CY	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	175.00	20.00	105.00	0.00	300.00	300.00	376.27
(Note: Per Estimator. Cost based on previous work of similar scope. Assumes concrete pumping.)				306,250	35,000	183,750	0	525,000	525,000	658,471
USR CONC-03 Concrete walls - 688 LF @ 1'-" thick and 10'-0" high - bridge approaches	650.00	CY	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	225.00	20.00	130.00	0.00	375.00	375.00	470.34
(Note: Per Estimator. Cost based on previous work of similar scope.)				146,250	13,000	84,500	0	243,750	243,750	305,719
USR CONC-05 Reinforcing bar -	420,000.00	LB	Bridge and	0.00	0.00	0.55	0.00	0.55	0.55	0.69
				0	0	231,000	0	231,000	231,000	289,727

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
175 lbs/cy - bridge approaches			Roadway General Contractor - Henderson, Main, and White Settlement							
(Note: Per Estimator.)										
20 White Settlement Extension Bridge and Roadway	1.00	LS	Bridge and Roadway General Contractor - White Settlement Extension and Bypass Channel and Levees General Contractor	187,549	58,217	705,118	2,458,900	3,409,784	3,409,784	4,276,657
Mobilization and Demobilization	1.00	LS	Contractor	3,534	4,623	0	0	8,157	8,157	10,230
USR MOBIL-01 Mobilization and Demobilization of Heavy Equipment	10.00	EA	Bypass Channel and Levees General Contractor	141.82 1,418	263.18 2,632	0.00 0	0.00 0	404.99 4,050	404.99 4,050	507.96 5,080
USR MOBIL-02 Mobilization and Demobilization of Medium Equipment	8.00	EA	Bypass Channel and Levees General Contractor	141.82 1,135	228.79 1,830	0.00 0	0.00 0	370.60 2,965	370.60 2,965	464.82 3,719
USR MOBIL-03 Mobilization and Demobilization of Large Self-Propelled Equipment	4.00	EA	Bypass Channel and Levees General Contractor	245.26 981	40.24 161	0.00 0	0.00 0	285.50 1,142	285.50 1,142	358.08 1,432
Earthwork	1.00	LS	Bridge and Roadway General Contractor - White Settlement Extension and Bridge	4,563	10,509	465	0	15,537	15,537	19,487
HNC 023154260265 Excavate and load, bank measure, medium material, 5 C.Y. bucket, wheeled loader	2,370.00	BCY	Bridge and Roadway General Contractor - White Settlement Extension and Bridge	0.18 435	0.47 1,114	0.00 0	0.00 0	0.65 1,549	0.65 1,549	0.82 1,943

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
USR EARTH-13 Backfill, spread and compact dumped gravel/fill, 6" layers	15,400.00	CY	Bridge and Roadway General Contractor - White Settlement Extension and Bridge	0.25 3,901	0.61 9,372	0.00 0	0.00 0	0.86 13,274	0.86 13,274	1.08 16,648
(Note: Backfill, spread dumped gravel/fill, 6" layers. Compaction w/ riding vibrating roller, 6" lifts. Based on 023151102360 and USR-COMP-01.)										
USR 023707001100 Erosion control, silt fence, polypropylene, adverse conditions, 3' high	1,000.00	LF	Bridge and Roadway General Contractor - White Settlement Extension and Bridge	0.19 192	0.00 0	0.34 340	0.00 0	0.53 532	0.53 532	0.67 667
USR 023707001250 Erosion control, hay bales, staked	20.00	LF	Bridge and Roadway General Contractor - White Settlement Extension and Bridge	0.32 6	0.22 4	2.25 45	0.00 0	2.79 56	2.79 56	3.50 70
USR EROSION-01 Straw Wattles	40.00	LF	Bridge and Roadway General Contractor - White Settlement Extension and Bridge	0.72 29	0.44 18	2.00 80	0.00 0	3.16 126	3.16 126	3.96 159
(Note: Cost per Estimator.)										
Pavement, Sidewalks, Curbs, and Gutter	1.00	LS	Bridge and Roadway General Contractor - White Settlement Extension and Bridge	63,164	28,619	563,287	0	655,070	655,070	821,609
USR CONC-05 Concrete pavement, 8" thick, 12' pass, includes lime soil stabilization, const. joint, finishing, and curing	12,560.00	SY	Bridge and Roadway General Contractor - White Settlement Extension and Bridge	2.85 35,847	2.28 28,619	35.86 450,436	0.00 0	41.00 514,901	41.00 514,901	51.42 645,805

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
(Note: Lime soil stabilization, 6% mix, 8" deep. Finishing small areas, belt dragged. 10" thick const. joint. Curing w/sprayed membrane. Based on 023405002220, 027503000100, 027503000702, 027503000745.)										
USR CONC-06 CIP reinforced concrete curb and gutter	4,710.00	LF	Bridge and Roadway General Contractor - White Settlement Extension and Bridge	11,151	0	59,393	0	70,545	70,545	88,479
(Note: Based on 027703000240 and 027703000300.)										
USR PVSWCG-01 Sidewalk, concrete, cast-in-place with 6 x 6 - W1.4 x W1.4 mesh, broomed finish, 3000 psi, 5" thick, excludes base	23,550.00	SF	Bridge and Roadway General Contractor - White Settlement Extension and Bridge	16,166	0	53,459	0	69,624	69,624	87,325
(Note: Cost and productivity based on RS MEANS 2008 Costworks Item 32 06 1010 0350.)										
Drainage	1.00	LS	Bridge and Roadway General Contractor - White Settlement Extension and Bridge	12,538	3,467	26,928	250,000	292,933	292,933	367,406
HNC 023156100372 Excavating, trench, medium soil, 6' to 10' deep, 2 C.Y. bucket, gradall, excludes sheeting or dewatering	1,315.00	BCY	Bridge and Roadway General Contractor - White Settlement Extension and Bridge	280	380	0	0	660	660	828
RSM 026305301060 Non-reinforced concrete pipe, extra strength, B&S or T&G joints, 18" diameter, class 2, excludes excavation or backfill	2,355.00	LF	Bridge and Roadway General Contractor - White Settlement Extension and Bridge	10,285	2,029	22,608	0	34,922	34,922	43,801
HNC 026301104540 Catch basin frame and cover, cast iron, curb inlet type, 27" x 27", excludes footing, excavation, and backfill	8.00	EA	Bridge and Roadway General Contractor - White Settlement	276	99	4,320	0	4,696	4,696	5,889

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
			Extension and Bridge							
HNC 023151101200 Backfill, trench, 60 H.P. dozer, excludes compaction	1,315.00	LCY	Bridge and Roadway General Contractor - White Settlement Extension and Bridge	0.64 840	0.55 718	0.00 0	0.00 0	1.18 1,558	1.18 1,558	1.49 1,954
HNC 023153107260 Compaction, around structures and trenches, walk behind, vibrating plate	1,315.00	ECY	Bridge and Roadway General Contractor - White Settlement Extension and Bridge	0.65 856	0.18 241	0.00 0	0.00 0	0.83 1,097	0.83 1,097	1.05 1,376
USR 08-22 Miscellaneous - drainage, material, and unforeseen conditions - White Settlement Extension Bridge and Roadway	1.00	LS	Bridge and Roadway General Contractor - White Settlement Extension and Bridge	0	0	0	250,000	250,000	250,000	313,558
(Note: Allowance per Estimator.)										
			Bridge and Roadway General Contractor - White Settlement Extension and Bridge							
Bridges	1.00	LS		103,750	11,000	114,438	2,208,900	2,438,088	2,438,088	3,057,925
USR 08-23 White Settlement Street and water feature bridge	19,900.00	SF	Bridge and Roadway General Contractor - White Settlement Extension and Bridge	0.00 0	0.00 0	0.00 0	111.00 2,208,900	111.00 2,208,900	111.00 2,208,900	139.22 2,770,471
(Note: Per Estimator.)										
USR CONC-09 Concrete Footing - 400 LF @ 1'-6" thick and 18'-0" wide - bridge approaches	400.00	CY	Bridge and Roadway General Contractor - White Settlement Extension and Bridge	175.00 70,000	20.00 8,000	105.00 42,000	0.00 0	300.00 120,000	300.00 120,000	376.27 150,508

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
(Note: Per Estimator. Cost based on previous work of similar scope. Assumes concrete pumping.)										
USR CONC-03 Concrete walls - 400 LF @ 1'-" thick and 10"-0" high - bridge approaches	150.00	CY	Bridge and Roadway General Contractor - White Settlement Extension and Bridge	225.00 33,750	20.00 3,000	130.00 19,500	0.00 0	375.00 56,250	375.00 56,250	470.34 70,550
(Note: Per Estimator. Cost based on previous work of similar scope.)										
USR CONC-05 Reinforcing bar - 175 lbs/cy - bridge approaches	96,250.00	LB	Bridge and Roadway General Contractor - White Settlement Extension and Bridge	0.00 0	0.00 0	0.55 52,938	0.00 0	0.55 52,938	0.55 52,938	0.69 66,396
(Note: Per Estimator.)										
25 Other Street Modifications	1.00	LS	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement Bypass Channel and Levees General Contractor	29,675	24,754	358,627	1,645,000	2,058,055	2,058,055	2,581,277
Mobilization and Demobilization	1.00	LS	Contractor	1,135	1,968	0	0	3,102	3,102	3,891
USR MOBIL-01 Mobilization and Demobilization of Heavy Equipment	4.00	EA	Bypass Channel and Levees General Contractor	141.82 567	263.18 1,053	0.00 0	0.00 0	404.99 1,620	404.99 1,620	507.96 2,032
USR MOBIL-02 Mobilization and Demobilization of Medium Equipment	4.00	EA	Bypass Channel and Levees General Contractor Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	141.82 567	228.79 915	0.00 0	0.00 0	370.60 1,482	370.60 1,482	464.82 1,859
Pavement, Sidewalks, Curbs, and Gutter	1.00	LS	Contractor - Henderson, Main, and White Settlement	28,540	22,786	358,627	1,005,000	1,414,953	1,414,953	1,774,678

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
USR CONC-05 Concrete pavement, 8" thick, 12' pass, includes lime soil stabilization, const. joint, finishing, and curing	10,000.00	SY	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	2.85 28,540	2.28 22,786	35.86 358,627	0.00 0	41.00 409,953	41.00 409,953	51.42 514,176
(Note: Lime soil stabilization, 6% mix, 8" deep. Finishing small areas, belt dragged. 10" thick const. joint. Curing w/sprayed membrane. Based on 023405002220, 027503000100, 027503000702, 027503000745.)										
USR 08-24 Street terminations - basic - general street modifications	10.00	EA	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0.00 0	0.00 0	0.00 0	35,000.00 350,000	35,000.00 350,000	35,000.00 350,000	43,898.09 438,981
(Note: Allowance per Estimator.)										
USR 08-25 Street terminations - cul de sac - general street modifications	5.00	EA	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0.00 0	0.00 0	0.00 0	71,000.00 355,000	71,000.00 355,000	71,000.00 355,000	89,050.40 445,252
(Note: Allowance per Estimator.)										
USR 08-26 Paving and miscellaneous	1.00	LS	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0	0	0	300,000	300,000	300,000	376,269
(Note: Allowance per Estimator.)										
Drainage	1.00	LS	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0	0	0	90,000	90,000	90,000	112,881
USR 08-27 Miscellaneous - drainage, material, and unforeseen conditions - general street modifications	1.00	LS	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0	0	0	90,000	90,000	90,000	112,881

Description (Note: Allowance per Estimator.)	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
Electrical USR 08-28 Lighting and miscellaneous electrical work	1.00	LS	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0	0	0	550,000	550,000	550,000	689,827
	1.00	LS	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0	0	0	550,000	550,000	550,000	689,827
(Note: Allowance per Estimator.)										
30 Riverside Oxbow Park	1.00	LS	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement Bypass Channel and Levees General Contractor	1,427,281	271,548	2,604,700	25,365	4,328,895	4,328,895	5,429,435
	1.00	LS	Bridge and Roadway General Contractor	3,534	4,623	0	0	8,157	8,157	10,230
Mobilization and Demobilization USR MOBIL-01 Mobilization and Demobilization of Heavy Equipment	10.00	EA	Bypass Channel and Levees General Contractor	141.82 1,418	263.18 2,632	0.00 0	0.00 0	404.99 4,050	404.99 4,050	507.96 5,080
	8.00	EA	Bypass Channel and Levees General Contractor	141.82 1,135	228.79 1,830	0.00 0	0.00 0	370.60 2,965	370.60 2,965	464.82 3,719
USR MOBIL-02 Mobilization and Demobilization of Medium Equipment	4.00	EA	Bypass Channel and Levees General Contractor	245.26 981	40.24 161	0.00 0	0.00 0	285.50 1,142	285.50 1,142	358.08 1,432
USR MOBIL-03 Mobilization and Demobilization of Large Self-Propelled Equipment										
Site Preparation	1.00	LS	Bridge and Roadway General Contractor - Henderson,	104,999	78,592	0	0	183,591	183,591	230,265

Description	Quantity	UOM	Contractor Main, and White Settlement	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
USR DEMO-04 Demolition, handling, and disposal of mesh reinforced concrete to 6" thick	98,700.00	SF	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	47,494	17,554	0	0	65,048	65,048	81,585
(Note: Based on 022202505800, 023154904200, 022203300100. Assumes 0.0188 cubic yards of debris per square foot of concrete. Assumes 2 tons per cubic yard.)										
USR DEMO-01 Demolition, handling, and disposal of reinforced concrete, 7" to 24" thick - Bridge	370.00	CY	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	10,800	11,464	0	0	22,264	22,264	27,925
(Note: Based on 022202505500, 023154904200, 022203300100. Assumes 2 tons per cubic yard.)										
USR DEMO-01 Demolition, handling, and disposal of reinforced concrete, 7" to 24" thick - Beach Street	1,600.00	CY	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	46,705	49,574	0	0	96,279	96,279	120,756
(Note: Based on 022202505500, 023154904200, 022203300100. Assumes 2 tons per cubic yard.)										
Pavement, Sidewalks, Curbs, and Gutter	1.00	LS	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	89,799	49,303	904,767	0	1,043,869	1,043,869	1,309,253
USR CONC-08 Asphaltic concrete pavement, 6" base course, 3" binder course, 1" wearing course - parking lots	5,340.00	SY	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	3,503	3,958	74,911	0	82,372	82,372	103,314
(Note: Based on 027202000100, 027403100812 and 027403100850.)										
USR CONC-08 Asphaltic concrete pavement, 6" base	3,180.00	SY	Bridge and Roadway General	2,086	2,357	44,610	0	49,053	49,053	61,524

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
course, 3" binder course, 1" wearing course - future parking lots			Contractor - Henderson, Main, and White Settlement							
(Note: Based on 027202000100, 027403100812 and 027403100850.)										
USR CONC-08 Asphaltic concrete pavement, 6" base course, 3" binder course, 1" wearing course - West Park Road	11,100.00	SY	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0.66 7,281	0.74 8,228	14.03 155,714	0.00 0	15.43 171,224	15.43 171,224	19.35 214,754
(Note: Based on 027202000100, 027403100812 and 027403100850.)										
USR CONC-08 Asphaltic concrete pavement, 6" base course, 3" binder course, 1" wearing course - West Park Road spur	1,500.00	SY	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0.66 984	0.74 1,112	14.03 21,042	0.00 0	15.43 23,138	15.43 23,138	19.35 29,021
(Note: Based on 027202000100, 027403100812 and 027403100850.)										
USR CONC-08 Asphaltic concrete pavement, 6" base course, 3" binder course, 1" wearing course - competition soccer parking	700.00	SY	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0.66 459	0.74 519	14.03 9,820	0.00 0	15.43 10,798	15.43 10,798	19.35 13,543
(Note: Based on 027202000100, 027403100812 and 027403100850.)										
USR CONC-08 Asphaltic concrete pavement, 6" base course, 3" binder course, 1" wearing course - East Park Road	3,600.00	SY	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0.66 2,361	0.74 2,669	14.03 50,502	0.00 0	15.43 55,532	15.43 55,532	19.35 69,650
(Note: Based on 027202000100, 027403100812 and 027403100850.)										
USR CONC-08 Asphaltic concrete pavement, 6" base course, 3" binder course, 1" wearing course - future recreational trail parking	1,000.00	SY	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0.66 656	0.74 741	14.03 14,028	0.00 0	15.43 15,426	15.43 15,426	19.35 19,347
(Note: Based on 027202000100, 027403100812 and 027403100850.)										

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
USR CONC-09 Concrete pavement, 12" thick, 12' pass, const. joint, finishing, curing, and grooving	5,760.00	SY	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	28,352	27,122	232,870	0	288,344	288,344	361,650
(Note: Finishing small areas, broom finish. 10" thick const. joint. Concrete grooving for roadways. Based on 027503000400, 027503000745, 027503000700, 027503003200.)										
RSM 027703000435 Concrete curb and gutter, straight, wood forms, 0.066 C.Y. per L.F., 6" high curb, 6" thick gutter, 30" wide, cast-in-place - competition soccer parking	1,240.00	LF	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	2,980	0	19,344	0	22,324	22,324	28,000
RSM 027703000435 Concrete curb and gutter, straight, wood forms, 0.066 C.Y. per L.F., 6" high curb, 6" thick gutter, 30" wide, cast-in-place - future recreational trail parking	3,230.00	LF	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	7,764	0	50,388	0	58,152	58,152	72,936
RSM 027703000435 Concrete curb and gutter, straight, wood forms, 0.066 C.Y. per L.F., 6" high curb, 6" thick gutter, 30" wide, cast-in-place - Beach Street	1,960.00	LF	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	4,711	0	30,576	0	35,287	35,287	44,258
RSM 027703000435 Concrete curb and gutter, straight, wood forms, 0.066 C.Y. per L.F., 6" high curb, 6" thick gutter, 30" wide, cast-in-place - West Park Road and parking	6,360.00	LF	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	15,287	0	99,216	0	114,503	114,503	143,613
RSM 027703000435 Concrete curb and gutter, straight, wood forms, 0.066 C.Y. per L.F., 6" high curb, 6" thick gutter, 30" wide, cast-in-place - West Road spur	3,060.00	LF	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	7,355	0	47,736	0	55,091	55,091	69,097
				2.40	0.00	15.60	0.00	18.00	18.00	22.58

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
RSM 027703000435 Concrete curb and gutter, straight, wood forms, 0.066 C.Y. per L.F., 6" high curb, 6" thick gutter, 30" wide, cast-in-place - East Park Road	2,020.00	LF	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	4,855	0	31,512	0	36,367	36,367	45,613
				<i>0.04</i>	<i>0.09</i>	<i>0.74</i>	<i>0.00</i>	<i>0.86</i>	<i>0.86</i>	<i>1.08</i>
RSM 027603000710 Lines on pavement, thermoplastic, white or yellow, 4" wide - roads	20,100.00	LF	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	769	1,718	14,874	0	17,361	17,361	21,775
(Note: Based on total linear footage of curb and gutter for roads.)				<i>0.04</i>	<i>0.09</i>	<i>0.74</i>	<i>0.00</i>	<i>0.86</i>	<i>0.86</i>	<i>1.08</i>
RSM 027603000710 Lines on pavement, thermoplastic, white or yellow, 4" wide - parking lots	10,300.00	LF	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	394	880	7,622	0	8,896	8,896	11,158
(Note: Based on total area of parking lots.)										
Bridges	1.00	LS	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	1,228,950	139,030	1,699,934	25,365	3,093,279	3,093,279	3,879,686
Park Road Bridge	1.00	LS	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	117,131	29,097	292,991	16,665	455,883	455,883	571,783
USR CONC-10 Concrete Abutment	91.60	CY	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	225.00 20,610	20.00 1,832	130.00 11,908	0.00 0	375.00 34,350	375.00 34,350	470.34 43,083
(Note: Per Estimator. Cost based on previous work of similar scope. Assumes concrete pumping.)										

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
USR CONC-11 Reinforcing bar - 250 lbs/cy - concrete abutment	22,900.00	LB	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0.00 0	0.00 0	0.55 12,595	0.00 0	0.55 12,595	0.55 12,595	0.69 15,797
(Note: Per Estimator.)										
RSM 024658001600 Caissons, open style in wet ground, to 50' deep, 36" diameter, 0.262 C.Y./L.F., machine drilled, pulled casing and pumping, includes excavation, concrete, 50 lb. reinforcing/C.Y., excludes mobilization, boulder removal, disposal	830.00	VLF	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	16.25 13,491	12.59 10,450	60.00 49,800	0.00 0	88.84 73,741	88.84 73,741	111.43 92,489
RSM 024658001060 Caissons, for bell excavation and concrete in stable ground, to 50' deep, 8' bell diameter, 36" shaft, 3.72 C.Y., machine drilled, add	16.00	EA	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	338.38 5,414	178.88 2,862	325.00 5,200	0.00 0	842.26 13,476	842.26 13,476	1,056.38 16,902
RSM 024559000500 Mobilization, to 36", set up and removedrill rig, for caissons, minimum	2.00	EA	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	406.06 812	214.65 429	0.00 0	0.00 0	620.71 1,241	620.71 1,241	778.51 1,557
HNC 034101005230 Precast beam or girder, rectangular, 30' span, 5000 #/L.F. live load, 3000 psi, includes material only	1,150.00	LF	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0.00 0	0.00 0	72.00 82,800	0.00 0	72.00 82,800	72.00 82,800	90.30 103,850
HNC 034508604090 Precast beam/girder/joist, with 125 ton crane, 33' maximum radius, 25 to 30 ton/piece, erection only, excludes material	39.00	EA	Bridge and Roadway General Contractor - Henderson, Main, and White	195.40 7,621	120.99 4,719	0.00 0	0.00 0	316.40 12,339	316.40 12,339	396.83 15,477

Description	Quantity	UOM	Contractor Settlement	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
USR CONC-11 Reinforcing bar - 250 lbs/cy - slab on grade	56,750.00	LB	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0.00 0	0.00 0	0.55 31,213	0.00 0	0.55 31,213	0.55 31,213	0.69 39,148
(Note: Per Estimator.)										
USR CONC-12 Slab on grade	227.00	CY	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	175.00 39,725	20.00 4,540	105.00 23,835	0.00 0	300.00 68,100	300.00 68,100	376.27 85,413
(Note: Per Estimator. Cost based on previous work of similar scope. Assumes concrete pumping.)										
RSM 028402000900 Guide rail, steel box beam, 6" x 6", W6x8 posts, 6'-3" O. C.	308.00	LF	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	4.62 1,424	2.33 718	25.00 7,700	0.00 0	31.96 9,843	31.96 9,843	40.08 12,345
RSM 028402000950 Guide rail, steel box beam end assembly, 6" x 6", W6x8 posts, 6'-3" O. C.	5.00	EA	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	5.70 28	5.36 27	246.00 1,230	0.00 0	257.06 1,285	257.06 1,285	322.42 1,612
USR CONC-12 Slab on grade - bridge approach	50.00	CY	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	175.00 8,750	20.00 1,000	105.00 5,250	0.00 0	300.00 15,000	300.00 15,000	376.27 18,813
(Note: Per Estimator. Cost based on previous work of similar scope. Assumes concrete pumping.)										
USR CONC-11 Reinforcing bar - 250 lbs/cy - slab on grade	12,500.00	LB	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0.00 0	0.00 0	0.55 6,875	0.00 0	0.55 6,875	0.55 6,875	0.69 8,623

Description	Quantity	UOM	Contractor Settlement	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
(Note: Per Estimator.)										
USR CONC-13 Armor Joints	5,555.00	LB	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0.00 0	0.00 0	0.00 0	3.00 16,665	3.00 16,665	3.00 16,665	3.76 20,902
(Note: Per Estimator. Cost based on previous work of similar scope.)										
RSM 028202100100 Fence, metal, security, 7' high, standard FE-7, includes excavation and posts	666.00	LF	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0.80 530	0.57 379	43.00 28,638	0.00 0	44.36 29,547	44.36 29,547	55.64 37,059
USR CONC-12 Slab on grade - slope pavement	107.00	CY	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	175.00 18,725	20.00 2,140	105.00 11,235	0.00 0	300.00 32,100	300.00 32,100	376.27 40,261
(Note: Per Estimator. Cost based on previous work of similar scope. Assumes concrete pumping.)										
USR CONC-11 Reinforcing bar - 250 lbs/cy - slope pavement	26,750.00	LB	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0.00 0	0.00 0	0.55 14,713	0.00 0	0.55 14,713	0.55 14,713	0.69 18,453
(Note: Per Estimator.)										
Beach Street Bridge	1.00	LS	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	1,111,819	109,934	1,406,943	8,700	2,637,395	2,637,395	3,307,903
USR CONC-10 Concrete Abutment	4,708.00	CY	Bridge and Roadway General Contractor -	225.00 1,059,300	20.00 94,160	130.00 612,040	0.00 0	375.00 1,765,500	375.00 1,765,500	470.34 2,214,345

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
			Henderson, Main, and White Settlement							
(Note: Per Estimator. Cost based on previous work of similar scope. Assumes concrete pumping.)										
USR CONC-11 Reinforcing bar - 250 lbs/cy - concrete abutment	1,177,000.00	LB	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0.00 0	0.00 0	0.55 647,350	0.00 0	0.55 647,350	0.55 647,350	0.69 811,926
(Note: Per Estimator.)										
RSM 024658001600 Caissons, open style in wet ground, to 50' deep, 36" diameter, 0.262 C.Y./L.F., machine drilled, pulled casing and pumping, includes excavation, concrete, 50 lb. reinforcing/C.Y., excludes mobilization, boulder removal, disposal	520.00	VLF	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	16.25 8,452	12.59 6,547	60.00 31,200	0.00 0	88.84 46,199	88.84 46,199	111.43 57,945
RSM 024658001060 Caissons, for bell excavation and concrete in stable ground, to 50' deep, 8' bell diameter, 36" shaft, 3.72 C.Y., machine drilled, add	10.00	EA	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	338.38 3,384	178.88 1,789	325.00 3,250	0.00 0	842.26 8,423	842.26 8,423	1,056.38 10,564
RSM 024559000500 Mobilization, to 36", set up and removedrill rig, for caissons, minimum	2.00	EA	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	406.06 812	214.65 429	0.00 0	0.00 0	620.71 1,241	620.71 1,241	778.51 1,557
HNC 034101005230 Precast beam or girder, rectangular, 30' span, 5000 #/L.F. live load, 3000 psi, includes material only	620.00	LF	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0.00 0	0.00 0	72.00 44,640	0.00 0	72.00 44,640	72.00 44,640	90.30 55,989
HNC 034508604090 Precast	20.00	EA	Bridge and	195.40 3,908	120.99 2,420	0.00 0	0.00 0	316.40 6,328	316.40 6,328	396.83 7,937

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
beam/girder/joist, with 125 ton crane, 33' maximum radius, 25 to 30 ton/piece, erection only, excludes material			Roadway General Contractor - Henderson, Main, and White Settlement							
USR CONC-12 Slab on grade	118.00	CY	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	175.00 20,650	20.00 2,360	105.00 12,390	0.00 0	300.00 35,400	300.00 35,400	376.27 44,400
(Note: Per Estimator. Cost based on previous work of similar scope. Assumes concrete pumping.)										
USR CONC-11 Reinforcing bar - 250 lbs/cy - slab on grade	29,500.00	LB	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0.00 0	0.00 0	0.55 16,225	0.00 0	0.55 16,225	0.55 16,225	0.69 20,350
(Note: Per Estimator.)										
RSM 028402000900 Guide rail, steel box beam, 6" x 6", W6x8 posts, 6'-3" O. C.	162.00	LF	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	4.62 749	2.33 378	25.00 4,050	0.00 0	31.96 5,177	31.96 5,177	40.08 6,493
RSM 028402000950 Guide rail, steel box beam end assembly, 6" x 6", W6x8 posts, 6'-3" O. C.	4.00	EA	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	5.70 23	5.36 21	246.00 984	0.00 0	257.06 1,028	257.06 1,028	322.42 1,290
USR CONC-12 Slab on grade - bridge approach	25.70	CY	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	175.00 4,498	20.00 514	105.00 2,699	0.00 0	300.00 7,710	300.00 7,710	376.27 9,670
(Note: Per Estimator. Cost based on previous work of similar scope. Assumes concrete pumping.)										
USR CONC-11 Reinforcing bar -	6,425.00	LB	Bridge and	0.00 0	0.00 0	0.55 3,534	0.00 0	0.55 3,534	0.55 3,534	0.69 4,432

Print Date Mon 14 April 2008
 Eff. Date 10/31/2007

U.S. Army Corps of Engineers
 Project FWCC.PD: FWCC.UPD
 Fort Worth Central City

Time 14:51:29

Project Direct Costs Report Page 160

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
250 lbs/cy - slab on grade			Roadway General Contractor - Henderson, Main, and White Settlement							
(Note: Per Estimator.)										
USR CONC-13 Armor Joints	2,900.00	LB	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0.00 0	0.00 0	0.00 0	3.00 8,700	3.00 8,700	3.00 8,700	3.76 10,912
(Note: Per Estimator. Cost based on previous work of similar scope.)										
RSM 028202100100 Fence, metal, security, 7' high, standard FE-7, includes excavation and posts	350.00	LF	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0.80 278	0.57 199	43.00 15,050	0.00 0	44.36 15,528	44.36 15,528	55.64 19,475
USR CONC-12 Slab on grade - slope pavement	55.80	CY	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	175.00 9,765	20.00 1,116	105.00 5,859	0.00 0	300.00 16,740	300.00 16,740	376.27 20,996
(Note: Per Estimator. Cost based on previous work of similar scope. Assumes concrete pumping.)										
USR CONC-11 Reinforcing bar - 250 lbs/cy - slope pavement	13,950.00	LB	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0.00 0	0.00 0	0.55 7,673	0.00 0	0.55 7,673	0.55 7,673	0.69 9,623
(Note: Per Estimator.)										
35 Riverside Gateway Park	1.00	LS	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	62,594	34,255	799,664	0	896,513	896,513	1,124,435

Labor ID: LB06NatFD EQ ID: EP03R06

Currency in US dollars

TRACES MII Version 2.2

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
Mobilization and Demobilization	1.00	LS	Bypass Channel and Levees General Contractor	1,135	1,968	0	0	3,102	3,102	3,891
USR MOBIL-01 Mobilization and Demobilization of Heavy Equipment	4.00	EA	Bypass Channel and Levees General Contractor	141.82 567	263.18 1,053	0.00 0	0.00 0	404.99 1,620	404.99 1,620	507.96 2,032
USR MOBIL-02 Mobilization and Demobilization of Medium Equipment	4.00	EA	Bypass Channel and Levees General Contractor	141.82 567	228.79 915	0.00 0	0.00 0	370.60 1,482	370.60 1,482	464.82 1,859
Pavement, Sidewalks, Curbs, and Gutter	1.00	LS	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	61,459	32,287	799,664	0	893,411	893,411	1,120,544
USR CONC-08 Asphaltic concrete pavement, 6" base course, 3" binder course, 1" wearing course - parking lots	25,100.00	SY	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0.66 16,465	0.74 18,605	14.03 352,111	0.00 0	15.43 387,181	15.43 387,181	19.35 485,615
(Note: Based on 027202000100, 027403100812 and 027403100850.)										
RSM 027703000435 Concrete curb and gutter, straight, wood forms, 0.066 C.Y. per L.F., 6" high curb, 6" thick gutter, 30" wide, cast-in-place - parking lots	12,160.00	LF	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	2.40 29,228	0.00 0	15.60 189,696	0.00 0	18.00 218,924	18.00 218,924	22.58 274,581
USR CONC-08 Asphaltic concrete pavement, 6" base course, 3" binder course, 1" wearing course - parking lot	13,950.00	SY	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0.66 9,151	0.74 10,340	14.03 195,695	0.00 0	15.43 215,186	15.43 215,186	19.35 269,893
(Note: Based on 027202000100, 027403100812 and 027403100850.)										
				2.40	0.00	15.60	0.00	18.00	18.00	22.58

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
RSM 027703000435 Concrete curb and gutter, straight, wood forms, 0.066 C.Y. per L.F., 6" high curb, 6" thick gutter, 30" wide, cast-in-place - parking lot	2,130.00	LF	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	5,120	0	33,228	0	38,348	38,348	48,097
RSM 027603000710 Lines on pavement, thermoplastic, white or yellow, 4" wide - parking lots	39,100.00	LF	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0.04 1,497	0.09 3,341	0.74 28,934	0.00 0	0.86 33,772	0.86 33,772	1.08 42,358
(Note: Based on total area of parking lots.)										
40 Bypass Channel Pedestrian Bridges	1.00	LS	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement Bypass Channel and Levees General Contractor	2,399	2,655	0	1,500,000	1,505,054	1,505,054	1,887,686
Mobilization and Demobilization	1.00	LS	Contractor	2,399	2,655	0	0	5,054	5,054	6,339
USR MOBIL-01 Mobilization and Demobilization of Heavy Equipment	6.00	EA	Bypass Channel and Levees General Contractor	141.82 851	263.18 1,579	0.00 0	0.00 0	404.99 2,430	404.99 2,430	507.96 3,048
USR MOBIL-02 Mobilization and Demobilization of Medium Equipment	4.00	EA	Bypass Channel and Levees General Contractor	141.82 567	228.79 915	0.00 0	0.00 0	370.60 1,482	370.60 1,482	464.82 1,859
USR MOBIL-03 Mobilization and Demobilization of Large Self-Propelled Equipment	4.00	EA	Bypass Channel and Levees General Contractor	245.26 981	40.24 161	0.00 0	0.00 0	285.50 1,142	285.50 1,142	358.08 1,432
Bridges	1.00	LS	Bridge and Roadway General Contractor - Henderson, Main, and White	0	0	0	1,500,000	1,500,000	1,500,000	1,881,347

Description	Quantity	UOM	Contractor Settlement	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
USR 08-29 Pedestrian crossing - north flood water control structure, steel trussed or arched	3,000.00	SF	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0.00 0	0.00 0	0.00 0	150.00 450,000	150.00 450,000	150.00 450,000	188.13 564,404
(Note: Allowance per Estimator. Cost based on professional judgment.)										
USR 08-30 Pedestrian crossing - south flood water control structure, steel trussed or arched	5,000.00	SF	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	0.00 0	0.00 0	0.00 0	210.00 1,050,000	210.00 1,050,000	210.00 1,050,000	263.39 1,316,943
(Note: Allowance per Estimator. Cost based on professional judgment.)										
13 Pumping Plants	1.00	LS	General Contractor	722,388	193,800	1,670,561	705,000	3,291,749	3,558,204	4,939,462
(Note: A Stormwater Pumping Facility will be included in the project to maintain the water level inside the water feature area during high water period rainfall events on the West Fork. This facility will be located adjacent to the TRWD Gate and will be constructed at the same time as the gate structure. The facility will contain a total of four (4) 45,000 gallon per minute pumps and be constructed of a concrete wet well and a masonry building. An emergency generator will be shared with the TRWD gate structure. In addition, access and parking will be provided adjacent to the site.)										
05 Stormwater Pumping Facility	1.00	LS	General Contractor	722,388	193,800	1,670,561	705,000	3,291,749	3,558,204	4,939,462
Mobilization and Demobilization	1.00	LS	General Contractor	2,966	3,502	0	0	6,468	6,468	8,112
USR MOBIL-01 Mobilization and Demobilization of Heavy Equipment	4.00	EA	Bypass Channel and Levees General Contractor	141.82 567	263.18 1,053	0.00 0	0.00 0	404.99 1,620	404.99 1,620	507.96 2,032
USR MOBIL-02 Mobilization and Demobilization of Medium Equipment	10.00	EA	Bypass Channel and Levees General Contractor	141.82 1,418	228.79 2,288	0.00 0	0.00 0	370.60 3,706	370.60 3,706	464.82 4,648
USR MOBIL-03 Mobilization and Demobilization of Large Self-Propelled Equipment	4.00	EA	Bypass Channel and Levees General Contractor	245.26 981	40.24 161	0.00 0	0.00 0	285.50 1,142	285.50 1,142	358.08 1,432
Earthwork	1.00	LS	General Contractor	87,045	83,355	39,395	0	209,794	209,794	291,285
				2.04	1.50	0.00	0.00	3.53	3.53	4.91

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
USR EARTH-14 Backfill around foundation, structural, 6" lifts w/loader, compaction around structures w/1 ton roller	23,100.00	CY	General Contractor	47,026	34,631	0	0	81,656	81,656	113,374
				<i>0.71</i>	<i>0.96</i>	<i>0.00</i>	<i>0.00</i>	<i>1.67</i>	<i>1.67</i>	<i>2.32</i>
RSM 023156100130 Excavating, trench or continuous footing, 4' to 6' deep, 1-1/2 C.Y. bucket, hydraulic backhoe, excludes sheeting or dewatering	5,000.00	BCY	General Contractor	3,538	4,816	0	0	8,354	8,354	11,599
USR 023151102360 Backfill, spread borrow, dozer (Note: Material cost per Estimator.)	100.00	LCY	General Contractor	<i>0.17</i> 17	<i>0.57</i> 57	<i>18.00</i> 1,800	<i>0.00</i> 0	<i>18.74</i> 1,874	<i>18.74</i> 1,874	<i>26.01</i> 2,601
RSM 024556001300 Piles, steel, "H" sections, 50' long, HP14 X 102, excludes mobilization or demobilization	1,003.50	VLF	General Contractor	<i>2.86</i> 2,873	<i>2.56</i> 2,567	<i>37.00</i> 37,130	<i>0.00</i> 0	<i>42.42</i> 42,570	<i>42.42</i> 42,570	<i>58.90</i> 59,106
RSM 024559000200 Mobilization, 75 ton, set up and remove crane, with pile leads and pile hammer	2.00	EA	General Contractor	<i>2,433.94</i> 4,868	<i>1,788.64</i> 3,577	<i>0.00</i> 0	<i>0.00</i> 0	<i>4,222.57</i> 8,445	<i>4,222.57</i> 8,445	<i>5,862.76</i> 11,726
USR EARTH-15 Excavate, load, and haul, medium material, 3 CY wheeled loader, 12 CY hwy hauler (2.9 cyc/hr) (Note: Based on 023154260245 and USR-023154900340.)	18,000.00	CY	General Contractor	<i>1.58</i> 28,495	<i>2.09</i> 37,685	<i>0.00</i> 0	<i>0.00</i> 0	<i>3.68</i> 66,180	<i>3.68</i> 66,180	<i>5.10</i> 91,887
USR 023707001100 Erosion control, silt fence, polypropylene, adverse conditions, 3' high	1,000.00	LF	General Contractor	<i>0.19</i> 192	<i>0.00</i> 0	<i>0.34</i> 340	<i>0.00</i> 0	<i>0.53</i> 532	<i>0.53</i> 532	<i>0.74</i> 739
USR 023707001250 Erosion control, hay bales, staked	20.00	LF	General Contractor	<i>0.32</i> 6	<i>0.22</i> 4	<i>2.25</i> 45	<i>0.00</i> 0	<i>2.79</i> 56	<i>2.79</i> 56	<i>3.87</i> 77
USR EROSION-01 Straw Wattles (Note: Cost per Estimator.)	40.00	LF	General Contractor	<i>0.72</i> 29	<i>0.44</i> 18	<i>2.00</i> 80	<i>0.00</i> 0	<i>3.16</i> 126	<i>3.16</i> 126	<i>4.39</i> 175
Buildings	1.00	LS	Building Subcontractor	206,834	56,574	1,043,727	645,000	1,952,136	2,061,086	2,861,681
Masonry	1.00	LS	Building Subcontractor	7,948	154	7,075	0	15,177	17,305	24,027

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
RSM 015407504650 Scaffolding, steel tubular, reg. rent, 4 uses/mo, erect or dismantle, 1st tier, 3' H x 5' W frames, excl. planks	1.56	CSF	Building Subcontractor	60.57 94	0.00 0	4.91 8	0.00 0	65.48 102	74.66 116	103.66 162
RSM 048101826200 Split face or scored split face concrete masonry unit (CMU), 2000 psi, 8" x 8" x 16", excludes scaffolding, grout and reinforcing	1,560.00	SF	Building Subcontractor	3.63 5,670	0.00 0	3.20 4,992	0.00 0	6.83 10,662	7.79 12,157	10.82 16,879
RSM 040802000020 #5 and #6 reinforcing steel bars, placed horizontally, ASTM A615	450.00	LB	Building Subcontractor	0.32 144	0.00 0	0.43 194	0.00 0	0.75 337	0.85 385	1.19 534
RSM 040802000060 #5 and #6 reinforcing steel bars, placed vertically, ASTM A615	600.00	LB	Building Subcontractor	0.39 236	0.00 0	0.43 258	0.00 0	0.82 494	0.94 563	1.30 782
RSM 040704200020 Grout, bond beams and lintels, 8" deep, 8" thick, 0.20 C.F. per L.F., pumped, excludes blockwork	192.00	LF	Building Subcontractor	0.53 102	0.05 9	0.82 157	0.00 0	1.40 268	1.59 305	2.21 424
RSM 040704200250 Grout, concrete masonry unit (CMU) cores, 8" thick, 0.258 C.F./S.F., pumped, excludes blockwork	1,560.00	SF	Building Subcontractor	1.09 1,703	0.09 145	0.94 1,466	0.00 0	2.12 3,314	2.42 3,779	3.36 5,247
Metals	1.00	LS	Building Subcontractor	92,095	8,029	77,511	0	177,635	202,542	281,216
HNC 055177000110 Stair, shop fabricated, steel, 5'-0" W, incl pipe railing, stringers, grating treads w/ safety nosing, per riser	27.00	EA	Building Subcontractor	36.34 981	2.51 68	350.00 9,450	0.00 0	388.86 10,499	443.38 11,971	615.60 16,621
HNC 055207400050 Railing, commercial, balcony, aluminum, 1-1/2" posts, field fabricated, incl 3 rails	515.00	LF	Building Subcontractor	5.22 2,688	0.36 186	42.50 21,888	0.00 0	48.08 24,761	54.82 28,233	76.11 39,199
RSM 050900800310 Anchor bolt,	60.00	EA	Building	7.22 433	0.00 0	1.85 111	0.00 0	9.07 544	10.34 620	14.36 862

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
L-type, plain steel, 3/4" dia x 18" L, incl nut & washer			Subcontractor							
				2.29	0.21	0.57	0.00	3.07	3.50	4.87
RSM 051204400650 Channel framing, structural steel, less than 8", field fabricated, incl cutting & welding	36,000.00	LB	Building Subcontractor	82,551	7,561	20,520	0	110,632	126,144	175,142
RSM 052106000020 Open web bar joist, 40-ton job lots, spans up to 30', K series, shop fabricated, incl shop primer, horizontal bridging, minimum	2.50	TON	Building Subcontractor	164.85 412	75.11 188	1,175.00 2,938	0.00 0	1,414.96 3,537	1,613.35 4,033	2,240.03 5,600
RSM 053103003560 Metal decking, steel, open type, wide rib, galvanized, over 500 Sq, 3" D, 16 ga	1,300.00	SF	Building Subcontractor	0.30 389	0.02 27	2.89 3,757	0.00 0	3.21 4,173	3.66 4,758	5.08 6,606
USR 158506003200 Louver, aluminum, extruded, with screen, mill finish, fixed blade, continuous line, stormproof, 48" x 48" (Note: Material cost based on 48" x 48" unit and RS Means CostWorks 2008 item 23 37 1540 3200 cost of \$38 per square foot.)	30.00	EA	Building Subcontractor	145.02 4,351	0.00 0	608.00 18,240	0.00 0	753.02 22,591	858.61 25,758	1,192.12 35,764
USR 158506003200 Louver, aluminum, extruded, with screen, mill finish, fixed blade, continuous line, stormproof, 24" x 48" (Note: Material cost based on 24" x 48" unit and RS Means CostWorks 2008 item 23 37 1540 3200 cost of \$38 per square foot.)	2.00	EA	Building Subcontractor	145.02 290	0.00 0	304.00 608	0.00 0	449.02 898	511.98 1,024	710.85 1,422
Thermal and Moisture	1.00	LS	Building Subcontractor	965	28	18,241	0	19,235	21,931	30,450
RSM 072207001745 Polyisocyanurate Insulation, for roof decks, 3" thick, R21.74, 2#/CF density	2,600.00	SF	Building Subcontractor	0.11 289	0.00 0	1.46 3,796	0.00 0	1.57 4,085	1.79 4,658	2.49 6,468
RSM 075308004800 Single-Ply Membrane, ethylene propylene diene monomer (EPDM), 0.40 P.S.F., fully adhered with	1,300.00	SF	Building Subcontractor	0.20 263	0.02 28	0.90 1,170	0.00 0	1.12 1,461	1.28 1,666	1.78 2,313

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
adhesive, 60 mils										
USR 077207001200 Roof Hatches, with curb, 1" fiberglass insulation, aluminum curb & cover, 6' x 6'	4.00	EA	Building Subcontractor	103.22 413	0.00 0	3,318.84 13,275	0.00 0	3,422.06 13,688	3,901.86 15,607	5,417.48 21,670
(Note: Material cost based on 4' x 4' unit and RS Means CostWorks 2008 item 07 72 3310 1100 cost of \$92.19 per square foot.)										
Finishes	1.00	LS	Building Subcontractor	0	0	20,000	0	20,000	22,804	31,662
USR FINISHES-02 Miscellaneous coatings and specialties	2,000.00	SF	Building Subcontractor	0.00 0	0.00 0	10.00 20,000	0.00 0	10.00 20,000	11.40 22,804	15.83 31,662
(Note: Unit cost allowance per Estimator. Cost based on professional judgment.)										
Equipment	1.00	LS	General Contractor	105,826	48,363	920,900	100,000	1,175,089	1,175,089	1,631,533
USR EQUIP-01 Mixed flow pump and motor - 45,000 gpm	4.00	EA	General Contractor	23,500.00 94,000	11,500.00 46,000	200,000.00 800,000	0.00 0	235,000.00 940,000	235,000.00 940,000	326,281.92 1,305,128
(Note: Allowance per Estimator. Cost based on professional judgment.)										
USR EQUIP-02 Mechanical trash rack cleaner	4.00	EA	General Contractor	2,500.00 10,000	500.00 2,000	22,000.00 88,000	0.00 0	25,000.00 100,000	25,000.00 100,000	34,710.84 138,843
(Note: Allowance per Estimator. Cost based on professional judgment.)										
USR EQUIP-03 Stop logs	1.00	EA	General Contractor	0.00 0	0.00 0	0.00 0	100,000.00 100,000	100,000.00 100,000	100,000.00 100,000	138,843.37 138,843
(Note: Allowance per Estimator. Cost based on professional judgment.)										
RSM 146307000350 Overhead Bridge Cranes, under hung hoist, electric operating, 2 girder, 3 ton, 40' span	1.00	EA	General Contractor	1,825.67 1,826	363.05 363	32,900.00 32,900	0.00 0	35,088.71 35,089	35,088.71 35,089	48,718.35 48,718
Electrical, Controls, and Instrumentation	1.00	LS	Electrical Subcontractor	0	0	0	545,000	545,000	621,414	862,793
USR 13-01 Electrical for stormwater pumping facility	1.00	LS	Electrical Subcontractor	0	0	0	235,000	235,000	267,949	372,030
(Note: Allowance per Estimator. Cost based on professional judgment.)										
USR 13-02 Lighting for stormwater pumping facility	1.00	LS	Electrical Subcontractor	0	0	0	10,000	10,000	11,402	15,831
(Note: Allowance per Estimator. Cost based on professional judgment.)										
USR 13-03 Emergency backup generator for stormwater pumping facility	1.00	LS	Electrical Subcontractor	0	0	0	160,000	160,000	182,434	253,297
(Note: Allowance per Estimator. Cost based on professional judgment.)										

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
USR 13-04 Controls and instrumentation for stormwater pumping facility (Note: Allowance per Estimator. Cost based on professional judgment.)	1.00	LS	Electrical Subcontractor	0	0	0	140,000	140,000	159,629	221,635
Concrete Footings, Slabs, and Retaining Walls	1.00	LS	Concrete Subcontractor	409,325	40,460	429,384	0	879,169	1,002,437	1,391,817
USR CONC-08 Concrete footing/slab on grade - structure (Note: Per Estimator. Cost based on previous work of similar scope. Assumes concrete pumping.)	270.00	CY	Concrete Subcontractor	175.00 47,250	20.00 5,400	105.00 28,350	0.00 0	300.00 81,000	342.06 92,357	474.93 128,232
USR CONC-03 Concrete walls - structure (Note: Per Estimator. Cost based on previous work of similar scope. Assumes concrete pumping.)	560.00	CY	Concrete Subcontractor	225.00 126,000	20.00 11,200	130.00 72,800	0.00 0	375.00 210,000	427.58 239,444	593.66 332,452
USR CONC-04 Concrete elevated slabs - structure (Note: Per Estimator. Cost based on previous work of similar scope. Assumes concrete pumping.)	103.00	CY	Concrete Subcontractor	275.00 28,325	20.00 2,060	140.00 14,420	0.00 0	435.00 44,805	495.99 51,087	688.65 70,931
USR CONC-05 Reinforcing bar - 175 lbs/cy - for structure slab, footings, and elevated slab (Note: Per Estimator.)	156,275.00	LB	Concrete Subcontractor	0.00 0	0.00 0	0.55 85,951	0.00 0	0.55 85,951	0.63 98,002	0.87 136,070
USR CONC-08 Concrete footing/slab on grade - retaining wall (Note: Per Estimator. Cost based on previous work of similar scope. Assumes concrete pumping.)	750.00	CY	Concrete Subcontractor	175.00 131,250	20.00 15,000	105.00 78,750	0.00 0	300.00 225,000	342.06 256,547	474.93 356,199
USR CONC-03 Concrete walls - retaining wall (Note: Per Estimator. Cost based on previous work of similar scope. Assumes concrete pumping.)	340.00	CY	Concrete Subcontractor	225.00 76,500	20.00 6,800	130.00 44,200	0.00 0	375.00 127,500	427.58 145,377	593.66 201,846
USR CONC-05 Reinforcing bar - 175 lbs/cy - retaining wall (Note: Per Estimator.)	190,750.00	LB	Concrete Subcontractor	0.00 0	0.00 0	0.55 104,913	0.00 0	0.55 104,913	0.63 119,622	0.87 166,088
Pavement, Sidewalks, Curbs, and Gutter	1.00	LS	Concrete Subcontractor	2,147	441	34,666	0	37,253	42,477	58,976
USR CONC-10 Concrete pavement, 8" thick, 12' pass, const. joint, finishing, and curing (Note: Finishing small areas, broom finish. 10" thick const. joint. Curing w/sprayed membrane. Based on 027503000100, 027503000745, 027503001000, 027503000700.)	670.00	SY	Concrete Subcontractor	3.20 2,147	0.66 441	30.34 20,327	0.00 0	34.20 22,915	39.00 26,128	54.14 36,277

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
USR CONC-05 Reinforcing bar - 175 lbs/cy - for concrete pavement (Note: Per Estimator.)	26,070.00	LB	Concrete Subcontractor	0.00 0	0.00 0	0.55 14,339	0.00 0	0.55 14,339	0.63 16,349	0.87 22,699
Drainage	1.00	LS	Water and Sewer Utility Subcontractor	13,129	8,793	117,596	0	139,517	159,079	220,870
USR EARTH-16 Excavate trench in medium soil w/1.5 CY gradall, backfill w/front-end loader, compaction w/self-propelled roller (Note: Trench 6' to 10' deep, compact in 6" lifts. Based on 023156100342, 023151101220.)	900.00	CY	Water and Sewer Utility Subcontractor	1.34 1,206	1.45 1,306	0.00 0	0.00 0	2.79 2,512	3.18 2,864	4.42 3,976
USR 026305304800 Reinforced concrete cylinder pipe (RCCP), 48" diameter (Note: Material cost based on RS Means CostWorks 2008 item 33 11 1310 3050 for 48" RCCP.)	404.00	LF	Water and Sewer Utility Subcontractor	18.82 7,603	16.06 6,487	179.00 72,316	0.00 0	213.88 86,406	243.86 98,520	338.59 136,789
USR DRAIN-05 Tideflex check valve, 48" (Note: Allowance per Estimator. Cost based on professional judgment.)	4.00	EA	Water and Sewer Utility Subcontractor	750.00 3,000	250.00 1,000	10,000.00 40,000	0.00 0	11,000.00 44,000	12,542.31 50,169	17,414.17 69,657
USR 151207300280 Sleeve, pipe, steel with water stop, 12" long, 54" diam. for 48" carrier pipe, includes link seal (Note: Material cost based on RS Means CostWorks 2008 item 22 11 1934 0280 for a 30" diameter sleeve for a 24" carrier pipe. Cost for 54" sleeve was determined using a ratio exponent of 0.6. Crew productivity was decreased due to a larger sleeve diameter.)	4.00	EA	Water and Sewer Utility Subcontractor	330.02 1,320	0.00 0	1,320.00 5,280	0.00 0	1,650.02 6,600	1,881.37 7,525	2,612.16 10,449
Site Restoration	1.00	LS	Restoration Subcontractor	943	675	5,794	60,000	67,412	76,864	106,720
HNC 028201306570 Chain link fence, industrial, vinyl, 9 ga. mesh, 1-5/8" top rail, 6' high, posts in concrete, excludes excavation	241.00	LF	Restoration Subcontractor	2.51 606	1.79 432	14.15 3,410	0.00 0	18.46 4,448	21.04 5,072	29.22 7,042
HNC 028204107020 Fence post, vinyl coated, in concrete, includes posts, excludes excavation	24.00	EA	Restoration Subcontractor	3.80 91	3.68 88	31.00 744	0.00 0	38.48 924	43.88 1,053	60.92 1,462
				0.09	0.09	0.21	0.00	0.39	0.44	0.62

Print Date Mon 14 April 2008
 Eff. Date 10/31/2007

U.S. Army Corps of Engineers
 Project FWCC.PD: FWCC.UPD
 Fort Worth Central City

Time 14:51:29

Project Direct Costs Report Page 170

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
HNC 028204107050 Barbed wire, vinyl coated, per strand	723.00	LF	Restoration Subcontractor	66	64	152	0	282	321	446
RSM 028201506645 Line posts, chain link fence, vinyl coated, (1/3 post length in ground), 2-1/2" OD, 6', set in concrete, includes excavation	24.00	EA	Restoration Subcontractor	7.50 180	3.78 91	62.00 1,488	0.00 0	73.28 1,759	83.56 2,005	116.01 2,784
USR REST-04 Grasscrete Erosion Control (Note: Per Estimator.)	1,200.00	SY	Restoration Subcontractor	0.00 0	0.00 0	0.00 0	50.00 60,000	50.00 60,000	57.01 68,413	79.16 94,986
14 Recreation Facilities	1.00	LS	General Contractor	3,279,172	1,478,175	3,741,807	4,659,100	13,158,254	14,226,334	19,654,383
(Note: A. Valley Storage Sites For the Rockwood West, Samuels Avenue and Ham Branch Valley storage Sites the recreational facilities consist of the replacement of concrete trails. B. Water Feature A water feature will be constructed at the existing confluence of the West Fork Trinity River and the Clear Fork Trinity River. The Water Feature area will be constructed with concrete retaining walls and walks. Recirculation pumps and housings are also included in the estimate to assist in the circulation of water in the interior area. A preliminary design had not been developed at the time of the estimate. A contingency of 20% was included on these costs. C. Marine Creek Modifications will be made to Marine Creek, upstream of Samuel Avenue Dam, in order to ensure that pedestrian access will be available once the dam is constructed and the water impoundment is created. The modifications include construction of concrete retaining walls and new walks, lighting, and pedestrian bridge. A contingency of 20% was included on these costs. D. Riverside Park Costs include the reconstruction of existing parking and new entrance roads. Allowances are provided for new athletic fields lighting, or relocations depending upon the final design and park plan. E. Riverside/Gateway Park In addition to the hard and soft trail system and two pedestrian bridges a number of special construction items have been included. The design of these facilities has yet to be determined so these items are shown as standard unit cost from RS MEANS based upon approximate foot prints. These include a 1,000 square feet concession stand with restrooms, 1,500 square feet splash park, four covered basketball courts, and bleachers. Allowances for electrical service, and lighting are provided.)										
05 Water Feature	1.00	LS	General Contractor	2,381,330	1,234,041	2,043,303	1,550,000	7,208,674	7,793,740	10,819,072
Mobilization and Demobilization	1.00	LS	General Contractor	5,389	9,657	0	0	15,046	15,046	18,871
USR MOBIL-01 Mobilization and Demobilization of Heavy Equipment	28.00	EA	Bypass Channel and Levees General Contractor	141.82 3,971	263.18 7,369	0.00 0	0.00 0	404.99 11,340	404.99 11,340	507.96 14,223
USR MOBIL-02 Mobilization and Demobilization of Medium Equipment	10.00	EA	Bypass Channel and Levees General Contractor	141.82 1,418	228.79 2,288	0.00 0	0.00 0	370.60 3,706	370.60 3,706	464.82 4,648
Earthwork	1.00	LS	General Contractor	709,467	1,048,675	212,699	0	1,970,841	1,970,841	2,736,381
USR EARTH-17 Excavate, load, and haul, medium material, 7 CY wheeled loader, 16.5 CY hwy hauler (1.6 cyc/hr)	435,000.00	CY	General Contractor	1.46 634,675	2.35 1,023,867	0.00 0	0.00 0	3.81 1,658,542	3.81 1,658,542	5.29 2,302,776

Labor ID: LB06NatFD EQ ID: EP03R06

Currency in US dollars

TRACES MII Version 2.2

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
(Note: Based on 023154260265 and 023154260285.)										
USR EARTH-18 Backfill/spread, 6" lifts dumped fill with dozer and compact in 6" lifts with vibrating roller	160,000.00	CY	General Contractor	14,476	10,256	0	0	24,733	24,733	34,340
(Note: Based on 023151205520 and USR-COMP-01.)										
USR PVSWCG-01 Sidewalk, concrete, cast-in-place with 6 x 6 - W1.4 x W1.4 mesh, broomed finish, 3000 psi, 5" thick, excludes base	77,000.00	SF	General Contractor	52,856	0	174,790	0	227,646	227,646	316,071
(Note: Cost and productivity based on RS MEANS 2008 Costworks Item 32 06 1010 0350.)										
USR EARTH-10 Fill for embankments, load, 1 mile haul, spread w/dozer, compact w/vibrating roller	8,700.00	CY	General Contractor	7,101	14,507	37,149	0	58,758	58,758	81,581
(Note: Based on 023155100020 and COMP-01.)										
USR 023707001100 Erosion control, silt fence, polypropylene, adverse conditions, 3' high	1,500.00	LF	General Contractor	288	0	510	0	798	798	1,108
USR 023707001250 Erosion control, hay bales, staked	40.00	LF	General Contractor	13	9	90	0	112	112	155
USR EROSION-01 Straw Wattles	80.00	LF	General Contractor	58	35	160	0	253	253	351
(Note: Cost per Estimator.)										
Retaining Walls	1.00	LS	Concrete Subcontractor	1,666,000	175,200	1,829,450	0	3,670,650	4,185,312	5,811,028
USR CONC-09 Concrete Footing	6,100.00	CY	Concrete Subcontractor	1,067,500	122,000	640,500	0	1,830,000	2,086,584	2,897,084
(Note: Per Estimator. Cost based on previous work of similar scope. Assumes concrete pumping.)										
USR CONC-03 Concrete walls	2,660.00	CY	Concrete Subcontractor	598,500	53,200	345,800	0	997,500	1,137,359	1,579,148
(Note: Per Estimator. Cost based on previous work of similar scope. Assumes concrete pumping.)										
USR CONC-05 Reinforcing bar - 175 lbs/cy	1,533,000.00	LB	Concrete Subcontractor	0	0	843,150	0	843,150	961,368	1,334,796

Description (Note: Per Estimator.)	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
			General							
Mechanical	1.00	LS	Contractor	0	0	0	1,050,000	1,050,000	1,050,000	1,457,855
USR 14-01 Recirculation pump housing - water feature (Note: Allowance per Estimator. Cost based on professional judgment.)	1.00	LS	General Contractor	0	0	0	400,000	400,000	400,000	555,373
USR 14-02 Recirculation pumps - water feature (Note: Allowance per Estimator. Cost based on professional judgment.)	4.00	EA	General Contractor	0	0	0	300,000	300,000	300,000	416,530
USR 14-03 Recirculation piping - water feature (Note: Allowance per Estimator. Cost based on professional judgment.)	1.00	LS	General Contractor	0	0	0	350,000	350,000	350,000	485,952
			Electrical							
Instrumentation	1.00	LS	Subcontractor	0	0	0	500,000	500,000	570,105	791,553
USR 14-04 Recirculation pumps electrical, instrumentation and controls - water feature (Note: Allowance per Estimator. Cost based on professional judgment.)	1.00	LS	Electrical Subcontractor	0	0	0	500,000	500,000	570,105	791,553
			Restoration							
Site Restoration	1.00	LS	Subcontractor	474	510	1,154	0	2,137	2,437	3,383
USR REST-01 Seeding, bermuda grass, chewing with mulch and fertilizer, 3 lb. per M.S.F., tractor spreader (Note: Based on 029203202700. Material cost based on vendor quote per pound and 3 lb. per M.S.F. application rate.)	69.70	MSF	Restoration Subcontractor	474	510	1,154	0	2,137	2,437	3,383
			General							
10 Samuels Avenue	1.00	LS	Contractor	38,886	7,493	134,715	0	181,093	205,204	284,180
			Bypass Channel and Levees							
			General							
Mobilization and Demobilization	1.00	LS	Contractor	1,985	3,478	0	0	5,464	5,464	6,853
USR MOBIL-01 Mobilization and Demobilization of Heavy Equipment	8.00	EA	Bypass Channel and Levees General Contractor	1,135	2,105	0	0	3,240	3,240	4,064
USR MOBIL-02 Mobilization and Demobilization of Medium Equipment	6.00	EA	Bypass Channel and Levees General Contractor	851	1,373	0	0	2,224	2,224	2,789
			General							
Earthwork	1.00	LS	Contractor	1,373	1,997	295	0	3,665	3,665	5,089

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
USR EARTH-19 Excavate, load, and haul, medium material, 3 CY wheeled loader, 12 CY hwy hauler (2.9 cyc/hr) (Note: Based on 023154260245 and USR-023154900340.)	875.00	CY	General Contractor	1.42 1,242	2.26 1,975	0.00 0	0.00 0	3.68 3,217	3.68 3,217	5.10 4,467
USR 023707001100 Erosion control, silt fence, polypropylene, adverse conditions, 3' high	500.00	LF	General Contractor	0.19 96	0.00 0	0.34 170	0.00 0	0.53 266	0.53 266	0.74 369
USR 023707001250 Erosion control, hay bales, staked	20.00	LF	General Contractor	0.32 6	0.22 4	2.25 45	0.00 0	2.79 56	2.79 56	3.87 77
USR EROSION-01 Straw Wattles (Note: Cost per Estimator.)	40.00	LF	General Contractor	0.72 29	0.44 18	2.00 80	0.00 0	3.16 126	3.16 126	4.39 175
Pavement, Sidewalks, Curbs, and Gutter	1.00	LS	Concrete Subcontractor	35,527	2,018	134,420	0	171,965	196,076	272,238
USR CONC-11 Sidewalk, concrete, cast-in-place with 6 x 6 - W1.4 x W1.4 mesh, broomed finish, 3000 psi, 6" thick, 6" deep compacted base course, 3/4" stone (Note: Based on 027752750400 and)	47,000.00	SF	Concrete Subcontractor	0.76 35,527	0.04 2,018	2.86 134,420	0.00 0	3.66 171,965	4.17 196,076	5.79 272,238
15 Marine Creek	1.00	LS	General Contractor Bypass Channel and Levees	607,171	87,252	708,710	408,000	1,811,132	2,032,073	2,788,090
Mobilization and Demobilization	1.00	LS	General Contractor	6,086	9,223	0	0	15,309	15,309	19,201
USR MOBIL-01 Mobilization and Demobilization of Heavy Equipment	24.00	EA	Bypass Channel and Levees General Contractor	141.82 3,404	263.18 6,316	0.00 0	0.00 0	404.99 9,720	404.99 9,720	507.96 12,191
USR MOBIL-02 Mobilization and Demobilization of Medium Equipment	12.00	EA	Bypass Channel and Levees General Contractor	141.82 1,702	228.79 2,745	0.00 0	0.00 0	370.60 4,447	370.60 4,447	464.82 5,578
USR MOBIL-03 Mobilization and Demobilization of Large Self-Propelled Equipment	4.00	EA	Bypass Channel and Levees General Contractor	245.26 981	40.24 161	0.00 0	0.00 0	285.50 1,142	285.50 1,142	358.08 1,432

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
Site Preparation	1.00	LS	General Contractor	40,477	16,363	295	75,000	132,134	132,134	183,460
USR DEMO-04 Demolition, handling, and disposal of mesh reinforced concrete to 6" thick - concrete sidewalks (Note: Based on 022202505800, 023154904200, 022203300100. Assumes 0.0188 cubic yards of debris per square foot of concrete. Assumes 2 tons per cubic yard.)	55,800.00	SF	General Contractor	0.48 26,851	0.18 9,924	0.00 0	0.00 0	0.66 36,775	0.66 36,775	0.92 51,059
USR DEMO-15 Demolition, handling, and disposal of reinforced concrete wall - short (Note: Based on 022204260400, 023154904200, and 022203300100. Assumes 1.5' thick wall and 0.333 cubic yards of debris per linear foot of wall. Assumes 2 tons per cubic yard.)	930.00	LF	General Contractor	6.39 5,941	3.13 2,908	0.00 0	0.00 0	9.52 8,850	9.52 8,850	13.21 12,287
USR DEMO-16 Demolition, handling, and disposal of reinforced concrete wall - tall (Note: Based on 022204260700, 023154904200, and 022203300100. Assumes 1.5' thick wall and 1.111 cubic yards of debris per linear foot of wall. Assumes 2 tons per cubic yard.)	300.00	LF	General Contractor	25.18 7,553	11.70 3,509	0.00 0	0.00 0	36.87 11,062	36.87 11,062	51.20 15,359
USR DEMO-09 Demolish steps (Note: Per Estimator.)	3.00	EA	General Contractor	0.00 0	0.00 0	0.00 0	5,000.00 15,000	5,000.00 15,000	5,000.00 15,000	6,942.17 20,827
USR DEMO-10 Demolish concrete weirs (Note: Per Estimator.)	100.00	LF	General Contractor	0.00 0	0.00 0	0.00 0	100.00 10,000	100.00 10,000	100.00 10,000	138.84 13,884
USR DEMO-11 Miscellaneous demolition (Note: Per Estimator.)	1.00	LS	General Contractor	0	0	0	50,000	50,000	50,000	69,422
USR 023707001100 Erosion control, silt fence, polypropylene, adverse conditions, 3' high	500.00	LF	General Contractor	0.19 96	0.00 0	0.34 170	0.00 0	0.53 266	0.53 266	0.74 369
USR 023707001250 Erosion control, hay bales, staked	20.00	LF	General Contractor	0.32 6	0.22 4	2.25 45	0.00 0	2.79 56	2.79 56	3.87 77
USR EROSION-01 Straw Wattles (Note: Cost per Estimator.)	40.00	LF	General Contractor	0.72 29	0.44 18	2.00 80	0.00 0	3.16 126	3.16 126	4.39 175
Earthwork	1.00	LS	General Contractor	2,962	4,945	0	80,000	87,907	87,907	122,053
USR EARTH-03 Excavate, load, and haul medium material, 5 CY	1,500.00	CY	General Contractor	1.97 2,962	3.30 4,945	0.00 0	0.00 0	5.27 7,907	5.27 7,907	7.32 10,978

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
hydraulic excavator, 16.5 CY hwy hauler (1.6 cycles per hour) (Note: Based on 023154260180 and 023154901100.)										
USR 14-05 Miscellaneous site work (Note: Allowance per Estimator.)	1.00	LS	General Contractor	0	0	0	80,000	80,000	80,000	111,075
Pavement, Sidewalks, Curbs, and Gutter	1.00	LS	Concrete Subcontractor	30,614	1,739	115,830	0	148,182	168,959	234,588
USR CONC-11 Sidewalk, concrete, cast-in-place with 6 x 6 - W1.4 x W1.4 mesh, broomed finish, 3000 psi, 6" thick, 6" deep compacted base course, 3/4" stone (Note: Based on 027752750400 and 027202000100.)	40,500.00	SF	Concrete Subcontractor	0.76 30,614	0.04 1,739	2.86 115,830	0.00 0	3.66 148,182	4.17 168,959	5.79 234,588
Retaining Walls	1.00	LS	Concrete Subcontractor	500,625	51,900	545,494	0	1,098,019	1,251,972	1,738,280
USR CONC-09 Concrete Footing (Note: Per Estimator. Cost based on previous work of similar scope. Assumes concrete pumping.)	1,665.00	CY	Concrete Subcontractor	175.00 291,375	20.00 33,300	105.00 174,825	0.00 0	300.00 499,500	342.06 569,535	474.93 790,761
USR CONC-03 Concrete walls (Note: Per Estimator. Cost based on previous work of similar scope. Assumes concrete pumping.)	930.00	CY	Concrete Subcontractor	225.00 209,250	20.00 18,600	130.00 120,900	0.00 0	375.00 348,750	427.58 397,648	593.66 552,108
USR CONC-05 Reinforcing bar - 175 lbs/cy (Note: Per Estimator.)	454,125.00	LB	Concrete Subcontractor	0.00 0	0.00 0	0.55 249,769	0.00 0	0.55 249,769	0.63 284,789	0.87 395,410
Electrical, Controls, and Instrumentation	1.00	LS	Electrical Subcontractor	0	0	0	100,000	100,000	114,021	158,311
USR 14-07 Electrical lighting - Marine Creek (Note: Allowance per Estimator.)	1.00	LS	Electrical Subcontractor	0	0	0	100,000	100,000	114,021	158,311
Site Restoration	1.00	LS	Restoration Subcontractor	3,908	1,082	20,341	0	25,331	28,883	40,102
USR RESTOR-03 Tree and shrub planting (Note: Assumes tree and shrub density of 25 trees per acre. Planting trees of 1-1/2" to 2" caliper. Species including ash, maple, oak, redbud, and walnut. Planting shrubs of)	5.00	ACR	Restoration Subcontractor	744.58 3,723	210.93 1,055	3,368.25 16,841	0.00 0	4,323.75 21,619	4,929.99 24,650	6,844.96 34,225
RSM 029204001000 Sodding, bent grass sod, on level ground, over 6 M.S.F.	7.00	MSF	Restoration Subcontractor	26.39 185	3.94 28	500.00 3,500	0.00 0	530.33 3,712	604.69 4,233	839.57 5,877

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
Bridges	1.00	LS	Bridge and Roadway Subcontractor	22,500	2,000	26,750	153,000	204,250	232,888	292,095
USR 14-06 Pedestrian bridge, steel trussed or arched - Marine Creek recreational area (Note: Per Estimator.)	1,800.00	SF	Bridge and Roadway Subcontractor	0.00 0	0.00 0	0.00 0	85.00 153,000	85.00 153,000	96.92 174,452	121.56 218,803
USR CONC-10 Concrete Abutment (Note: Per Estimator. Cost based on previous work of similar scope. Assumes concrete pumping.)	100.00	CY	Bridge and Roadway Subcontractor	225.00 22,500	20.00 2,000	130.00 13,000	0.00 0	375.00 37,500	427.58 42,758	536.28 53,628
USR CONC-11 Reinforcing bar - 250 lbs/cy (Note: Per Estimator.)	25,000.00	LB	Bridge and Roadway Subcontractor	0.00 0	0.00 0	0.55 13,750	0.00 0	0.55 13,750	0.63 15,678	0.79 19,664
20 Ham Branch	1.00	LS	General Contractor Bypass Channel and Levees	5,978	3,617	14,765	0	24,360	26,925	36,760
Mobilization and Demobilization	1.00	LS	General Contractor	1,702	2,952	0	0	4,654	4,654	5,837
USR MOBIL-01 Mobilization and Demobilization of Heavy Equipment	6.00	EA	Bypass Channel and Levees General Contractor	141.82 851	263.18 1,579	0.00 0	0.00 0	404.99 2,430	404.99 2,430	507.96 3,048
USR MOBIL-02 Mobilization and Demobilization of Medium Equipment	6.00	EA	Bypass Channel and Levees General Contractor	141.82 851	228.79 1,373	0.00 0	0.00 0	370.60 2,224	370.60 2,224	464.82 2,789
Earthwork	1.00	LS	General Contractor	497	451	465	0	1,413	1,413	1,961
USR EARTH-19 Excavate, load, and haul, medium material, 3 CY wheeled loader, 12 CY hwy hauler (2.9 cyc/hr) (Note: Based on 023154260245 and USR-023154900340.)	190.00	CY	General Contractor	1.42 270	2.26 429	0.00 0	0.00 0	3.68 699	3.68 699	5.10 970
USR 023707001100 Erosion control, silt fence, polypropylene,	1,000.00	LF	General Contractor	0.19 192	0.00 0	0.34 340	0.00 0	0.53 532	0.53 532	0.74 739

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
adverse conditions, 3' high				0.32	0.22	2.25	0.00	2.79	2.79	3.87
USR 023707001250 Erosion control, hay bales, staked	20.00	LF	General Contractor	6	4	45	0	56	56	77
USR EROSION-01 Straw Wattles (Note: Cost per Estimator.)	40.00	LF	General Contractor	0.72	0.44	2.00	0.00	3.16	3.16	4.39
				29	18	80	0	126	126	175
Pavement, Sidewalks, Curbs, and Gutter	1.00	LS	Concrete Subcontractor	3,779	215	14,300	0	18,294	20,859	28,962
USR CONC-11 Sidewalk, concrete, cast-in-place with 6 x 6 - W1.4 x W1.4 mesh, broomed finish, 3000 psi, 6" thick, 6" deep compacted base course, 3/4" stone (Note: Based on 027752750400 and 027202000100.)	5,000.00	SF	Concrete Subcontractor	0.76	0.04	2.86	0.00	3.66	4.17	5.79
				3,779	215	14,300	0	18,294	20,859	28,962
25 Riverside Park	1.00	LS	General Contractor Bypass Channel and Levees	21,432	7,384	101,187	205,000	335,003	380,928	528,160
Mobilization and Demobilization	1.00	LS	General Contractor	1,985	3,478	0	0	5,464	5,464	6,853
USR MOBIL-01 Mobilization and Demobilization of Heavy Equipment	8.00	EA	Bypass Channel and Levees General Contractor	141.82	263.18	0.00	0.00	404.99	404.99	507.96
				1,135	2,105	0	0	3,240	3,240	4,064
USR MOBIL-02 Mobilization and Demobilization of Medium Equipment	6.00	EA	Bypass Channel and Levees General Contractor	141.82	228.79	0.00	0.00	370.60	370.60	464.82
				851	1,373	0	0	2,224	2,224	2,789
Earthwork	1.00	LS	General Contractor	727	970	295	0	1,992	1,992	2,766
USR EARTH-19 Excavate, load, and haul, medium material, 3 CY wheeled loader, 12 CY hwy hauler (2.9 cyc/hr) (Note: Based on 023154260245 and USR-023154900340.)	420.00	CY	General Contractor	1.42	2.26	0.00	0.00	3.68	3.68	5.10
				596	948	0	0	1,544	1,544	2,144
USR 023707001100 Erosion control, silt fence, polypropylene, adverse conditions, 3' high	500.00	LF	General Contractor	0.19	0.00	0.34	0.00	0.53	0.53	0.74
				96	0	170	0	266	266	369
				0.32	0.22	2.25	0.00	2.79	2.79	3.87

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
USR 023707001250 Erosion control, hay bales, staked	20.00	LF	General Contractor	6	4	45	0	56	56	77
USR EROSION-01 Straw Wattles (Note: Cost per Estimator.)	40.00	LF	General Contractor	0.72 29	0.44 18	2.00 80	0.00 0	3.16 126	3.16 126	4.39 175
Pavement, Sidewalks, Curbs, and Gutter	1.00	LS	Concrete Subcontractor	18,719	2,936	100,892	0	122,547	139,729	194,005
USR CONC-08 Asphaltic concrete pavement, 6" base course, 3" binder course, 1" wearing course - parking lot (Note: Based on 027202000100, 027403100812 and 027403100850.)	2,300.00	SY	Concrete Subcontractor	0.66 1,509	0.74 1,705	14.03 32,265	0.00 0	15.43 35,479	17.59 40,453	24.42 56,167
USR CONC-08 Asphaltic concrete pavement, 6" base course, 3" binder course, 1" wearing course - roads (Note: Based on 027202000100, 027403100812 and 027403100850.)	260.00	SY	Concrete Subcontractor	0.66 171	0.74 193	14.03 3,647	0.00 0	15.43 4,011	17.59 4,573	24.42 6,349
USR CONC-11 Sidewalk, concrete, cast-in-place with 6 x 6 - W1.4 x W1.4 mesh, broomed finish, 3000 psi, 6" thick, 6" deep compacted base course, 3/4" stone (Note: Based on 027752750400 and 027202000100.)	22,500.00	SF	Concrete Subcontractor	0.76 17,008	0.04 966	2.86 64,350	0.00 0	3.66 82,323	4.17 93,866	5.79 130,327
RSM 027603000710 Lines on pavement, thermoplastic, white or yellow, 4" wide	850.00	LF	Concrete Subcontractor	0.04 33	0.09 73	0.74 629	0.00 0	0.86 734	0.98 837	1.37 1,162
Electrical, Controls, and Instrumentation	1.00	LS	Electrical Subcontractor	0	0	0	205,000	205,000	233,743	324,537
USR 14-08 Soccer field lighting (Note: Per Estimator.)	1.00	EA	Electrical Subcontractor	0.00 0	0.00 0	0.00 0	100,000.00 100,000	100,000.00 100,000	114,021.00 114,021	158,310.60 158,311
USR 14-09 Ball field lighting (Note: Per Estimator.)	1.00	EA	Electrical Subcontractor	0.00 0	0.00 0	0.00 0	65,000.00 65,000	65,000.00 65,000	74,113.65 74,114	102,901.89 102,902
USR 14-10 Field lighting (Note: Per Estimator.)	1.00	EA	Electrical Subcontractor	0.00 0	0.00 0	0.00 0	40,000.00 40,000	40,000.00 40,000	45,608.40 45,608	63,324.24 63,324

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
30 Rockwood Park - West	1.00	LS	General Contractor	20,595	6,399	65,646	0	92,641	104,363	144,168
Mobilization and Demobilization	1.00	LS	General Contractor	1,985	3,478	0	0	5,464	5,464	6,853
USR MOBIL-01 Mobilization and Demobilization of Heavy Equipment	8.00	EA	Bypass Channel and Levees General Contractor	1,135	2,105	0	0	3,240	3,240	4,064
USR MOBIL-02 Mobilization and Demobilization of Medium Equipment	6.00	EA	Bypass Channel and Levees General Contractor	851	1,373	0	0	2,224	2,224	2,789
Pavement, Sidewalks, Curbs, and Gutter	1.00	LS	Concrete Subcontractor	17,272	981	65,351	0	83,604	95,326	132,354
USR CONC-11 Sidewalk, concrete, cast-in-place with 6 x 6 - W1.4 x W1.4 mesh, broomed finish, 3000 psi, 6" thick, 6" deep compacted base course, 3/4" stone (Note: Based on 027752750400 and 027202000100.)	22,850.00	SF	Concrete Subcontractor	17,272	981	65,351	0	83,604	95,326	132,354
Earthwork	1.00	LS	General Contractor	1,338	1,940	295	0	3,573	3,573	4,961
USR EARTH-19 Excavate, load, and haul, medium material, 3 CY wheeled loader, 12 CY hwy hauler (2.9 cyc/hr) (Note: Based on 023154260245 and USR-023154900340.)	850.00	CY	General Contractor	1,207	1,919	0	0	3,125	3,125	4,339
USR 023707001100 Erosion control, silt fence, polypropylene, adverse conditions, 3' high	500.00	LF	General Contractor	96	0	170	0	266	266	369
USR 023707001250 Erosion control, hay bales, staked	20.00	LF	General Contractor	6	4	45	0	56	56	77
USR EROSION-01 Straw Wattles (Note: Cost per Estimator.)	40.00	LF	General Contractor	29	18	80	0	126	126	175
35 Riverside Oxbow/Gateway Park	1.00	LS	General Contractor	203,780	131,989	673,482	2,496,100	3,505,351	3,683,100	5,053,953

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
Riverside Oxbow	1.00	LS	General Contractor	160,911	43,168	580,335	2,421,100	3,205,513	3,372,747	4,623,781
Mobilization and Demobilization	1.00	LS	General Contractor	6,086	9,223	0	0	15,309	15,309	19,201
USR MOBIL-01 Mobilization and Demobilization of Heavy Equipment	24.00	EA	Bypass Channel and Levees General Contractor	141.82 3,404	263.18 6,316	0.00 0	0.00 0	404.99 9,720	404.99 9,720	507.96 12,191
USR MOBIL-02 Mobilization and Demobilization of Medium Equipment	12.00	EA	Bypass Channel and Levees General Contractor	141.82 1,702	228.79 2,745	0.00 0	0.00 0	370.60 4,447	370.60 4,447	464.82 5,578
USR MOBIL-03 Mobilization and Demobilization of Large Self-Propelled Equipment	4.00	EA	Bypass Channel and Levees General Contractor	245.26 981	40.24 161	0.00 0	0.00 0	285.50 1,142	285.50 1,142	358.08 1,432
Earthwork	1.00	LS	General Contractor	13,345	22,266	127,058	0	162,668	162,668	225,854
USR EARTH-19 Excavate, load, and haul, medium material, 3 CY wheeled loader, 12 CY hwy hauler (2.9 cyc/hr) (Note: Based on 023154260245 and USR-023154900340.)	1,945.00	CY	General Contractor	1.42 2,761	2.26 4,390	0.00 0	0.00 0	3.68 7,151	3.68 7,151	5.10 9,929
USR EARTH-20 Excavate, load, and haul, 6" deep bank run gravel base course, 3 CY wheeled loader, 12 CY hwy hauler (2.9 cyc/hr) (Note: Based on 023154260245, USR-023154900340, and 027202000100.)	3,900.00	CY	General Contractor	2.63 10,243	4.58 17,843	32.40 126,360	0.00 0	39.60 154,446	39.60 154,446	54.98 214,438
USR 023707001100 Erosion control, silt fence, polypropylene, adverse conditions, 3' high	1,500.00	LF	General Contractor	0.19 288	0.00 0	0.34 510	0.00 0	0.53 798	0.53 798	0.74 1,108
USR 023707001250 Erosion control, hay bales, staked	30.00	LF	General Contractor	0.32 10	0.22 7	2.25 68	0.00 0	2.79 84	2.79 84	3.87 116
USR EROSION-01 Straw Wattles	60.00	LF	General Contractor	0.72 43	0.44 26	2.00 120	0.00 0	3.16 190	3.16 190	4.39 263

Description (Note: Cost per Estimator.)	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
Pavement, Sidewalks, Curbs, and Gutter	1.00	LS	Concrete Subcontractor	81,437	1,871	323,887	0	407,195	464,288	644,633
USR PVSWCG-02 Sidewalk, concrete, cast-in-place with 6 x 6 - W1.4 x W1.4 mesh, broomed finish, 3000 psi, 6" thick, excludes base (Note: Cost and productivity based on RS MEANS 2008 Costworks Item 32 06 1010 0400.)	105,000.00	SF	Concrete Subcontractor	0.73 77,022	0.00 0	2.65 278,250	0.00 0	3.38 355,272	3.86 405,085	5.36 562,433
USR 027906000020 Basketball court, asphalt, one court, 2-1/2" thick, includes base	2,800.00	SY	Concrete Subcontractor	1.40 3,913	0.67 1,871	16.15 45,220	0.00 0	18.22 51,004	20.77 58,155	28.84 80,745
USR 027906002000 Basketball court, paint markings on asphalt, 2 coats	6.00	CT	Concrete Subcontractor	83.67 502	0.00 0	69.50 417	0.00 0	153.17 919	174.64 1,048	242.48 1,455
Bridges	1.00	LS	Bridge and Roadway Subcontractor	45,000	4,000	53,500	270,000	372,500	424,728	532,707
USR 14-11 Pedestrian bridge, 100' steel trussed or arched - Riverside Oxbow (Note: Per Estimator.)	1,000.00	SF	Bridge and Roadway Subcontractor	0.00 0	0.00 0	0.00 0	150.00 150,000	150.00 150,000	171.03 171,032	214.51 214,513
USR CONC-10 Concrete Abutment - 100' pedestrian bridge (Note: Per Estimator. Cost based on previous work of similar scope. Assumes concrete pumping.)	100.00	CY	Bridge and Roadway Subcontractor	225.00 22,500	20.00 2,000	130.00 13,000	0.00 0	375.00 37,500	427.58 42,758	536.28 53,628
USR CONC-11 Reinforcing bar - 250 lbs/cy - 100' pedestrian bridge (Note: Per Estimator.)	25,000.00	LB	Bridge and Roadway Subcontractor	0.00 0	0.00 0	0.55 13,750	0.00 0	0.55 13,750	0.63 15,678	0.79 19,664
USR 14-12 Pedestrian bridge, 80' steel trussed or arched - Riverside Oxbow (Note: Per Estimator.)	800.00	SF	Bridge and Roadway Subcontractor	0.00 0	0.00 0	0.00 0	150.00 120,000	150.00 120,000	171.03 136,825	214.51 171,610
USR CONC-10 Concrete	100.00	CY	Bridge and	225.00 22,500	20.00 2,000	130.00 13,000	0.00 0	375.00 37,500	427.58 42,758	536.28 53,628

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
Abutment - 80' pedestrian bridge			Roadway Subcontractor							
(Note: Per Estimator. Cost based on previous work of similar scope. Assumes concrete pumping.)										
USR CONC-11 Reinforcing bar - 250 lbs/cy - 80' pedestrian bridge	25,000.00	LB	Bridge and Roadway Subcontractor	0.00 0	0.00 0	0.55 13,750	0.00 0	0.55 13,750	0.63 15,678	0.79 19,664
(Note: Per Estimator.)										
Recreation Amenities	1.00	LS	General Contractor	0	0	0	1,834,800	1,834,800	1,834,800	2,547,498
USR 14-13 Concession stand/restroom facilities	1,000.00	SF	General Contractor	0.00 0	0.00 0	0.00 0	200.00 200,000	200.00 200,000	200.00 200,000	277.69 277,687
(Note: Per Estimator.)										
USR 14-15 Splash park	1,500.00	SF	General Contractor	0.00 0	0.00 0	0.00 0	240.00 360,000	240.00 360,000	240.00 360,000	333.22 499,836
(Note: Per Estimator.)										
USR 14-17 Basketball courts shelter	25,200.00	SF	General Contractor	0.00 0	0.00 0	0.00 0	45.00 1,134,000	45.00 1,134,000	45.00 1,134,000	62.48 1,574,484
(Note: Per Estimator.)										
USR 14-18 Bleachers	50.00	EA	General Contractor	0.00 0	0.00 0	0.00 0	116.00 5,800	116.00 5,800	116.00 5,800	161.06 8,053
(Note: Per Estimator.)										
USR 14-19 Boat launch	3.00	EA	General Contractor	0.00 0	0.00 0	0.00 0	45,000.00 135,000	45,000.00 135,000	45,000.00 135,000	62,479.52 187,439
(Note: Per Estimator.)										
Electrical, Controls, and Instrumentation	1.00	LS	Electrical Subcontractor	0	0	0	188,300	188,300	214,702	298,099
USR 14-14 Park lighting	1.00	LS	Electrical Subcontractor	0	0	0	58,300	58,300	66,474	92,295
(Note: COE estimate.)										
USR 14-16 Basketball courts - lighting	1.00	LS	Electrical Subcontractor	0	0	0	30,000	30,000	34,206	47,493
(Note: Allowance per Estimator.)										
USR 14-21 Electrical service to snack bar and wastewater pump station	1.00	LS	Electrical Subcontractor	0	0	0	100,000	100,000	114,021	158,311
(Note: Allowance per Estimator.)										
Drainage	1.00	LS	Water and Sewer Utility Subcontractor	2,853	1,046	16,870	88,000	108,769	124,019	172,192
USR EARTH-21 Excavate trench	600.00	CY	Water and Sewer	1.58 947	1.12 670	17.25 10,350	0.00 0	19.94 11,967	22.74 13,645	31.57 18,945

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
in medium soil w/2 CY gradall, backfill w/front-end loader, compaction w/self-propelled roller (Note: Trench 6' to 10' deep, compact in 6" lifts. Based on 023156100342, 023151101220.)			Utility Subcontractor							
RSM 026305302030 Reinforced concrete pipe (RCP), 18" diameter, 6' lengths, class 3, excludes excavation or backfill, gaskets	400.00	LF	Water and Sewer Utility Subcontractor	4.76 1,906	0.94 376	16.30 6,520	0.00 0	22.00 8,802	25.09 10,036	34.84 13,934
USR DRAIN-06 Concrete pipe encasement (Note: Per Estimator.)	400.00	LF	Water and Sewer Utility Subcontractor	0.00 0	0.00 0	0.00 0	220.00 88,000	220.00 88,000	250.85 100,338	348.28 139,313
Mechanical	1.00	LS	Water and Sewer Utility Subcontractor	12,189	4,763	59,020	40,000	115,972	132,233	183,596
USR EARTH-21 Excavate trench in medium soil w/2 CY gradall, backfill w/front-end loader, compaction w/self-propelled roller (Note: Trench 6' to 10' deep, compact in 6" lifts. Based on 023156100342, 023151101220.)	890.00	CY	Water and Sewer Utility Subcontractor	1.58 1,405	1.12 993	17.25 15,353	0.00 0	19.94 17,751	22.74 20,240	31.57 28,102
RSM 025107303020 Piping, water distribution, ductile iron, cement lined, tyton push-on joint, no fittings, 18' lengths, 6" diameter, class 50 water piping, excludes excavation or backfill	2,000.00	LF	Water and Sewer Utility Subcontractor	3.03 6,068	1.23 2,465	8.90 17,800	0.00 0	13.17 26,332	15.01 30,024	20.84 41,687
RSM 151106007040 Valves, semi-steel, lubricated plug valve, flanged, 200 lb., 6"	4.00	EA	Water and Sewer Utility Subcontractor	280.17 1,121	0.00 0	650.00 2,600	0.00 0	930.17 3,721	1,060.59 4,242	1,472.56 5,890
HNC 020801001030 Fire hydrants, two way, breakable, 5'- 0" depth, 8", includes mechanical joints, excludes excavation and backfill	4.00	EA	Water and Sewer Utility Subcontractor	151.69 607	76.65 307	1,425.00 5,700	0.00 0	1,653.34 6,613	1,885.15 7,541	2,617.41 10,470
				18.37	4.93	475.00	0.00	498.30	568.16	788.86

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
RSM 025107108010 Distribution connection, tapping sleeves with rubber gaskets, 6" x 4", excludes excavation and backfill	1.00	EA	Water and Sewer Utility Subcontractor	18	5	475	0	498	568	789
				<i>1.58</i>	<i>1.12</i>	<i>17.25</i>	<i>0.00</i>	<i>19.94</i>	<i>22.74</i>	<i>31.57</i>
USR EARTH-21 Excavate trench in medium soil w/2 CY gradall, backfill w/front-end loader, compaction w/self-propelled roller (Note: Trench 6' to 10' deep, compact in 6" lifts. Based on 023156100342, 023151101220.)	890.00	CY	Water and Sewer Utility Subcontractor	1,405	993	15,353	0	17,751	20,240	28,102
				<i>0.78</i>	<i>0.00</i>	<i>0.87</i>	<i>0.00</i>	<i>1.65</i>	<i>1.88</i>	<i>2.62</i>
RSM 025107504000 Polyvinyl chloride pressure pipe, 1-1/2", class 200, SDR 21, excludes excavation or backfill	2,000.00	LF	Water and Sewer Utility Subcontractor	1,566	0	1,740	0	3,306	3,769	5,234
USR 14-20 Waste water pump station, <5 HP (Note: Allowance per Estimator.)	1.00	EA	Water and Sewer Utility Subcontractor	0	0	0	40,000.00	40,000.00	45,608.40	63,324.24
				0	0	0	40,000	40,000	45,608	63,324
Gateway Park	1.00	LS	General Contractor Bypass Channel and Levees	42,868	88,822	93,148	75,000	299,838	310,353	430,172
Mobilization and Demobilization	1.00	LS	General Contractor	1,985	3,478	0	0	5,464	5,464	6,853
				<i>141.82</i>	<i>263.18</i>	<i>0.00</i>	<i>0.00</i>	<i>404.99</i>	<i>404.99</i>	<i>507.96</i>
USR MOBIL-01 Mobilization and Demobilization of Heavy Equipment	8.00	EA	Bypass Channel and Levees General Contractor	1,135	2,105	0	0	3,240	3,240	4,064
USR MOBIL-02 Mobilization and Demobilization of Medium Equipment	6.00	EA	Bypass Channel and Levees General Contractor	851	1,373	0	0	2,224	2,224	2,789
				<i>141.82</i>	<i>228.79</i>	<i>0.00</i>	<i>0.00</i>	<i>370.60</i>	<i>370.60</i>	<i>464.82</i>
Site Preparation	1.00	LS	General Contractor	25,856	68,908	0	0	94,764	94,764	131,574
USR DEMO-08 Demolition, handling, and disposal of bituminous driveways (Note: Based on 022202505100, 023154904200, 023154904200. Assumes 0.111 cubic yards of debris per square yard. Assumes 1.5 tons per cubic yard.)	760.00	SY	General Contractor	942	1,139	0	0	2,081	2,081	2,889
				<i>1.24</i>	<i>1.50</i>	<i>0.00</i>	<i>0.00</i>	<i>2.74</i>	<i>2.74</i>	<i>3.80</i>
				<i>0.04</i>	<i>0.12</i>	<i>0.00</i>	<i>0.00</i>	<i>0.16</i>	<i>0.16</i>	<i>0.23</i>

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
USR DEMO-02 Demolition, handling, and disposal of building debris (Note: Based on 022201108010, 023154904200, 022203300100. Assumes 0.002875 cubic yards of debris per cubic foot of building. Assumes 2 tons per cubic yard.)	571,350.00	CF	General Contractor	24,914	67,769	0	0	92,684	92,684	128,685
Earthwork	1.00	LS	General Contractor	15,027	16,436	93,148	0	124,610	124,610	173,012
USR EARTH-19 Excavate, load, and haul, medium material, 3 CY wheeled loader, 12 CY hwy hauler (2.9 cyc/hr) (Note: Based on 023154260245 and USR-023154900340.)	4,300.00	CY	General Contractor	6,104	9,705	0	0	15,809	15,809	21,950
USR 029108100805 Wood shavings, imported, 8" deep, furnish and place	4,300.00	LCY	General Contractor	8,582	6,697	92,450	0	107,729	107,729	149,575
USR 023707001100 Erosion control, silt fence, polypropylene, adverse conditions, 3' high	1,500.00	LF	General Contractor	288	0	510	0	798	798	1,108
USR 023707001250 Erosion control, hay bales, staked	30.00	LF	General Contractor	10	7	68	0	84	84	116
USR EROSION-01 Straw Wattles (Note: Cost per Estimator.)	60.00	LF	General Contractor	43	26	120	0	190	190	263
Buildings	1.00	LS	Building Subcontractor	0	0	0	75,000	75,000	85,516	118,733
USR BUILDINGS-04 Boat house - 25 feet by 50 feet by 12 feet high (Note: Per Estimator.)	1,250.00	SF	Building Subcontractor	0	0	0	75,000	75,000	85,516	118,733
15 Flood Control and Diversion Structures	1.00	LS	Isolation Gate General Contractor - Trinity Point	852,664	373,518	1,157,935	5,139,240	7,523,357	8,433,646	10,577,741
(Note: Three (3) gate control structures (Clear Fork, Trinity Point and TRWD) will be constructed for the project. All three (3) structures will be constructed of concrete with battered foundation piles providing support to bedrock. The Clear Fork gate will also have a sheet pile cutoff wall. Each gate will have one large (24 feet x 17 feet) vertical roller gate and at least one small (12 feet x 10 feet) vertical roller gate (Trinity Point Gate - two). The large gate will be used for normal water control and boat access to the interior area, while the smaller gate(s) will be used to seal off pedestrian access during flooding conditions. Gates can be inspected when open through internal access areas. In addition, each gate will have an enclosed control room and instrumentation system for monitoring the gates. Budgetary information on gate construction and installation costs was provided by General Electric Hydro.)										
10 Trinity Point	1.00	LS	Isolation Gate	852,664	373,518	1,157,935	5,139,240	7,523,357	8,433,646	10,577,741

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
Mobilization and Demobilization	1.00	LS	General Contractor - Trinity Point Hauling Subcontractor	7,988	9,298	0	0	17,286	18,526	23,236
USR MOBIL-01 Mobilization and Demobilization of Heavy Equipment	20.00	EA	Hauling Subcontractor	141.82 2,836	263.18 5,264	0.00 0	0.00 0	404.99 8,100	461.78 9,236	579.18 11,584
USR MOBIL-02 Mobilization and Demobilization of Medium Equipment	2.00	EA	Hauling Subcontractor	141.82 284	228.79 458	0.00 0	0.00 0	370.60 741	422.57 845	530.00 1,060
RSM 024559000200 Mobilization, 75 ton, set up and remove crane, with pile leads and pile hammer	2.00	EA	Isolation Gate General Contractor - Trinity Point	2,433.94 4,868	1,788.64 3,577	0.00 0	0.00 0	4,222.57 8,445	4,222.57 8,445	5,296.08 10,592
Site Preparation	1.00	LS	Isolation Gate General Contractor - Trinity Point	34,576	47,106	22,965	0	104,647	105,585	132,429
USR HAUL-04 Access Roads	1,500.00	LF	Isolation Gate General Contractor - Trinity Point	15.00 22,500	10.00 15,000	15.00 22,500	0.00 0	40.00 60,000	40.00 60,000	50.17 75,254
(Note: Per Estimator. Cost based on professional judgment.)										
USR STPREP-BY01 Scraper w/Operator, strip soil - Gate Structures	5,808.00	LCY	Isolation Gate General Contractor - Trinity Point	0.15 860	1.13 6,553	0.00 0	0.00 0	1.28 7,414	1.28 7,414	1.60 9,298
USR STPREP-BY02 Dozer w/Operator, clear, grub and stack - Gate Structures	5,808.00	LCY	Isolation Gate General Contractor - Trinity Point	0.10 568	0.29 1,701	0.00 0	0.00 0	0.39 2,269	0.39 2,269	0.49 2,846
USR SITEPREP-01 Screening and Stockpiling of Cleared and Grubbed Material	5,808.00	LCY	Isolation Gate General Contractor - Trinity Point	1.32 7,672	3.42 19,885	0.00 0	0.00 0	4.74 27,557	4.74 27,557	5.95 34,562
(Note: Screening of stripped soil. Assumes wheel loader w/operator, screening plant, and laborer.)										
USR HWYHAUL-12 Highway Haul, 17 CY End Dump, Removal	2,904.00	LCY	Hauling Subcontractor	0.95 2,749	1.36 3,945	0.00 0	0.00 0	2.30 6,694	2.63 7,632	3.30 9,572

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
of Screened Material (Note: Assumes 1/2 of screened material will be hauled off-site for disposal at the city landfill. Remaining material will be left on-site and used for site restoration.)										
USR 023707001100 Erosion control, silt fence, polypropylene, adverse conditions, 3' high	1,000.00	LF	Isolation Gate General Contractor - Trinity Point	0.19 192	0.00 0	0.34 340	0.00 0	0.53 532	0.53 532	0.67 667
USR 023707001250 Erosion control, hay bales, staked	20.00	LF	Isolation Gate General Contractor - Trinity Point	0.32 6	0.22 4	2.25 45	0.00 0	2.79 56	2.79 56	3.50 70
USR EROSION-01 Straw Wattles	40.00	LF	Isolation Gate General Contractor - Trinity Point	0.72 29	0.44 18	2.00 80	0.00 0	3.16 126	3.16 126	3.96 159
(Note: Cost per Estimator.)										
Excavation, Hauling, and Placement	1.00	LS	Isolation Gate General Contractor - Trinity Point	160,439	251,065	513,123	0	924,627	924,627	1,159,696
USR CFFRDAM-01 Cofferdam, Sheet Piling, Steel, 38 psf, 25' Excavation, Drive, Extract, and Salvage - 2 each at 500 LF long by 30 LF, removed at completion (Note: Cost and productivity based on RS MEANS 2008 Costworks Item 31 41 1610 1900.)	30,000.00	SF	Isolation Gate General Contractor - Trinity Point	2.64 79,224	2.60 77,917	9.35 280,500	0.00 0	14.59 437,641	14.59 437,641	18.30 548,903
USR CARE-01 Care of water - pumps (Note: 2 pumps operating for 56 days each. Assumes the 2 pumps discharge to 1 common settling basin and outfall. Skid mounted 6" centrifugal pump, 100' of hose (5 sections). Allowance per estimator to cover miscellaneous materials.)	112.00	DAY	Isolation Gate General Contractor - Trinity Point	49.50 5,544	352.16 39,441	40.00 4,480	0.00 0	441.66 49,466	441.66 49,466	553.94 62,041
USR CARE-02 Care of water - settling basin (Note: Skid mounted 6" centrifugal pump, 100' of hose (5 sections). Crew and equipment to check on settling basin daily. Allowance per estimator to cover miscellaneous materials.)	56.00	DAY	Isolation Gate General Contractor - Trinity Point	49.55 2,775	352.16 19,721	20.00 1,120	0.00 0	421.70 23,615	421.70 23,615	528.91 29,619
USR CARE-03 Care of water - discharge piping (Note: Crew and equipment to check on discharge piping daily. Allowance per estimator to cover miscellaneous materials.)	56.00	DAY	Isolation Gate General Contractor - Trinity Point	63.66 3,565	15.51 868	50.00 2,800	0.00 0	129.17 7,233	129.17 7,233	162.01 9,072
USR CARE-04 Care of water -	56.00	DAY	Isolation Gate	57.34 3,211	15.51 868	20.00 1,120	0.00 0	92.85 5,200	92.85 5,200	116.45 6,521

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
outfall			General Contractor - Trinity Point							
(Note: Crew and equipment to check on outfall daily. Allowance per estimator to cover miscellaneous materials.)										
RSM 022405001700 Dewatering, sump hole construction, pit with gravel collar, corrugated, 12" gravel collar, 12" corr. pipe, 16 ga, includes excavation and gravel pit	240.00	LF	Isolation Gate General Contractor - Trinity Point	4.94 1,184	1.77 425	16.30 3,912	0.00 0	23.01 5,522	23.01 5,522	28.86 6,926
USR DRAIN-04 Sub drain system - small	1.00	LS	Isolation Gate General Contractor - Trinity Point	15,000	0	10,000	0	25,000	25,000	31,356
(Note: Allowance per Estimator. Cost based on professional judgment.)										
RSM 024556001300 Piles, steel, "H" sections, 50' long, HP14 X 102, excludes mobilization or demobilization	3,622.00	VLF	Isolation Gate General Contractor - Trinity Point	2.86 10,371	2.56 9,267	37.00 134,014	0.00 0	42.42 153,652	42.42 153,652	53.21 192,715
USR EXCAV-BY03 Hyd Excavator, 3 CY - Trinity River Gate	52,100.00	BCY	Isolation Gate General Contractor - Trinity Point	0.13 6,958	0.34 17,675	0.00 0	0.00 0	0.47 24,633	0.47 24,633	0.59 30,895
USR OFFRDHAUL-GS03 6x6 Articulated Off-Road Truck, 24 CY, Trinity River Gate	65,520.00	LCY	Isolation Gate General Contractor - Trinity Point	0.25 16,407	0.88 57,732	0.00 0	0.00 0	1.13 74,139	1.13 74,139	1.42 92,988
(Note: Productivity based on estimated average haul distance, number of excavators and dump trucks used.)										
USR SPRDFL-GS03 Backfill, 6" lifts, dozer - Trinity River Gate	65,520.00	LCY	Isolation Gate General Contractor - Trinity Point	0.07 4,567	0.26 17,320	0.00 0	0.00 0	0.33 21,887	0.33 21,887	0.42 27,451
USR COMP-GS01 Compaction, riding vibrating roller, pad foot, single drum, 84" wide, 6" lifts, 5 passes - Trinity River Gate	56,268.00	ECY	Isolation Gate General Contractor - Trinity Point	0.08 4,679	0.14 8,061	0.00 0	0.00 0	0.23 12,740	0.23 12,740	0.28 15,979
USR EMBNKSPRD-02 Geotextile Subsurface Drainage Filtration, fabric ply bonded to 3-dimensional nylon mat, ideal conditions, 0.4" thick	3,334.00	SY	Isolation Gate General Contractor - Trinity Point	1.77 5,906	0.00 0	2.61 8,702	0.00 0	4.38 14,608	4.38 14,608	5.50 18,322
(Note: Material cost for RS MEANS CostWorks 2008 item number 33 46 2610 0170.)										

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
USR HWYHAUL-19 Highway Haul, 17 CY End Dump, Import Material - embankment road, 1.5" rock (Note: Material cost for RS MEANS CostWorks 2008 item number 32 11 2323 1521. Assumes 40 minute round trip haul time.)	1,001.00	LCY	Isolation Gate General Contractor - Trinity Point	0.61 606	0.87 870	50.56 50,611	0.00 0	52.03 52,086	52.03 52,086	65.26 65,328
USR EMBNKSPRD-01 Spread embankment road material, dozer - 1.5" rock	1,001.00	LCY	Isolation Gate General Contractor - Trinity Point	0.07 70	0.37 369	0.00 0	0.00 0	0.44 439	0.44 439	0.55 551
USR EMBNKCMP-01 Compaction, riding vibrating roller, smooth drum, 48" wide, 6" lifts, 5 passes - embankment road - 1.5" rock	901.00	ECY	Isolation Gate General Contractor - Trinity Point	0.12 109	0.10 88	0.00 0	0.00 0	0.22 196	0.22 196	0.27 246
USR HWYHAUL-20 Highway Haul, 17 CY End Dump, Import Material - embankment road, 3/4" rock (Note: Material cost for RS MEANS CostWorks 2008 item number 31 05 1610 0320. Assumes 40 minute round trip haul time.)	334.00	LCY	Isolation Gate General Contractor - Trinity Point	0.61 202	0.87 290	47.50 15,865	0.00 0	48.97 16,357	48.97 16,357	61.43 20,516
USR EMBNKSPRD-01 Spread embankment road material, dozer - 3/4" rock	334.00	LCY	Isolation Gate General Contractor - Trinity Point	0.07 23	0.37 123	0.00 0	0.00 0	0.44 146	0.44 146	0.55 184
USR EMBNKCMP-01 Compaction, riding vibrating roller, smooth drum, 48" wide, 6" lifts, 5 passes - embankment road - 3/4" rock	301.00	ECY	Isolation Gate General Contractor - Trinity Point	0.12 36	0.10 29	0.00 0	0.00 0	0.22 66	0.22 66	0.27 82
Pavement, Sidewalks, Curbs and Gutter	1.00	LS	Concrete Subcontractor	125	163	7,920	0	8,208	9,358	11,737
USR 027503000300 Plain cement concrete pavement, fixed form, unreinforced, 12' pass, 10" thick, includes joints, finishing, and curing (Note: Material cost per Estimator.)	72.00	SY	Concrete Subcontractor	1.73 125	2.26 163	110.00 7,920	0.00 0	113.99 8,208	129.98 9,358	163.02 11,737
Training Walls	1.00	LS	Concrete Subcontractor	641,125	62,420	581,535	0	1,285,080	1,465,261	1,837,776
				175.00	20.00	105.00	0.00	300.00	342.06	429.03

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
USR CONC-08 Concrete footing/slab on grade (Note: Per Estimator. Cost based on previous work of similar scope.)	1,479.00	CY	Concrete Subcontractor	258,825	29,580	155,295	0	443,700	505,911	634,529
				225.00	20.00	130.00	0.00	375.00	427.58	536.28
USR CONC-03 Concrete walls (Note: Per Estimator. Cost based on previous work of similar scope. Assumes concrete pumping.)	1,385.00	CY	Concrete Subcontractor	311,625	27,700	180,050	0	519,375	592,197	742,751
				275.00	20.00	140.00	0.00	435.00	495.99	622.09
USR CONC-04 Concrete elevated slabs (Note: Per Estimator. Cost based on previous work of similar scope. Assumes concrete pumping.)	257.00	CY	Concrete Subcontractor	70,675	5,140	35,980	0	111,795	127,470	159,877
				0.00	0.00	0.55	0.00	0.55	0.63	0.79
USR CONC-05 Reinforcing bar - 175 lbs/cy (Note: Per Estimator.)	382,200.00	LB	Concrete Subcontractor	0	0	210,210	0	210,210	239,684	300,619
Mechanical	1.00	LS	Subcontractor	1,906	132	7,819	0	9,857	11,240	14,097
				0.00	0.00	0.00	0.00	0.00	0.00	0.00
RSM 055303000136 Floor grating, aluminum, 1-3/4" x 3/16" bearing bars @ 1-3/16" O.C., cross bars @ 4" O.C., up to 300 S.F., field fabricated from panels	170.00	SF	Mechanical Subcontractor	0	0	0	0	0	0	0
				2.04	0.14	7.18	0.00	9.36	10.67	13.38
USR METAL-01 Aluminum grating frame (Note: Per Estimator.)	130.00	LF	Mechanical Subcontractor	265	18	933	0	1,216	1,387	1,739
				11.97	0.83	31.50	0.00	44.30	50.51	63.35
RSM 055145000100 Ladder, shop fabricated, steel, 20" W, bolted to concrete, excl cage	84.00	VLF	Mechanical Subcontractor	1,006	70	2,646	0	3,721	4,243	5,322
				127.20	8.79	1,200.00	0.00	1,336.00	1,523.32	1,910.59
USR METAL-02 Aluminum floor access hatch - 4' x 4' (Note: Material cost per Estimator.)	1.00	EA	Mechanical Subcontractor	127	9	1,200	0	1,336	1,523	1,911
				127.20	8.79	760.00	0.00	896.00	1,021.63	1,281.35
USR METAL-02 Aluminum floor access hatch - 3' x 3' (Note: Material cost per Estimator.)	4.00	EA	Mechanical Subcontractor	509	35	3,040	0	3,584	4,087	5,125
				509	35	3,040	0	3,584	4,087	5,125
Finishes	1.00	LS	Subcontractor	0	0	0	1,110,000	1,110,000	1,265,633	1,587,396
USR FINISHES-03 Painting and coating - flood control and diversion structure	1.00	LS	Building Subcontractor	0	0	0	110,000	110,000	125,423	157,310

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
(Note: Allowance per Estimator. Cost based on professional judgment.)										
USR FINISHES-04 Architectural enhancement	1.00	LS	Building Subcontractor	0	0	0	1,000,000	1,000,000	1,140,210	1,430,087
(Note: Allowance per Estimator. Cost based on professional judgment.)										
Flood Control Structures	1.00	LS	Gate Control Structures Subcontractor	244	158	0	3,674,240	3,674,642	4,189,864	5,255,057
(Note: Vendor quote - General Electric Hydro - 21 May 2004. Cost includes design, contingency, delivery to the site and installation.)										
USR EQUIP-04 Gate - 24' x 17' with motor and drum hoist	1.00	EA	Gate Control Structures Subcontractor	0	0	0	1,700,000	1,700,000	1,938,357	2,431,147
(Note: Vendor quote - General Electric Hydro - 21 May 2004. Cost includes design, contingency, delivery to the site and installation.)										
USR EQUIP-05 Gate - 12' x 10' with motor and drum hoist	2.00	EA	Gate Control Structures Subcontractor	0	0	0	1,500,000	1,500,000	1,710,315	2,145,130
(Note: Vendor quote - General Electric Hydro - 21 May 2004. Cost includes design, contingency, delivery to the site and installation.)										
USR EQUIP-06 Stop log - 24' x 17'	1.00	EA	Gate Control Structures Subcontractor	0	0	0	273,000	273,000	311,277	390,414
(Note: Vendor quote - General Electric Hydro - 21 May 2004. Cost includes design, contingency, delivery to the site and installation.)										
USR EQUIP-07 Stop log - 12' x 10'	2.00	EA	Gate Control Structures Subcontractor	0	0	0	170,000	170,000	193,836	243,115
(Note: Vendor quote - General Electric Hydro - 21 May 2004. Cost includes design, contingency, delivery to the site and installation.)										
USR EQUIP-08 Motor housing, prefabricated building	220.00	SF	Building Subcontractor	244	158	0	31,240	31,642	36,078	45,251
(Note: Cost and productivity based on RS MEANS 2008 Costworks Item 13 34 2310 0400.)										
Electrical, Controls, and Instrumentation	1.00	LS	Electrical Subcontractor	15	0	37	355,000	355,052	404,833	507,755
USR ELEC-10 Barrier warning system - isolation gate	1.00	LS	Electrical Subcontractor	0	0	0	25,000	25,000	28,505	35,752
(Note: Allowance per Estimator. Cost based on professional judgment.)										
USR ELEC-11 Electric lights site - isolation gate	1.00	LS	Electrical Subcontractor	0	0	0	20,000	20,000	22,804	28,602
(Note: Allowance per Estimator. Cost based on professional judgment.)										
USR ELEC-09 Transformer - isolation gate	1.00	LS	Electrical Subcontractor	0	0	0	10,000	10,000	11,402	14,301
(Note: Allowance per Estimator. Cost based on professional judgment.)										
USR ELEC-13 Underground	2,500.00	LF	Electrical	0	0	0	20,000	20,000	22,804	28,602

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
primary service (Note: Allowance per Estimator. Cost based on professional judgment.)			Subcontractor							
RSM 020806000400 Underground marking tape, vinyl, aluminum foil core, detectable, 2"	25.00	CLF	Electrical Subcontractor	0.61 15	0.00 0	1.46 37	0.00 0	2.07 52	2.36 59	2.96 74
USR ELEC-14 Control building electrical - isolation gate (Note: Allowance per Estimator. Cost based on professional judgment.)	1.00	LS	Electrical Subcontractor	0	0	0	75,000	75,000	85,516	107,257
USR ELEC-15 Security electrical - isolation gate (Note: Allowance per Estimator. Cost based on professional judgment.)	1.00	LS	Electrical Subcontractor	0	0	0	25,000	25,000	28,505	35,752
USR ELEC-12 Instrumentation - isolation gate (Note: Allowance per Estimator. Cost based on professional judgment.)	1.00	LS	Electrical Subcontractor	0	0	0	20,000	20,000	22,804	28,602
USR ELEC-08 Emergency backup generator (Note: Allowance per Estimator. Cost based on professional judgment.)	1.00	LS	Electrical Subcontractor	0	0	0	160,000	160,000	182,434	228,814
Site Restoration	1.00	LS	Landscape Subcontractor	6,246	3,177	24,536	0	33,958	38,719	48,563
USR REST-01 Seeding, bermuda grass, chewing with mulch and fertilizer, 3 lb. per M.S.F., tractor spreader (Note: Based on 029203202700. Material cost based on vendor quote per pound and 3 lb. per M.S.F. application rate.)	261.40	MSF	Landscape Subcontractor	6.80 1,778	7.31 1,911	16.55 4,326	0.00 0	30.66 8,015	34.96 9,139	43.85 11,463
USR RESTOR-03 Tree and shrub planting (Note: Assumes tree and shrub density of 25 trees per acre. Planting trees of 1-1/2" to 2" caliper. Species including ash, maple, oak, redbud, and walnut. Planting shrubs of 5 gallon caliper. Species including hibiscus, forsythia, burning bush, and hydrangea.)	6.00	ACR	Landscape Subcontractor	744.58 4,467	210.93 1,266	3,368.25 20,210	0.00 0	4,323.75 25,943	4,929.99 29,580	6,183.34 37,100
30 Planning, Engineering, and Design	1.00	LS		0	0	0	32,717,096	32,717,096	0	32,717,096
(Note: This category includes anticipated costs for design and permitting including but not limited to development of final designs, contract bid packages, cost estimation, engineering services during construction, environmental permitting, and permit fees. The costs are divided into two main tasks: 1) A/E Design Fees and 2) Permits, Fees, and Licenses. Costs under this category are based on a percentage of the total construction cost with contingency. Based on the complexity, magnitude, and duration of the project the costs have been assumed as approximately 5.0% for A/E Design Fees and 1.7% for Permits, Fees and Licenses for a total of 6.7% for this category.)										
USR 30-01 A/E design services (Note: Based on the complexity, magnitude, and duration of the project the costs have been assumed as approximately 5% for this category.)	1.00	LS		0	0	0	17,678,014	17,678,014	0	17,678,014
USR 30-02 Permitting (Note: Based on the complexity, magnitude, and duration of the project the costs have been assumed as approximately 1.7% for this category.)	1.00	LS		0	0	0	6,007,243	6,007,243	0	6,007,243
USR 21-01 Survey and Testing (Note: Based on the complexity, magnitude, and duration of the project the costs have been assumed as approximately 1.3% for this category.)	1.00	LS		0	0	0	5,105,437	5,105,437	0	5,105,437
USR 21-02 Legal costs	1.00	LS		0	0	0	3,926,402	3,926,402	0	3,926,402

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
(Note: Based on the complexity, magnitude, and duration of the project the costs have been assumed as approximately 1% for this category.)										
31 Construction Management	1.00	LS		0	0	0	40,432,378	40,432,378	0	40,432,378
(Note: This category includes anticipated costs for program management and construction management. A. Program Management This category includes anticipated costs for program management services during the design and construction of the project. Program management services are anticipated, but not limited to be: Agency Coordination/Management, Standards Development, Maintenance of Project Records and Base Files, Funding/ Grants and Cost Accounting, Contract Procurement, Project Schedule Maintenance, and Closeout. Costs under this category are based on a percentage of the total construction cost with contingency. Based on the complexity, magnitude, and duration of the project the costs have been assumed as approximately 4.9% for this category. No contingency was included on these costs. B. Construction Management This category includes anticipated costs for construction management including but not limited to costs for: meetings (pre-con, progress, post-con), field coordination, inspection, survey control, contract modifications, payment request processing. Costs under this category are based on a percentage of the total construction cost with contingency. Based on the complexity, magnitude, and duration of the project the costs have been assumed as approximately 4.6% for this category.)										
USR 31-01 Program management - includes agency coordination, management standards development, maintain base files funding, grants and cost vaccounts contract procurement and administration	1.00	LS		0	0	0	23,989,434	23,989,434	0	23,989,434
(Note: Based on the complexity, magnitude, and duration of the project the costs have been assumed as approximately 4.9% for this category.)										
USR 31-02 Construction management and testing	1.00	LS		0	0	0	16,442,944	16,442,944	0	16,442,944
(Note: Based on the complexity, magnitude, and duration of the project the costs have been assumed as approximately 4.6% for this category.)										
Environmental Remediation General										
33 HTRW	1.00	LS	Contractor	0	0	0	17,558,239	17,558,239	17,558,239	22,022,088
(Note: The HTRW category includes costs for environmental services and remediation on the project and was developed based on the results of the environmental records review completed for the potentially impacted properties during the initial EIS phase. For the Phase I and Phase II site assessments the following allowances were used: Update the Phase I EIS data, 173 parcels at an cost of \$1,000/site; Phase II site assessments assumed 106 sites at \$9,200/site: soil and groundwater testing 1350 samples at \$335/sample and 413 samples at \$430/sample; asbestos surveys estimated at 50 building at \$1,150/structure Environmental remediation costs for the project were developed primarily for the potentially impacted properties within the proposed bypass channel at each of the sites with records indicating potential release of petroleum or hazardous chemicals. Costs include, but are not limited to, the following: - Investigation of assumed contaminated sites; - Excavation and disposal of underground storage tanks (USTs) and accompanying contaminated soils; - Placement of short-term groundwater recovery/treatment systems at locations with leaking USTs (LUSTs)/USTs; - Excavation and disposal of assumed volumes of contaminated soil based on the number of databases that each site appears within; - Analytical costs for characterization of the contaminated soils for disposal and confirmation of complete removal; and - Engineering design fees and administrative costs for following required regulatory guidelines and submittal of appropriate reports to regulatory agencies. Asbestos abatement costs were calculated based on factoring the total square footage buildings to be removed to determine office type space within the total building footprint which would likely contain asbestos. Of the total of 1.5 million square feet of buildings to be demolished, 50 % is assumed to be finished and of that amount 20% was assumed to contain asbestos. Abatement unit price were then used from MEANS Environmental Remediation Book to determine the estimated asbestos abatement cost. The HTRW construction costs are based on the best available information at this time and will be updated and refined as design development is advanced and more information can be obtained within the project footprint.)										
Environmental Remediation General										
Envrionmental Assessments	1.00	LS	Contractor	0	0	0	1,889,200	1,889,200	1,889,200	2,369,493
USR 33-01 Phase I site assessments	1.00	LS	Environmental Remediation General Contractor	0	0	0	173,000	173,000	173,000	216,982
(Note: Allowance per Estimator.)										
USR 33-02 Phase II/III site	1.00	LS	Environmental	0	0	0	975,000	975,000	975,000	1,222,875

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
assessments			Remediation General Contractor							
(Note: Allowance per Estimator.) USR 33-03 Asbestos assessments	1.00	LS	Environmental Remediation General Contractor	0	0	0	111,550	111,550	111,550	139,909
(Note: Allowance per Estimator.) USR 33-10 Soil and groundwater testing	1.00	LS	Environmental Remediation General Contractor	0	0	0	629,650	629,650	629,650	789,727
(Note: Estimate provided by Accutest Laboratory - 5 September 2006.)			Environmental Remediation General Contractor							
Site Remediation	1.00	LS	Contractor	0	0	0	14,002,039	14,002,039	14,002,039	17,561,791
USR 33-04 Asbestos removal	1.00	LS	Environmental Remediation General Contractor	0	0	0	737,039	737,039	737,039	924,417
(Note: Allowance per Estimator.)										
USR 33-05 Underground storage tank removal	20.00	EA	Environmental Remediation General Contractor	0.00 0	0.00 0	0.00 0	40,000.00 800,000	40,000.00 800,000	40,000.00 800,000	50,169.24 1,003,385
(Note: Allowance per Estimator.)										
USR 33-06 Soil remediation	202,500.00	TON	Environmental Remediation General Contractor	0.00 0	0.00 0	0.00 0	50.00 10,125,000	50.00 10,125,000	50.00 10,125,000	62.71 12,699,089
(Note: Allowance per Estimator.) USR 33-07 Miscellaneous demolition (unknowns)	1.00	LS	Environmental Remediation General Contractor	0	0	0	400,000	400,000	400,000	501,692
(Note: Allowance per Estimator.)										
USR 33-08 Groundwater treatment system	20.00	EA	Environmental Remediation General Contractor	0.00 0	0.00 0	0.00 0	50,000.00 1,000,000	50,000.00 1,000,000	50,000.00 1,000,000	62,711.55 1,254,231
(Note: Per Estimator.)										
USR 33-09 Groundwater treatment system operation and maintenance	36.00	MO	Environmental Remediation General Contractor	0.00 0	0.00 0	0.00 0	15,000.00 540,000	15,000.00 540,000	15,000.00 540,000	18,813.47 677,285
(Note: Per Estimator.) USR 33-12 Offsite groundwater impacts - capital costs for offsite	1.00	LS	Environmental Remediation	0	0	0	400,000	400,000	400,000	501,692

Print Date Mon 14 April 2008
 Eff. Date 10/31/2007

U.S. Army Corps of Engineers
 Project FWCC.PD: FWCC.UPD
 Fort Worth Central City

Time 14:51:29

Project Direct Costs Report Page 195

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
facilities (Note: Allowance per Estimator.)			General Contractor							
Remediation Program Management	1.00	LS	Contractor	0	0	0	1,667,000	1,667,000	1,667,000	2,090,803
USR 33-11 Remediation coordination (Note: Allowance per Estimator.)	1.00	LS	Environmental Remediation General Contractor	0	0	0	1,667,000	1,667,000	1,667,000	2,090,803

Total Project Summary Table

Fort Worth Central City
Fort Worth, Texas

4/18/2008

Description	MIH Output	Escalation to Midpoint			Cost Contingency		Full Funded Project Cost (w/Contingency and Escalation)
	Project Cost (October 2007)	Year	%	\$	%	\$	
Project Cost Summary Report	506,743,627						673,450,000
1 01 Federal 220	158,868,918			29,516,561		31,614,457	220,000,000
Schedule Contingency Impact						221,375	220,000
1.1 01 Lands and Damages	31,183,334			2,203,807		4,262,160	37,650,000
1.1.1 10 Property Acquisition	26,568,716	2nd 1/4 09	1.08	2,019,222	12%	3,176,504	31,760,000
1.1.2 15 Property Relocations	4,614,618	2009	1.04	184,585	24%	1,085,656	5,890,000
1.2 03 Reservoirs	43,268,796			8,744,898		8,118,468	60,130,000
1.2.1.1 05 Samuels Avenue Sites	5,323,585	2015	1.32	1,686,560	19%	1,008,375	8,020,000
1.2.1.2 10 University Drive	3,952,653	2012	1.19	741,859	12%	468,697	5,160,000
1.2.1.3 15 Ham Branch	822,375	2012	1.19	154,349	12%	96,205	1,070,000
1.2.1.4 20 Riverside Park	2,375,242	2012	1.19	445,800	18%	437,363	3,260,000
1.2.1.5 25 Rockwood Park - West	1,579,999	2011	1.15	233,086	19%	308,083	2,120,000
1.2.1.6 30 Riverside Oxbow/Gateway	29,214,941	2012	1.19	5,483,244	20%	5,799,745	40,500,000
1.3 06 Fish and Wildlife Facilities	304,109			57,077		30,436	390,000
1.3.1 15 Ham Branch	304,109	2012	1.19	57,077	10%	30,436	390,000
1.4 11 Levees and Floodwalls	41,125,153			9,428,160		11,539,750	62,090,000
1.4.1 Bypass Channel - North	18,580,541	2013	1.23	4,259,688	28%	5,191,780	28,030,000
1.4.2 Bypass Channel - South	22,544,611	2013	1.23	5,168,472	28%	6,347,971	34,060,000
1.5 15 Flood Control and Diversion Structures	24,695,906			8,962,079		5,843,197	39,500,000
1.5.1 05 Clear Fork	11,774,910	2016	1.36	4,273,084	24%	2,768,234	18,820,000
1.5.2 15 TRWD	12,920,996	2016	1.36	4,688,995	24%	3,074,963	20,680,000
1.6 18 Cultural Resource Preservation	1,108,740	2010	1.11	120,540	12%	132,648	1,360,000
1.7 30 Planning, Engineering, and Design	11,105,131		0.00	0	11%	1,205,257	12,310,000
1.8 31 Construction Management	6,077,749		0.00	0	4%	261,167	6,350,000
2 02 Non-Federal	347,874,709			47,188,907		58,384,651	453,450,000
Schedule Contingency Impact						409,955	410,000
2.1 01 Lands and Damages	53,111,628			3,147,108		8,193,015	64,450,000
2.1.1 05 Property Acquisition Assistance	7,239,991	2009	1.04	289,600	10%	687,890	8,220,000
2.1.2 10 Property Acquisition	28,406,743	2009	1.08	2,158,912	12%	3,396,255	33,960,000
2.1.3 15 Property Relocations	17,464,894	2009	1.04	698,596	24%	4,108,869	22,270,000
2.2 02 Relocations	32,887,990			3,189,179		10,118,398	46,200,000
2.2.1 05 Mobilization and Demobilization	10,230	2009	1.07	729	15%	1,576	20,000
2.2.2 10 General Demolition and Site Preparation	10,293,929	2009	1.07	733,185	16%	1,608,755	12,640,000
2.2.3 15 Utility Relocation - Sanitary Sewer, Potable Water, Storm Sewer and Natural Gas	10,444,027	2010	1.11	1,135,452	27%	2,792,557	14,370,000
2.2.4 20 Utility Relocation - Electrical and Communication	2,873,548	2010	1.11	312,406	27%	766,493	3,950,000
2.2.5 25 Utility Relocation - Transmission Lines	9,266,254	2010	1.11	1,007,407	53%	4,949,016	15,220,000
2.3 04 Dams	42,239,100			11,500,831		8,731,324	62,470,000
2.3.1 05 Samuels Avenue Dam	30,949,414	2014	1.27	8,426,884	18%	5,665,737	45,040,000
2.3.2 10 Marine Creek Low Water Dam/Lock	11,289,686	2014	1.27	3,073,947	27%	3,065,588	17,430,000
2.4 06 Fish and Wildlife Facilities	10,835,246			2,006,769		1,045,694	13,890,000
2.4.1 10 Riverside Oxbow/Gateway	10,166,517	2012	1.19	1,908,116	9%	944,962	13,020,000
2.4.2 05 Rockwood Park	668,729	2011	1.15	98,653	15%	100,732	870,000
2.5 08 Roads, Railroads and Bridges	70,579,566			11,534,509		11,948,896	94,060,000
2.5.1 05 Henderson Bridge and Roadway	19,398,453	2011	1.15	2,861,718	18%	3,585,619	25,850,000
2.5.2 10 White Settlement Bridge and Roadway	14,813,840	2011	1.15	2,185,382	18%	2,693,425	19,690,000
2.5.3 15 Main Street Bridge and Roadway	19,594,591	2011	1.15	2,890,653	18%	3,516,537	26,000,000
2.5.4 20 White Settlement Extension Bridge and Roadway	4,705,205	2016	1.36	1,707,506	19%	899,765	7,310,000
2.5.5 25 Other Street Modifications	2,841,232	2010	1.11	308,893	9%	267,510	3,420,000
2.5.6 30 Riverside Oxbow Park	5,934,883	2011	1.15	875,532	11%	659,990	7,470,000
2.5.7 35 Riverside Gateway Park	1,196,511	2012	1.19	224,569	11%	130,596	1,550,000
2.5.8 40 Bypass Channel Pedestrian Bridges	2,094,852	2013	1.23	480,256	9%	195,454	2,770,000
2.6 13 Pumping Plants	5,622,722			2,040,471		766,547	8,430,000
2.6.1 05 Stormwater Pumping Facility	5,622,722	2016	1.36	2,040,471	14%	766,547	8,430,000
2.7 14 Recreation Facilities	22,269,848			6,772,873		1,861,029	30,900,000
2.7.1 05 Water Feature	12,264,109	2016	1.36	4,450,613	9%	1,161,066	17,880,000
2.7.2 10 Samuels Avenue	308,904	2015	1.32	97,864	8%	24,866	430,000
2.7.3 15 Marine Creek	3,180,897	2015	1.32	1,007,737	8%	256,051	4,440,000
2.7.4 20 Ham Branch	39,958	2012	1.19	7,500	9%	3,502	50,000
2.7.5 25 Riverside Park	594,394	2012	1.19	111,560	6%	37,191	740,000
2.7.6 30 Rockwood Park - West	156,711	2011	1.15	23,118	8%	12,735	190,000
2.7.7 35 Riverside Oxbow/Gateway Park	5,724,877	2012	1.19	1,074,481	6%	365,617	7,170,000
2.8 15 Flood Control and Diversion Structures	12,116,580			4,397,075		2,682,091	19,200,000
2.8.1 10 Trinity Point	12,116,580	2016	1.36	4,397,075	22%	2,682,091	19,200,000
2.9 30 Planning, Engineering, and Design	32,957,096			0	9%	3,037,301	35,990,000
2.10 31 Construction Management	40,432,378			0	3%	1,245,016	41,680,000
2.11 33 HTRV	24,822,555			2,600,092		8,345,386	35,770,000
2.11.1 Environmental Assessments	2,628,880	2009	1.07	187,242	34%	883,834	3,700,000
2.11.2 Site Remediation	19,832,531	2010	1.11	2,156,151	34%	6,667,731	28,660,000
2.11.3 Remediation Program Management	2,361,144	2010	1.11	256,699	34%	793,821	3,410,000

Comment Report: All Comments
 Project: Fort Worth, Central City
 Review: Cost ICR
 Displaying 92 comments for the criteria specified in this report.

1750 ms to run this page

Id ▲	Discipline	DocType	Spec	Sheet	Detail
1827750	Cost Engineering	Other	n/a'	n/a	n/a
Coordinating Discipline(s): Project Management The Cost, Schedule, Risk review will use the following regulations and guidance in performing the review. The review will assume feasibility level: ER 1105-2-100, Planning Guidance Notebook ER 1110-2-1150, Engineering and Design for Civil Works Projects ER 1110-1-1300, Cost Engineering Policy and General Requirements ER 1110-2-1302, Civil Works Cost Engineering EI 01D010, Engineering Instructions, Constr Cost Estimates (or soon to be UFC 3-740-05) EC 1110-1-105, Independent Technical Review EC 1105-2-408, Peer Review of Decision Documents Engineering & Construction Bulletin, 11 June 06, MCACES CECW-CP Memorandum, Peer Review Process, 30 Mar 2007 Engineering & Construction Bulletin, 10 Sep 07, RISK ANALYSIS Submitted By: Jim Neubauer (509-527-7332). Submitted On: 12-Mar-08					
1-0	Evaluation Concurred No Reponse Required Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08				
1-1	Backcheck Recommendation Close Comment Closed without comment. Submitted By: Jim Neubauer (509-527-7332) Submitted On: 07-Apr-08				
Current Comment Status: Comment Closed					
1827751	Cost Engineering	Other	n/a'	n/a	n/a
Coordinating Discipline(s): Project Management It is our understanding that the project has already received congressional authorization including a funding cap of \$220M. Of that value, the federal share is \$110M. Because authorization and funding have been established, the following review is considered an Independent Cost Review (ICR) since no engineering technical products are under consideration. The following review is intended to serve as a baseline check of cost, schedule and risk as related to the funding cap. The majority of the comments will be based on the federal share; however, there may be comments that relate to total project and cost as deemed necessary or prudent. Submitted By: Jim Neubauer (509-527-7332). Submitted On: 12-Mar-08					
1-0	Evaluation Concurred No response required Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08				
1-1	Backcheck Recommendation Close Comment Closed without comment. Submitted By: Jim Neubauer (509-527-7332) Submitted On: 07-Apr-08				
Current Comment Status: Comment Closed					
1827752	Cost Engineering	Other	n/a'	n/a	n/a
Coordinating Discipline(s): Project Management Trace-ability: Each electronic document, page or tab, should be archived, indicating the date, document source and name of the developer.					

Submitted By: [Jim Neubauer](#) (509-527-7332). Submitted On: 12-Mar-08

1-0	<p>Evaluation Concurred Document sources, development date, developer information and other pertinent information have been added to the document.</p> <p>Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08</p>
------------	--

1-1	<p>Backcheck Recommendation Close Comment Closed without comment.</p> <p>Submitted By: Jim Neubauer (509-527-7332) Submitted On: 07-Apr-08</p>
------------	---

Current Comment Status: **Comment Closed**

1827758	Cost Engineering	Other	n/a'	n/a	n/a
---------	------------------	-------	------	-----	-----

Coordinating Discipline(s): Project Management

Risk: The analysis depicts a contingency of 16% for total project. While a good deal of study has been completed and a solid plan developed, the 16% seems low and requires further scrutiny. Consider risk evaluation to the feature level. Also, consider a method to establish the federal risk as compared to total project. The federal risks will likely be somewhat different regarding contract acquisition and contract solicitation practices.

Submitted By: [Jim Neubauer](#) (509-527-7332). Submitted On: 12-Mar-08

1-0	<p>Evaluation Concurred Risk analysis has been performed to the feature level. Risks specific to the Federal portion of the project have been identified and incorporated into the risk analysis.</p> <p>Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08</p>
------------	---

1-1	<p>Backcheck Recommendation Close Comment Closed without comment.</p> <p>Submitted By: Jim Neubauer (509-527-7332) Submitted On: 07-Apr-08</p>
------------	---

Current Comment Status: **Comment Closed**

1827761	Cost Engineering	Other	n/a'	n/a	n/a
---------	------------------	-------	------	-----	-----

Coordinating Discipline(s): Project Management

Risk Study: The study must assume that the estimate is based on the "most likely" cost, and distribution factors reflecting the most likely case. A considerable concern is to establish whether the cost estimate reflects the "most likely" case. With the known information, the estimate can be improved to better reflect the "most likely" case. Our review will consider the MII under the "most likely" estimate conditions. Any estimate revisions will require a restudy of the risk items.

Submitted By: [Jim Neubauer](#) (509-527-7332). Submitted On: 12-Mar-08

1-0	<p>Evaluation Concurred As the MII estimate is refined and improved in the future, the risk analysis will need to be refined and improved accordingly.</p> <p>Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08</p>
------------	--

1-1	<p>Backcheck Recommendation Close Comment Closed without comment.</p> <p>Submitted By: Jim Neubauer (509-527-7332) Submitted On: 07-Apr-08</p>
------------	---

Current Comment Status: **Comment Closed**

1827765	Cost Engineering	Other	n/a'	n/a	n/a
Coordinating Discipline(s): Project Management					
Risk Register: Improve the notes regarding assumptions and concerns. This is important in archiving the risks considered by the team. Also, the Risk team must include the estimator, because he has the best understanding of the estimate assumptions and how they relate to any risks.					
Submitted By: Jim Neubauer (509-527-7332). Submitted On: 12-Mar-08					
1-0	Evaluation Concurred Notes have been improved to include assumptions and concerns. Cost estimator was involved in previous risk analysis and will continue to be as the project advances. The involvement has and will be documented for improved clarity. Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08				
1-1	Backcheck Recommendation Close Comment Closed without comment. Submitted By: Jim Neubauer (509-527-7332) Submitted On: 07-Apr-08				
Current Comment Status: Comment Closed					
1827767	Cost Engineering	Other	n/a'	n/a	n/a
Coordinating Discipline(s): Project Management					
Risk Register – Risk Level: Explain how the risk levels were established as low – moderate-high. For example, what process was used to establish that fuel was a high risk? How was it determined that material is considered high risk? Normally, we would have used a more detailed MII estimate that demonstrates crews and productivity so that we can study labor, equipment, materials and productivity regarding specific parameters that represent high costs within the estimate.					
Submitted By: Jim Neubauer (509-527-7332). Submitted On: 12-Mar-08					
1-0	Evaluation Concurred A narrative has been included to describe the iterative process by which risk levels were established by the project team. Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08				
1-1	Backcheck Recommendation Open Comment Include within the narrative that you included all risk events; low, medium and high, within the Crystall Ball study. Submitted By: Jim Neubauer (509-527-7332) Submitted On: 07-Apr-08				
1-2	Backcheck Recommendation Close Comment Issue explained and resolved via telephone Submitted By: Jim Neubauer (509-527-7332) Submitted On: 17-Apr-08				
2-0	Evaluation Concurred The narrative will be revised to indicate that all risks identified on the risk register were included in the risk analysis. The description of various factors that influenced the selection of risk levels (i.e., high, moderate and low) will be expanded so that the iterative nature of the PDTs involvement is clarified. Submitted By: Michael Oleson (817-332-8727) Submitted On: 15-Apr-08				
<i>Backcheck not conducted</i>					
Current Comment Status: Comment Closed					
1827768	Cost Engineering	Other	n/a'	n/a	n/a

Coordinating Discipline(s): Project Management					
Risk Register: I question whether all major risks have been adequately considered. Consider risk in contract acquisition strategy, escalation variances, construction productivity, haul and route access and speeds, subcontractor assignments, project management, contract cost growth (modifications) and technical complexity.					
Submitted By: Jim Neubauer (509-527-7332). Submitted On: 12-Mar-08					
1-0	Evaluation Concurred The suggested risk factors were evaluated against the current risk register and (1) new risk factors will be added or (2) existing risk factors will be modified to capture the suggested risks. At this time, escalation variances will continue to be analyzed explicitly on a factor-specific basis. Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08				
1-1	Backcheck Recommendation Close Comment Closed without comment. Submitted By: Jim Neubauer (509-527-7332) Submitted On: 07-Apr-08				
Current Comment Status: Comment Closed					
1827773	Cost Engineering	Other	n/a'	n/a	n/a
Coordinating Discipline(s): Project Management					
Risk Register – Material Prices: Consider breaking the material risk concern into subsets for major materials such as steel, concrete, aggregates. This may better capture specific material risks.					
Submitted By: Jim Neubauer (509-527-7332). Submitted On: 12-Mar-08					
1-0	Evaluation Concurred Material price risk have been further assessed in subcategories that include steel and concrete. Aggregate prices have been studied to determine if a separate category is warranted and are not felt to require one at this time. Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08				
1-1	Backcheck Recommendation Close Comment Closed without comment. Submitted By: Jim Neubauer (509-527-7332) Submitted On: 07-Apr-08				
Current Comment Status: Comment Closed					
1827775	Cost Engineering	Other	n/a'	n/a	n/a
Coordinating Discipline(s): Project Management					
Risk Register – Productivity: Recommend that productivity risk be considered in high cost areas, such as earthen haul and placement, concrete wall construction.					
Submitted By: Jim Neubauer (509-527-7332). Submitted On: 12-Mar-08					
1-0	Evaluation Concurred Productivity risk has been identified on the risk register and impacts quantified for high cost areas. Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08				
1-1	Backcheck Recommendation Close Comment Closed without comment. Submitted By: Jim Neubauer (509-527-7332) Submitted On: 07-Apr-08				

Current Comment Status: Comment Closed					
1827777	Cost Engineering	Other	n/a'	n/a	n/a
Coordinating Discipline(s): Project Management					
Risk Register – Fuel Costs: I'm surprised to see the fuel rated as a high cost. I agree that it is a concern, the question is whether the studied risk is concerned with near term higher costs verses long term rises. Long term fuel increases belong in escalation.					
Submitted By: Jim Neubauer (509-527-7332). Submitted On: 12-Mar-08					
1-0	Evaluation Non-concurred The bulk of the project is a major earthmoving project with significant hauling costs. A brief or moderate spike in fuel costs could have a significant short term adverse impact that would not be expected to be captured in escalation variances. Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08				
1-1	Backcheck Recommendation Close Comment Closed without comment. Submitted By: Jim Neubauer (509-527-7332) Submitted On: 07-Apr-08				
Current Comment Status: Comment Closed					
1827780	Cost Engineering	Other	n/a'	n/a	n/a
Coordinating Discipline(s): Project Management					
Risk Register: Consider excluding the low risk items from the Crystal Ball study.					
Submitted By: Jim Neubauer (509-527-7332). Submitted On: 12-Mar-08					
1-0	Evaluation Non-concurred Exclusion of risk register items identified as "low risk" results in an overall cost contingency reduction of approximately one full percentage point. That degree of contingency reduction may have an adverse impact on project budgeting, management and performance monitoring. Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08				
1-1	Backcheck Recommendation Close Comment The low risk items were included. The sensitivity chart indicates them as "other." Submitted By: Jim Neubauer (509-527-7332) Submitted On: 07-Apr-08				
Current Comment Status: Comment Closed					
1827782	Cost Engineering	Other	n/a'	n/a	n/a
Coordinating Discipline(s): Project Management					
Risk Register – Equipment: The register indicates a moderate risk. I question this rating. The MII estimate uses a fairly conservative equipment cost. I would expect the risk to be more related to rental equipment or subcontracts. The MII estimate currently does not break out subcontracts. I envision subcontract potential for truck hauling, rebar tying, wall formwork.					
Submitted By: Jim Neubauer (509-527-7332). Submitted On: 12-Mar-08					
1-0	Evaluation Concurred Additional detail provided in the revised cost estimate, particularly regarding subcontract breakdown and direct equipment costs, has been incorporated into the risk analysis. The risk register has been revised accordingly.				

	Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08				
1-1	Backcheck Recommendation Close Comment Closed without comment. Submitted By: Jim Neubauer (509-527-7332) Submitted On: 07-Apr-08				
	Current Comment Status: Comment Closed				
1827783	Cost Engineering	Other	n/a'	n/a	n/a
Coordinating Discipline(s): Project Management					
Risk Study – Customization Tab: Better clarification is needed. Suggest that a crosswalk be developed that indicates what items from the Impact Table tab are used in the Customization tab.					
Submitted By: Jim Neubauer (509-527-7332). Submitted On: 12-Mar-08					
1-0	Evaluation Concurred A crosswalk and narrative description of the customization tab has been developed and provided in report format. Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08				
1-1	Backcheck Recommendation Close Comment Closed without comment. Submitted By: Jim Neubauer (509-527-7332) Submitted On: 07-Apr-08				
	Current Comment Status: Comment Closed				
1827787	Cost Engineering	Other	n/a'	n/a	n/a
Coordinating Discipline(s): Project Management					
Risk Study: At the appropriate time, the study should include a report, discussing process, software, approach and methodology, risk items considered (risk register), major risk items found, cost and schedule impact to total project.					
Submitted By: Jim Neubauer (509-527-7332). Submitted On: 12-Mar-08					
1-0	Evaluation Concurred Final study submittal includes a report. Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08				
1-1	Backcheck Recommendation Close Comment Closed without comment. Submitted By: Jim Neubauer (509-527-7332) Submitted On: 07-Apr-08				
	Current Comment Status: Comment Closed				
1827789	Cost Engineering	Other	n/a'	n/a	n/a
Coordinating Discipline(s): Project Management					
Risk Study Summation: The risk study requires further work and must be based on the revised estimate (most likely case), forthcoming after this review. The risk study should include the lead estimator to ensure that the risk concerns from the estimate are adequately captured and studied, based on his knowledge of the estimate.					
Submitted By: Jim Neubauer (509-527-7332). Submitted On: 12-Mar-08					
1-0	Evaluation Concurred				

	<p>The risk analysis has been updated based on the revised cost estimate. Cost estimator was involved in previous risk analysis and will continue to be as the project advances.</p> <p>Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08</p>				
1-1	<p>Backcheck Recommendation Close Comment Closed without comment.</p> <p>Submitted By: Jim Neubauer (509-527-7332) Submitted On: 07-Apr-08</p>				
<p>Current Comment Status: Comment Closed</p>					
1827811	Cost Engineering	Other	n/a'	n/a	n/a
<p>Coordinating Discipline(s): Project Management</p> <p>Schedule Risk: It is my understanding that the schedule risk is still evolving. The schedule cannot be completed until a confident estimate has been established. At that time, a better value schedule and schedule risk study can be developed. Address critical path and near-critical path elements only within the schedule risk.</p> <p>Submitted By: Jim Neubauer (509-527-7332). Submitted On: 12-Mar-08</p>					
1-0	<p>Evaluation Concurred The schedule risk analysis has been updated based on the revised cost estimate. Only critical path and near critical path tasks have been considered uncertain in the revised schedule risk analysis.</p> <p>Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08</p>				
1-1	<p>Backcheck Recommendation Open Comment The resulting schedule growth risk should be portrayed for those risk items that carry an added escalation risk. The escalation amount would fall into the contingency value, with an added percent.</p> <p>Submitted By: Jim Neubauer (509-527-7332) Submitted On: 07-Apr-08</p>				
1-2	<p>Backcheck Recommendation Close Comment Issue studied and resolved via telephone.</p> <p>Submitted By: Jim Neubauer (509-527-7332) Submitted On: 17-Apr-08</p>				
2-0	<p>Evaluation Concurred The 80% confidence level schedule contingency of 154 work days will be incorporated into the cost risk analysis as a separate contingency. The contingency will be calculated as the escalation cost impact resulting from adding 154 work days to the most likely project duration. The cost impact will be shown as separate contingency costs for both the Federal 220 Project and Non-Federal Project. Further allocation of the schedule-related cost contingency to the task level or feature level will not be performed.</p> <p>Submitted By: Michael Oleson (817-332-8727) Submitted On: 15-Apr-08</p>				
<p><i>Backcheck not conducted</i></p>					
<p>Current Comment Status: Comment Closed</p>					
1828879	Cost Engineering	Cost Estimate	n/a'	n/a	n/a
<p>(Document Reference: MII Estimate)</p> <p>Coordinating Discipline(s): Cost Engineering</p> <p>The price level of the construction estimate is not clearly indicated in the MII project notes. The project properties screen shows a preparation date of 2/12/2008, escalation index date of 9/30/2007, and effective pricing date of 2/12/2008. The markups tab of Project Properties shows a list of many escalation end dates of 10/31/2007. What is the estimate price level??</p> <p>Submitted By: Gareth Clausen (509 527-7587). Submitted On: 12-Mar-08</p>					

1-0	<p>Evaluation Concurred</p> <p>Notes clarified in estimate. The estimate price level is 10/31/2007. The previous MCACES MFW estimates were prepared in 2005 dollars. The costs in the MII estimate are escalated to 10/31/2007 based on the Civil Works Construction Cost Index revised 09/30/2007.</p> <p>Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08</p>
1-1	<p>Backcheck Recommendation Open Comment</p> <p>The response to this comment is "Notes clarified in estimate." A word search of the project notes did not find any occurrences of 'price level'. IT DOESNOT APPEAR THAT THE RESPONSE STATING THAT THE NOTES WERE CLARIFIED WAS DONE. The casual reader has no clue as to the price level of this estimate. The notes were not clarified.</p> <p>Submitted By: Gareth Clausen (509 527-7587) Submitted On: 07-Apr-08</p>
1-2	<p>Backcheck Recommendation Close Comment</p> <p>A Tele-Conference was held on April 14th. The comment was discussed and clarified.</p> <p>Submitted By: Gareth Clausen (509 527-7587) Submitted On: 14-Apr-08</p>
<p>Current Comment Status: Comment Closed</p>	

1828882	Cost Engineering	Cost Estimate	n/a'	n/a	n/a
---------	------------------	---------------	------	-----	-----

(Document Reference: MII Estimate)
Coordinating Discipline(s): Cost Engineering

No documents or information provided to indicate that the current estimate was previously reviewed and checked by the preparer's office. During the site visit the review was told that older estimates were reviewed. For quality assurance a document trail should be provided indicating review and backcheck of estimate revisions.

Submitted By: [Gareth Clausen](#) (509 527-7587). Submitted On: 12-Mar-08

1-0	<p>Evaluation Concurred</p> <p>Notes expanded to provide details on review checks. All estimates were prepared by qualified estimating staff within the CDM Constructors division of the firm. During the estimating process an ongoing review of all work takes place as the estimate is being prepared. At the completion of all estimates, the Regional Chief Estimator performs a QA review of the estimate, to verify that it is within the standard guidelines of CDM Constructors. The protocol was used for the preparation of the FWCC estimate.</p> <p>Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08</p>
1-1	<p>Backcheck Recommendation Open Comment</p> <p>A word search of the project notes did not find any reference or document trail of the review process indicated in this comment response. WHAT NOTES WERE EXPANDED?</p> <p>Submitted By: Gareth Clausen (509 527-7587) Submitted On: 07-Apr-08</p>
1-2	<p>Backcheck Recommendation Close Comment</p> <p>A Tele-Conference was held on April 14th. The comment was discussed and clarified. CDM's review process for this estimate was presented.</p> <p>Submitted By: Gareth Clausen (509 527-7587) Submitted On: 14-Apr-08</p>
<p>Current Comment Status: Comment Closed</p>	

1828888	Cost Engineering	Cost Estimate	n/a'	n/a	n/a
---------	------------------	---------------	------	-----	-----

(Document Reference: MII Estimate)
Coordinating Discipline(s): Cost Engineering

A Total Project Summary (Federal 220) is not provided. All costs appear to be included into the MII estimate as cost line items. A report of total project cost on an inflated dollar basis through the project schedule was not provided. Recommend a summary of Total project costs in constant dollars and inflated dollars be provided to the Project Manager.

Submitted By: [Gareth Clausen](#) (509 527-7587). Submitted On: 12-Mar-08

1-0 Evaluation **Concurred**
 The constant dollar estimate was provide for review per ICR meeting discussion on March 5, 2008. Both constant dollar and escalated to mid-point cost estimates have been prepared and are presented in the revised Total Project Summary table. MII Estimate has been divided into to sub-projects/ folders indicating cost line items included in the Federal 200 vs. Non-Federal project components.
 Submitted By: [Michael Oleson](#) (817-332-8727) Submitted On: 31-Mar-08

1-1 Backcheck Recommendation **Close Comment**
 Closed without comment.
 Submitted By: [Gareth Clausen](#) (509 527-7587) Submitted On: 07-Apr-08

Current Comment Status: **Comment Closed**

1828890	Cost Engineering	Cost Estimate	n/a'	n/a	n/a
---------	------------------	---------------	------	-----	-----

(Document Reference: [MII Estimate](#))
Coordinating Discipline(s): Cost Engineering

It appears that a 20% contingency is applied at the construction item sub-folder levels, a 10% contingency on lands and damages, a 20% contingency on cultural resource preservation, no contingency on feasibility studies, planning, engineering and design, and construction management. To answer the question; Are appropriate contingencies included? Probably, However the application of contingencies is buried in the MII estimate detail and not clearly visible for the review, or the sponsor. A Total Project Summary would clearly show these items.

Submitted By: [Gareth Clausen](#) (509 527-7587). Submitted On: 12-Mar-08

1-0 Evaluation **Concurred**
 Project contingencies have been removed from the MII estimate per direction from ICR. Contingencies have been added separately in the Total Project Summary based on the revised risk based analysis.
 Submitted By: [Michael Oleson](#) (817-332-8727) Submitted On: 31-Mar-08

1-1 Backcheck Recommendation **Close Comment**
 Closed without comment.
 Submitted By: [Gareth Clausen](#) (509 527-7587) Submitted On: 07-Apr-08

Current Comment Status: **Comment Closed**

1828896	Cost Engineering	Cost Estimate	n/a'	n/a	n/a
---------	------------------	---------------	------	-----	-----

(Document Reference: [MII Estimate](#))
Coordinating Discipline(s): Cost Engineering

Are two total project cost estimates displayed in the feasibility report; one based on constant dollars and one based on projected inflation rates? No – Example: TRWD gate, Schedule Activity ID 158, MII Folder Source Tag 15. EM 1110-2-1304 CWBS 15, Floodway Control & Diversion Structure; FY2008 to FY2015 782.93 to 679.59 = 15.2%. The following escalation values for all subfolders are: 7.07, 7.07, 7.07, 12.87, 7.07, 12.87, 12.87, 12.87, 7.07. Example: Ham Branch, Schedule Activity ID 225, MII Folder Source Tag 15. EM 1110-2-1304 CWBS 15, Composite Index; FY2008 to FY2009 687.63 to 702.76 = 2.2% and FY2008 to FY2012, 687.63 to 746.51 = 8.5%. The following escalation values for all subfolders are: 6.39, 6.39, 6.39, 6.39, 9.56. The MII Project Properties show the following escalation rates and dates. 7.07% 1/31/2006 to 10/31/2007 6.39% 1/31/2006 to 10/31/2007 12.87% 1/31/2005 to 10/31/2007 9.56% 1/31/2005 to 10/31/2007 It appears the estimate is at October 2007 price level. It appears there is no escalation for inflation according to the project schedule.

Submitted By: [Gareth Clausen](#) (509 527-7587). Submitted On: 12-Mar-08

1-0	<p>Evaluation Concurred Both constant dollar and escalated dollar estimates have been developed. Escalation for inflation according to the project schedule have been provided in the total project summary.</p> <p>Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08</p>				
1-1	<p>Backcheck Recommendation Close Comment Yes and NO, The first three columns in the Total Project Summary Table appears to bring all cost data to a "2007 \$" price level on a constant dollar basis. So, the "Project Cost - 2007 \$" is not a PROJECT cost because it doesn't include contingencies. -- The last column appears to represent the Project Cost inflated through the project schedule, sometimes refered to as the fully funded cost estimate.</p> <p>Submitted By: Gareth Clausen (509 527-7587) Submitted On: 07-Apr-08</p>				
Current Comment Status: Comment Closed					
1828897	Cost Engineering	Cost Estimate	n/a'	n/a	n/a
<p>(Document Reference: MII Estimate) Coordinating Discipline(s): Cost Engineering</p> <p>Is the non-Federal sponsor's obligations clearly shown? Because of the unique authorization the Federal dollar participation is clear. However, the value of construction activities supported by the Federal dollar is not clearly presented.</p> <p>Submitted By: Gareth Clausen (509 527-7587). Submitted On: 12-Mar-08</p>					
1-0	<p>Evaluation Concurred Federal versus Non-Federal cost line items and obligations are identified in the MII estimate and Total Project Summary. This identifies the federal and non-federal cost components. In addition several tables are shown in the project report which identify both the responsibility and timing of local funding requirements, thus providing a clearer representation of requirements.</p> <p>Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08</p>				
1-1	<p>Backcheck Recommendation Close Comment The evaluation text is fine. The point of the comment is; if any cost growth occurs the sponsor would have to pickup the additional cost.</p> <p>Submitted By: Gareth Clausen (509 527-7587) Submitted On: 07-Apr-08</p>				
Current Comment Status: Comment Closed					
1828902	Cost Engineering	Cost Estimate	n/a'	n/a	n/a
<p>(Document Reference: MII Estimate) Coordinating Discipline(s): Cost Engineering</p> <p>The MII project notes do not address significant volatile cost items in the project scope</p> <p>Submitted By: Gareth Clausen (509 527-7587). Submitted On: 12-Mar-08</p>					
1-0	<p>Evaluation Concurred The MII project notes have been updated with a discussion of the significant cost items in the project scope. In addition, the risk analysis has included specific cost items which may have volatile pricing.</p> <p>Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08</p>				
1-1	<p>Backcheck Recommendation Open Comment None of this is found in the project notes.</p> <p>Submitted By: Gareth Clausen (509 527-7587) Submitted On: 07-Apr-08</p>				
1-2	<p>Backcheck Recommendation Close Comment</p>				

<p>A Tele-Conference was held on April 14th. The comment was discussed and clarified. Identify in the volatile cost items is handled in the risk analysis.</p> <p>Submitted By: Gareth Clausen (509 527-7587) Submitted On: 14-Apr-08</p>					
<p>Current Comment Status: Comment Closed</p>					
1828903	Cost Engineering	Cost Estimate	n/a'	n/a	n/a
<p>(Document Reference: MII Estimate) Coordinating Discipline(s): Cost Engineering</p> <p>The MII project notes do not describe risk analysis for establishing contingencies</p> <p>Submitted By: Gareth Clausen (509 527-7587). Submitted On: 12-Mar-08</p>					
<p>1-0 Evaluation Concurred The MII project notes have been updated with a discussion of the risk analysis establishing contingencies. Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08</p>					
<p>1-1 Backcheck Recommendation Close Comment Closed without comment. Submitted By: Gareth Clausen (509 527-7587) Submitted On: 07-Apr-08</p>					
<p>Current Comment Status: Comment Closed</p>					
1828908	Cost Engineering	Cost Estimate	n/a'	n/a	n/a
<p>(Document Reference: MII Estimate) Coordinating Discipline(s): Cost Engineering,Cost Engineering</p> <p>Throughout the MII estimate descriptions include the word "borrow". Are borrow areas needed and identified? Borrow areas are not clearly identified.</p> <p>Submitted By: Gareth Clausen (509 527-7587). Submitted On: 12-Mar-08</p> <p>Revised 17-Mar-08.</p>					
<p>1-0 Evaluation Concurred The word "borrow" was part of the general description in the 2006 Cost Book. In general these line items are for cut and fill during earthwork. The term borrow has been removed from these items. Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08</p>					
<p>1-1 Backcheck Recommendation Close Comment Closed without comment. Submitted By: Gareth Clausen (509 527-7587) Submitted On: 07-Apr-08</p>					
<p>Current Comment Status: Comment Closed</p>					
1828909	Cost Engineering	Cost Estimate	n/a'	n/a	n/a
<p>(Document Reference: MII Estimate) Coordinating Discipline(s): Cost Engineering</p> <p>The MII project notes do not address equipment, labor, or material availability.</p> <p>Submitted By: Gareth Clausen (509 527-7587). Submitted On: 12-Mar-08</p>					

1-0	<p>Evaluation Concurred MII notes have been updated. The site is located in and near major metropolitan areas (Fort Worth, Texas and Dallas, Texas). Materials, equipment, and labor are expected to be available in sufficient quantities.</p> <p>Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08</p>				
1-1	<p>Backcheck Recommendation Close Comment Closed without comment.</p> <p>Submitted By: Gareth Clausen (509 527-7587) Submitted On: 07-Apr-08</p>				
<p>Current Comment Status: Comment Closed</p>					
1828911	Cost Engineering	Cost Estimate	n/a'	n/a	n/a
<p>(Document Reference: MII Estimate) [This item is flagged as a critical issue.] Coordinating Discipline(s): Cost Engineering</p> <p>MII Project Notes do not address environmental concerns during construction.</p> <p>Submitted By: Gareth Clausen (509 527-7587). Submitted On: 12-Mar-08</p>					
1-0	<p>Evaluation Concurred The MII project notes have been updated to include a short discussion of how environmental concerns will be addressed during construction.</p> <p>Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08</p>				
1-1	<p>Backcheck Recommendation Close Comment Could not find environmental concerns addressed during construction.</p> <p>Submitted By: Gareth Clausen (509 527-7587) Submitted On: 07-Apr-08</p>				
<p>Current Comment Status: Comment Closed</p>					
1828914	Cost Engineering	Cost Estimate	n/a'	n/a	n/a
<p>(Document Reference: MII Estimate) Coordinating Discipline(s): Cost Engineering</p> <p>The MII Project Notes do not address an Acquisition Plan (When and method of acquisition). It appears the estimate is structured as though all work is under one contract. This should be clearly indicated.</p> <p>Submitted By: Gareth Clausen (509 527-7587). Submitted On: 12-Mar-08</p>					
1-0	<p>Evaluation Concurred Assumptions have been made for the likely major contracts that will be awarded as part of this project. The MII cost estimate and project notes have been revised to include this breakdown.</p> <p>Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08</p>				
1-1	<p>Backcheck Recommendation Close Comment Closed without comment.</p> <p>Submitted By: Gareth Clausen (509 527-7587) Submitted On: 07-Apr-08</p>				
<p>Current Comment Status: Comment Closed</p>					
1828917	Cost Engineering	Cost Estimate	n/a'	n/a	n/a
<p>(Document Reference: MII Estimate, General Estimate Layout - Title Structure) Coordinating Discipline(s): Cost Engineering</p> <p>The title structure and the descriptions for many of the items is not adequate to determine what was being estimated. Example: "Concrete" when the work under this title is retaining walls. Review and clarify all titles.</p>					

Submitted By: [Gareth Clausen](#) (509 527-7587). Submitted On: 12-Mar-08

1-0	<p>Evaluation Concurred The title structure of the MII estimate have been modified to better describe the work being estimated.</p> <p>Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08</p>
1-1	<p>Backcheck Recommendation Close Comment Closed without comment.</p> <p>Submitted By: Gareth Clausen (509 527-7587) Submitted On: 07-Apr-08</p>
Current Comment Status: Comment Closed	

1828923	Cost Engineering	Cost Estimate	n/a'	n/a	n/a
---------	------------------	---------------	------	-----	-----

(Document Reference: [MII Estimate, General Estimate Layout - Title Structure](#))

Coordinating Discipline(s): Cost Engineering

Were good unit title task costs / assemblies developed to support the development of a reasonable construction schedule? NO, The construction schedules within the project schedule are extremely generic. Many of the cost items are based on a crew of 1 peice of equipment and 1 operator resulting in thousands of hours for the cost item making it impossible to develop a reasonable construction schedule. Recommend reasonable crew composition in the estimate.

Submitted By: [Gareth Clausen](#) (509 527-7587). Submitted On: 12-Mar-08

1-0	<p>Evaluation Concurred Crew composition has been included in the estimate based on the proposed construction schedule and projected equipment that was calculated as part of the air quality analysis.</p> <p>Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08</p>
1-1	<p>Backcheck Recommendation Open Comment projected equipment that was calculated as part of the air quality analysis? The project notes don't address this. What significance does this have to the estimate. Since it is mentioned in the evaluation text the review would expect to see the cost of labor, equipment, materials to maintain air quality standards. Where is the cost?</p> <p>Submitted By: Gareth Clausen (509 527-7587) Submitted On: 07-Apr-08</p>
1-2	<p>Backcheck Recommendation Close Comment A Tele-Conference was held on April 14th. The comment was discussed and clarified. The potential numbers of operating equipment was analyzed separately from the estimate and there is no known impact to the estimate.</p> <p>Submitted By: Gareth Clausen (509 527-7587) Submitted On: 14-Apr-08</p>
Current Comment Status: Comment Closed	

1828935	Cost Engineering	Cost Estimate	n/a'	n/a	n/a
---------	------------------	---------------	------	-----	-----

(Document Reference: [MII Estimate, Construction Estimate Details](#))

Coordinating Discipline(s): Cost Engineering

Does the estimate detail the assumptions made for development of the detailed cost items? NO. Many of the cost items are "Per Estimator. Cost based on professional judgement" The 20% contingency may or may not adequately reflect the cost risk. These items should be detailed and estimated as such. IF not this estimate is not feasibility, appears to be similar to ASTM class 4, reconnaissance level.

Submitted By: [Gareth Clausen](#) (509 527-7587). Submitted On: 12-Mar-08

1-0	<p>Evaluation Concurred</p>
------------	------------------------------------

	<p>Additional detail on basis of cost, references and the development of costs have been added were feasible. There are certain items such as electrical work where there is currently insufficient detail to provide detail for cost estimating. The estimating team determined that the design was of such a preliminary nature, that to use detailed pricing would have resulted in a less accurate estimate. Contingency amounts have been removed from the MII estimate and re-calculated based on current Risk Assessment guidelines by feature.</p> <p>Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08</p>				
1-1	<p>Backcheck Recommendation Open Comment</p> <p>Additional detail on basis of cost, references and the development of costs have been added were feasible. GOOD. - - - There are certain items such as electrical work where there is currently insufficient detail to provide detail for cost estimating. AGREE - - - The estimating team determined that the design was of such a preliminary nature, that to use detailed pricing would have resulted in a less accurate estimate. THE REVIEW TOTALLY DISAGREES WITH THIS STATEMENT! WHICH IS BETTER? TO BE 100% OFF ON ONE ITEM OR TO BE 100% OFF ON HALF OR A QUARTER OF THE ITEMS THAT MAKEUP THE WORK BEING ESTIMATED?? !! - - - Contingency amounts have been removed from the MII estimate and re-calculated based on current Risk Assessment guidelines by feature. GOOD</p> <p>Submitted By: Gareth Clausen (509 527-7587) Submitted On: 07-Apr-08</p>				
1-2	<p>Backcheck Recommendation Close Comment</p> <p>A Tele-Conference was held on April 14th. The comment was discussed and clarified. These items were re-evaluated in the risk analysis.</p> <p>Submitted By: Gareth Clausen (509 527-7587) Submitted On: 14-Apr-08</p>				
Current Comment Status: Comment Closed					
1828949	Cost Engineering	Cost Estimate	n/a'	n/a	n/a
<p>(Document Reference: MII Estimate, Construction Estimate Details)</p> <p>Coordinating Discipline(s): Cost Engineering</p> <p>4.104 Do quantities appear reasonable and consistent with the recommended plan? This cannot be determined by this review. Many cost items do not indicate where the quantity is being excavated from and where it is going. This should be clarified or broken down into smaller specific quantities.</p> <p>Submitted By: Gareth Clausen (509 527-7587). Submitted On: 12-Mar-08</p>					
1-0	<p>Evaluation Concurred</p> <p>The MII estimate has been updated to include better descriptions of the work.</p> <p>Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08</p>				
1-1	<p>Backcheck Recommendation Close Comment</p> <p>Closed without comment.</p> <p>Submitted By: Gareth Clausen (509 527-7587) Submitted On: 07-Apr-08</p>				
Current Comment Status: Comment Closed					
1828951	Cost Engineering	Cost Estimate	n/a'	n/a	n/a
<p>(Document Reference: MII Estimate, Construction Estimate Details)</p> <p>Coordinating Discipline(s): Cost Engineering</p> <p>4.105 Are note fields used to briefly explain the detail costs? NO</p> <p>Submitted By: Gareth Clausen (509 527-7587). Submitted On: 12-Mar-08</p>					
1-0	<p>Evaluation Concurred</p> <p>The MII estimate has been updated to include better descriptions of the work.</p>				

	Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08				
1-1	Backcheck Recommendation Close Comment Closed without comment. Submitted By: Gareth Clausen (509 527-7587) Submitted On: 08-Apr-08				
	Current Comment Status: Comment Closed				
1828954	Cost Engineering	Cost Estimate	n/a'	n/a	n/a
(Document Reference: MII Estimate, Construction Estimate Details) Coordinating Discipline(s) : Cost Engineering					
4.106 Does the estimate organize and present a logical sequence of work? Generally it does.					
Submitted By: Gareth Clausen (509 527-7587). Submitted On: 12-Mar-08					
1-0	Evaluation Concurred No response required. Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08				
1-1	Backcheck Recommendation Close Comment Closed without comment. Submitted By: Gareth Clausen (509 527-7587) Submitted On: 07-Apr-08				
	Current Comment Status: Comment Closed				
1828959	Cost Engineering	Cost Estimate	n/a'	n/a	n/a
(Document Reference: MII Estimate, Construction Estimate Details) Coordinating Discipline(s) : Cost Engineering,Cost Engineering,Cost Engineering					
4.108 Does the estimate contain specific detail to make judgment on whether costs are reasonable? NO it does not. There is a preponderance of lump sum, allowance, and professional judgment. 33% of the construction cost is based on "per estimator, judgement, allowance, similar scope. Not acceptable at the feasibility level.					
Submitted By: Gareth Clausen (509 527-7587). Submitted On: 12-Mar-08					
Revised 17-Mar-08.					
1-0	Evaluation Concurred Additional detail has been included in the estimate. Additional detail will be added as the project evolves which will provide great levels of detail reflective of the state of the design. Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08				
1-1	Backcheck Recommendation Close Comment Closed without comment. Submitted By: Gareth Clausen (509 527-7587) Submitted On: 08-Apr-08				
	Current Comment Status: Comment Closed				
1828975	Cost Engineering	Cost Estimate	n/a'	n/a	n/a
(Document Reference: MII Estimate, Labor and Equipment) Coordinating Discipline(s) : Cost Engineering					
4.205 Does crew makeup look reasonable? NO, The crews for major earth moving are 1 each and not nearly balanced based on equipment production i.e. one loader with a number of trucks hauling. Recommend re-visit all crew composition.					

Submitted By: [Gareth Clausen](#) (509 527-7587). Submitted On: 12-Mar-08

1-0	<p>Evaluation Concurred Crew composition has been included in the estimate based on the proposed construction schedule and projected equipment that was calculated as part of the air quality analysis.</p> <p>Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08</p>
------------	---

1-1	<p>Backcheck Recommendation Open Comment Here again is projected equipment that was calculated as part of the air quality analysis. What and where is the cost impact? Labor, equipment, material??</p> <p>Submitted By: Gareth Clausen (509 527-7587) Submitted On: 07-Apr-08</p>
------------	---

1-2	<p>Backcheck Recommendation Close Comment A Tele-Conference was held on April 14th. The comment was discussed and clarified. See previous backcheck comments.</p> <p>Submitted By: Gareth Clausen (509 527-7587) Submitted On: 14-Apr-08</p>
------------	---

Current Comment Status: **Comment Closed**

1828976	Cost Engineering	Cost Estimate	n/a'	n/a	n/a
---------	------------------	---------------	------	-----	-----

(Document Reference: [MII Estimate, Materials](#))
Coordinating Discipline(s): Cost Engineering

4.302 Does earthwork consider BCY, LCY and ECY? NO recommend checking all units of measure and clearly identify swell and shrink.

Submitted By: [Gareth Clausen](#) (509 527-7587). Submitted On: 12-Mar-08

1-0	<p>Evaluation Concurred Earthwork quantities have been reviewed and reflect bank cubic yard (BY), loose cubic yard (LCY), and embankment cubic yard (ECY) units of measure.</p> <p>Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08</p>
------------	---

1-1	<p>Backcheck Recommendation Close Comment Closed without comment.</p> <p>Submitted By: Gareth Clausen (509 527-7587) Submitted On: 07-Apr-08</p>
------------	---

Current Comment Status: **Comment Closed**

1828978	Cost Engineering	Cost Estimate	n/a'	n/a	n/a
---------	------------------	---------------	------	-----	-----

(Document Reference: [MII Estimate, Materials](#))
Coordinating Discipline(s): Cost Engineering

4.305 Does the estimate clarify/include transport costs? NO, this comment is applicable to the gates and equipment for the Clear Fork and TRWD gates. The estimate is based on an old quote and doesn't indicate FOB, delivered to storage, or delivered to site.

Submitted By: [Gareth Clausen](#) (509 527-7587). Submitted On: 12-Mar-08

1-0	<p>Evaluation Concurred The vendor quote for the gate structures includes design, contingency, delivery to the site, and installation. The MII estimate has been updated to reflect this.</p> <p>Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08</p>
------------	---

1-1	<p>Backcheck Recommendation Close Comment Closed without comment.</p>
------------	--

Submitted By: Gareth Clausen (509 527-7587) Submitted On: 08-Apr-08					
Current Comment Status: Comment Closed					
1830512	Cost Engineering	Cost Estimate	n/a'	n/a	n/a
(Document Reference: MII Estimate Mobilization - Preparatory Work, Demobilization – Cleanup)					
Coordinating Discipline(s): Cost Engineering					
4.401 Are mobilization and demobilization costs detailed? NO Recommend some detail estimating for mob & demob.					
Submitted By: Gareth Clausen (509 527-7587). Submitted On: 13-Mar-08					
1-0	Evaluation Concurred Mob/ Demob costs have been detailed in the estimate. Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08				
1-1	Backcheck Recommendation Close Comment Closed without comment. Submitted By: Gareth Clausen (509 527-7587) Submitted On: 08-Apr-08				
Current Comment Status: Comment Closed					
1830521	Cost Engineering	Cost Estimate	n/a'	n/a	n/a
(Document Reference: MII Estimate Mobilization - Preparatory Work, Demobilization – Cleanup)					
Coordinating Discipline(s): Cost Engineering					
4.402 Does the total mobilization and demobilization cost appear reasonable? The review did not find any mobilization costs.					
Submitted By: Gareth Clausen (509 527-7587). Submitted On: 13-Mar-08					
1-0	Evaluation Concurred Mob/ Demob costs have been detailed in the estimate. Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08				
1-1	Backcheck Recommendation Open Comment The review found the following average mobilization and demobilization; Valley Storage - 0.6%, Levee & Floodwalls - 0.1%, Diversion Structures - 0.2%. The costs are assigned to a hauling subcontractor. The amounts appear low. This review is accustomed to a general rule of thumb of 3% to 5% mobilization, preparatory work, and demobilization. Mob/Prep/Demob for large earthwork would be less. Under 1% may not be sufficient cost. What is reasonable? Valley Storage? 1%, Levee & Floodwalls - because of the concrete work? 3%, Diversion Structures - because of the multiple crafts, concrete, mechanical, electrical, etc. the review would expect upto 5%. Recommend a review of the estimated Mob & Demob costs. Submitted By: Gareth Clausen (509 527-7587) Submitted On: 08-Apr-08				
1-2	Backcheck Recommendation Close Comment A Tele-Conference was held on April 14th. The comment was discussed and clarified. Job office overhead was discussed, also, some of the construction site preparatory type work is included in the "construction management". Typically Corps estimating procedures is to include all these costs in job office overhead or mobilization not management. Submitted By: Gareth Clausen (509 527-7587) Submitted On: 14-Apr-08				
Current Comment Status: Comment Closed					
1830538	Cost Engineering	Cost Estimate	n/a'	n/a	n/a
(Document Reference: MII Estimate Miscellaneous Estimate Details)					

Coordinating Discipline(s): Cost Engineering

4.503 Do major unit prices appear reasonable for the locale? (concrete, steel, earthwork, etc.) All major concrete work is based on estimator's judgement. This should be corrected.

Submitted By: [Gareth Clausen](#) (509 527-7587). Submitted On: 13-Mar-08

1-0	<p>Evaluation Concurred</p> <p>Where feasible additional detail was added to the estimate. In some places the estimating team determined that the design was of such a preliminary nature, that to use detailed pricing would have resulted in a less accurate estimate. In places where design lacked sufficient detail estimator judgment or gross estimates were developed using approximate quantities.</p> <p>Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08</p>
------------	--

1-1	<p>Backcheck Recommendation Close Comment</p> <p>The review disagrees</p> <p>Submitted By: Gareth Clausen (509 527-7587) Submitted On: 08-Apr-08</p>
------------	--

Current Comment Status: Comment Closed	
---	--

1830576	Cost Engineering	Cost Estimate	n/a'	n/a	n/a
---------	------------------	---------------	------	-----	-----

(Document Reference: [MII Estimate Construction Schedule](#))

Coordinating Discipline(s): Cost Engineering

7.107 Does the construction schedule consider crew sizes, numbers of crews, related productivity? NO. The review cannot determine the reasonableness of the construction schedules because the crew composition and size is not provided in the estimate. There does not appear to be any correlation between the estimate and schedules.

Submitted By: [Gareth Clausen](#) (509 527-7587). Submitted On: 13-Mar-08

1-0	<p>Evaluation Concurred</p> <p>Crew composition has been included in the estimate.</p> <p>Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08</p>
------------	---

1-1	<p>Backcheck Recommendation Open Comment</p> <p>The evaluation text does not address the comment. There is no correlation between the estimate and construction schedules.</p> <p>Submitted By: Gareth Clausen (509 527-7587) Submitted On: 08-Apr-08</p>
------------	---

1-2	<p>Backcheck Recommendation Close Comment</p> <p>A Tele-Conference was held on April 14th. The comment was discussed and clarified.</p> <p>Submitted By: Gareth Clausen (509 527-7587) Submitted On: 14-Apr-08</p>
------------	--

Current Comment Status: Comment Closed	
---	--

1830592	Cost Engineering	Cost Estimate	n/a'	n/a	n/a
---------	------------------	---------------	------	-----	-----

(Document Reference: [MII Estimate Construction Schedule](#))

Coordinating Discipline(s): Cost Engineering

7.110 Do construction schedules depict critical or time-sensitive orders or procurements? NO The Clear Fork and TRWD gates may require lead time for the operating gates and equipment. This is not addressed in the schedule or the estimate.

Submitted By: [Gareth Clausen](#) (509 527-7587). Submitted On: 13-Mar-08

1-0	<p>Evaluation Concurred</p>
------------	---

	<p>The construction schedule includes a critical path and separate contractors have been defined for large work components. Given the preliminary nature of the project separate items for the acquisition of gate and equipment have not been added at this time. Additional detail will be provided in subsequent estimates as the design and schedule advance.</p> <p>Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08</p>				
1-1	<p>Backcheck Recommendation Open Comment "The construction schedule includes a critical path and separate contractors have been defined for large work components." THE REVIEW WAS NOT PROVIDED A SCHEDULE OR ANY INFORMATION THAT CORRESPONDS WITH THIS STATEMENT.</p> <p>Submitted By: Gareth Clausen (509 527-7587) Submitted On: 08-Apr-08</p>				
1-2	<p>Backcheck Recommendation Close Comment A Tele-Conference was held on April 14th. The comment was discussed and clarified.</p> <p>Submitted By: Gareth Clausen (509 527-7587) Submitted On: 14-Apr-08</p>				
<p>Current Comment Status: Comment Closed</p>					
1830602	Cost Engineering	Cost Estimate	n/a'	n/a	n/a
<p>(Document Reference: MII Estimate Total Project Cost Summary in Current Dollars) Coordinating Discipline(s): Cost Engineering</p> <p>8.01 Is there a proper Total Project Cost Worksheet? No, one was not provided.</p> <p>Submitted By: Gareth Clausen (509 527-7587). Submitted On: 13-Mar-08</p>					
1-0	<p>Evaluation Concurred A Total Project Cost Worksheet has been provided with the revised MII estimate.</p> <p>Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08</p>				
1-1	<p>Backcheck Recommendation Close Comment Closed without comment.</p> <p>Submitted By: Gareth Clausen (509 527-7587) Submitted On: 08-Apr-08</p>				
<p>Current Comment Status: Comment Closed</p>					
1830613	Cost Engineering	Cost Estimate	n/a'	n/a	n/a
<p>(Document Reference: MII Estimate Total Project Cost Summary in Current Dollars) Coordinating Discipline(s): Cost Engineering</p> <p>8.02 Is the price level date shown and is it consistent with the estimate preparation date? The price level date in the estimate must be reconciled with the escalation dates buried in the markups.</p> <p>Submitted By: Gareth Clausen (509 527-7587). Submitted On: 13-Mar-08</p>					
1-0	<p>Evaluation Concurred Notes clarified in estimate. The estimate price level is 10/31/2007. The previous MCACES MFW estimates were prepared in 2005 dollars. The costs in the MII estimate are escalated to 10/31/2007 based on the Civil Works Construction Cost Index revised 09/30/2007.</p> <p>Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08</p>				
1-1	<p>Backcheck Recommendation Close Comment The Total Project Summary Table shows what appears to be the price level; "2007 \$" the reader can only assume this is consistent with the estimate price level of October 31, 2007.</p> <p>Submitted By: Gareth Clausen (509 527-7587) Submitted On: 08-Apr-08</p>				
<p>Current Comment Status: Comment Closed</p>					

1830659	Cost Engineering	Cost Estimate	n/a'	n/a	n/a
<p>(Document Reference: MII Estimate Total Project Cost Summary in Current Dollars) Coordinating Discipline(s): Cost Engineering</p> <p>8.11 Does the E&D clearly include costs for Project Management, Planning & Environmental, Engineering & Design, ITR & VE, Contracting, reprographics, EDC, Planning during construction, project operation? The basis for the assumed percent markup appears to include some but not all of the above items.</p> <p>Submitted By: Gareth Clausen (509 527-7587). Submitted On: 13-Mar-08</p>					
1-0	<p>Evaluation Concurred The costs assumed for project management, planning and environmental, engineering and design, ITR and value engineering, contracting, reprographics, planning during construction and project operation are included in Planning, Engineering and Design. Project management is included as part of the non-Federal incurred costs. The MII notes have been updated to clarify these items.</p> <p>Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08</p>				
1-1	<p>Backcheck Recommendation Close Comment Closed without comment.</p> <p>Submitted By: Gareth Clausen (509 527-7587) Submitted On: 08-Apr-08</p>				
<p>Current Comment Status: Comment Closed</p>					
1830777	Cost Engineering	Cost Estimate	n/a'	n/a	n/a
<p>(Document Reference: MII Estimate Total Project Cost (using escalation indexes) To The Project Schedule) Coordinating Discipline(s): Cost Engineering</p> <p>9.00 A Total Project Cost inflated to the project schedule was not provided. During the site visit the review was told that costs were escalated to the "mid-point" of construction. This review is concerned that all costs will or may be inflated to a single mid-point date. This is not desirable or reasonable. The design costs for the channel occur 3-4 years prior to construction. Design costs for the isolation gates occurs 3 years prior to construction. The schedule appears detailed sufficiently so that the cost for each major component can be inflated separately i.e. channel costs inflated to 2013 and Samuels Sites inflated to 2016.</p> <p>Submitted By: Gareth Clausen (509 527-7587). Submitted On: 13-Mar-08</p>					
1-0	<p>Evaluation Concurred The constant dollar estimate was provide for review per ICR meeting discussion on March 5, 2008. Both constant dollar and escalated to mid-point cost estimates have been prepared and are presented in the revised Total Project Summary table. MII Estimate has been divided into to sub-projects/ folders indicating cost line items included in the Federal 200 vs. Non-Federal project components.</p> <p>Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08</p>				
1-1	<p>Backcheck Recommendation Close Comment Closed without comment.</p> <p>Submitted By: Gareth Clausen (509 527-7587) Submitted On: 08-Apr-08</p>				
<p>Current Comment Status: Comment Closed</p>					
1830792	Cost Engineering	Cost Estimate	n/a'	n/a	n/a
<p>(Document Reference: MII Estimate) Coordinating Discipline(s): Cost Engineering</p> <p>Samuels Avenue Sites Site Preparation There are two distinct cut areas and three distinct fill areas. All separated. There are 79,700 cy moved, 79,700 cy screened, 15,300 cy hauled, [79,700 cy – 15,300 cy = 64,400 cy. The estimate doesn't explain why the material is being hauled, or what will be the disposition of the 64,400 cy piled?</p>					

Submitted By: Gareth Clausen (509 527-7587). Submitted On: 13-Mar-08					
1-0	Evaluation Concurred Screened material will be removed from the site. Remaining soil will be stockpiled on-site and used during site restoration. The MII estimate have been updated to correct units and clarify the actions estimated in this section. Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08				
1-1	Backcheck Recommendation Close Comment Closed without comment. Submitted By: Gareth Clausen (509 527-7587) Submitted On: 08-Apr-08				
Current Comment Status: Comment Closed					
1830817	Cost Engineering	Cost Estimate	n/a'	n/a	n/a
(Document Reference: MII Estimate) Coordinating Discipline(s): Cost Engineering Samuels Avenue Sites Site Preparation This work is accomplished with; 1 dozer, 1 loader, 1 truck, there doesn't appear to be any equipment standby. This comment is applicable throughout the entire estimate. Throughout the estimate crew composition is questioned. The required equipment numbers is not included. Submitted By: Gareth Clausen (509 527-7587). Submitted On: 13-Mar-08					
1-0	Evaluation Concurred Crew composition has been included in the estimate. Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08				
1-1	Backcheck Recommendation Close Comment Closed without comment. Submitted By: Gareth Clausen (509 527-7587) Submitted On: 08-Apr-08				
Current Comment Status: Comment Closed					
1830819	Cost Engineering	Cost Estimate	n/a'	n/a	n/a
(Document Reference: MII Estimate) Coordinating Discipline(s): Cost Engineering Samuels Avenue Sites Earthwork Unit of measure is not consistent from bank yards, yards, loose yards, embankment yards. Quantities must be reconciled. A swell of 20% is buried in the bowels of the estimate as a math calculation on the quantity for hauling only. Submitted By: Gareth Clausen (509 527-7587). Submitted On: 13-Mar-08					
1-0	Evaluation Concurred Earthwork quantities will be reviewed and reflect bank cubic yard (BCY), loose cubic yard (LCY), and embankment cubic yard (ECY) units of measure. Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08				
1-1	Backcheck Recommendation Close Comment Closed without comment. Submitted By: Gareth Clausen (509 527-7587) Submitted On: 08-Apr-08				
Current Comment Status: Comment Closed					
1830824	Cost Engineering	Cost Estimate	n/a'	n/a	n/a

(Document Reference: MII Estimate)

Coordinating Discipline(s): Cost Engineering

Riverside Oxbow Site Preparation DEMO-08 disposal of bituminous driveays DEMO-02 disposal of building debris DEMO-04 Demolition, handling, and disposal of mesh reinforced concrete to 6" thick DEMO-01 Demolition, handling, and disposal of reinforced concrete, 7" to 24" thick – Bridge DEMO-01 Demolition, handling, and disposal of reinforced concrete, 7" to 24" thick - Beach Street Based on the site visit, question these items as being in the scope of the Federal 220 project.

Submitted By: [Gareth Clausen](#) (509 527-7587). Submitted On: 13-Mar-08

1-0	<p>Evaluation Concurred Costs have been redistributed to Roadway preparatory site work and recreational preliminary site work. The majority of demolition activities are conducted under the non-federal portion of project; however, there may be some typical minor site demolition associated with construction activities at each site.</p> <p>Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08</p>
1-1	<p>Backcheck Recommendation Close Comment Closed without comment.</p> <p>Submitted By: Gareth Clausen (509 527-7587) Submitted On: 08-Apr-08</p>
<p>Current Comment Status: Comment Closed</p>	

1830825	Cost Engineering	Cost Estimate	n/a'	n/a	n/a
---------	------------------	---------------	------	-----	-----

(Document Reference: MII Estimate)

Coordinating Discipline(s): Cost Engineering

Bypass Channel – North Earthwork Excavate and load, bank measure, 550,912 BCY, the next item: Hauling, excavated or borrow material, loose cubic yards. 550,912 LCY. The Quantities cannot be the same. The volumes are too great to ignore swell when previously in the estimate swell was computed at 20%.

Submitted By: [Gareth Clausen](#) (509 527-7587). Submitted On: 13-Mar-08

1-0	<p>Evaluation Concurred Earthwork quantities have been reviewed and reflect bank cubic yard (BCY), loose cubic yard (LCY), and embankment cubic yard (ECY) units of measure.</p> <p>Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08</p>
1-1	<p>Backcheck Recommendation Close Comment Closed without comment.</p> <p>Submitted By: Gareth Clausen (509 527-7587) Submitted On: 08-Apr-08</p>
<p>Current Comment Status: Comment Closed</p>	

1830830	Cost Engineering	Cost Estimate	n/a'	n/a	n/a
---------	------------------	---------------	------	-----	-----

(Document Reference: MII Estimate)

Coordinating Discipline(s): Cost Engineering

Same for this item; Ripping sedimentary rock, 55,952 BCY Excavate and load, bank measure, 55,952 BCY Hauling, excavated or borrow material, loose cubic yards, 55,952 BCY After ripping it appears that excavation and hauling cannot be the save volume. The volumes are too great to ignore swell when previously in the estimate swell was computed at 20%.

Submitted By: [Gareth Clausen](#) (509 527-7587). Submitted On: 13-Mar-08

1-0	<p>Evaluation Concurred Earthwork quantities have been reviewed and reflect bank cubic yard (BCY), loose cubic yard (LCY), and embankment cubic yard (ECY) units of measure.</p> <p>Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08</p>				
1-1	<p>Backcheck Recommendation Open Comment Question; "Earthwork quantities have been reviewed - - " It appears the quantities have changed, in this case from 55,952 to 130,000. Is there an explanation?</p> <p>Submitted By: Gareth Clausen (509 527-7587) Submitted On: 08-Apr-08</p>				
1-2	<p>Backcheck Recommendation Close Comment A Tele-Conference was held on April 14th. The comment was discussed and clarified. A walk-thru of the changes was done.</p> <p>Submitted By: Gareth Clausen (509 527-7587) Submitted On: 14-Apr-08</p>				
<p>Current Comment Status: Comment Closed</p>					
1830839	Cost Engineering	Cost Estimate	n/a'	n/a	n/a
<p>(Document Reference: MII Estimate) Coordinating Discipline(s): Cost Engineering</p> <p>Concrete, 1 LS This is typical throughout the estimate. It is not right – It is not wrong. However, "concrete" doesn't clearly describe the scope of work. It appears this folder is for retaining walls. What is the length? What is the height of the wall(s)? The scope of work is not clearly described.</p> <p>Submitted By: Gareth Clausen (509 527-7587). Submitted On: 13-Mar-08</p>					
1-0	<p>Evaluation Concurred The notes within the MII estimate have been updated to provide more specifics regarding the retaining walls. The folder title was changed from "Concrete" to "Retaining Walls".</p> <p>Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08</p>				
1-1	<p>Backcheck Recommendation Close Comment Closed without comment.</p> <p>Submitted By: Gareth Clausen (509 527-7587) Submitted On: 08-Apr-08</p>				
1-2	<p>Backcheck Recommendation Close Comment Closed without comment.</p> <p>Submitted By: Gareth Clausen (509 527-7587) Submitted On: 08-Apr-08</p>				
<p>Current Comment Status: Comment Closed</p>					
1830843	Cost Engineering	Cost Estimate	n/a'	n/a	n/a
<p>(Document Reference: MII Estimate) Coordinating Discipline(s): Cost Engineering</p> <p>Lower Wall, Middle Wall, Upper Wall; 1 LS, 1 LS, 1 LS; This is typical throughout the estimate. It is not right – It is not wrong. However, "concrete" doesn't clearly describe the scope of work. It appears this folder is for retaining walls. What is the length? What is the height of the wall(s)? The scope of work is not clearly described.</p> <p>Submitted By: Gareth Clausen (509 527-7587). Submitted On: 13-Mar-08</p>					
1-0	<p>Evaluation Concurred The notes within the MII estimate have been updated to provide more specifics regarding the retaining walls. The folder title was changed from "Concrete" to "Retaining Walls".</p> <p>Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08</p>				

1-1	Backcheck Recommendation Close Comment Closed without comment. Submitted By: Gareth Clausen (509 527-7587) Submitted On: 08-Apr-08
Current Comment Status: Comment Closed	
1830847	Cost Engineering Cost Estimate n/a' n/a n/a
<p>(Document Reference: MII Estimate) Coordinating Discipline(s): Cost Engineering</p> <p>Site Restoration The scope of this work is not provided. Where is the Bermuda grass going? Where is the sod going? Where are the trees going? Is there irrigation for the sod?</p> <p>Submitted By: Gareth Clausen (509 527-7587). Submitted On: 13-Mar-08</p>	
1-0	Evaluation Concurred Bermuda grass seed is proposed for overbank and levee disturbed areas which consists primarily the south side of the area. Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08
1-1	Backcheck Recommendation Open Comment Where is the 93,710 sqft of sod going? Where are the 1,000 trees going? Is there irrigation for the sod and trees? - or - Is there watering for a period of time to establish growth? It appears there is some cost missing here. Submitted By: Gareth Clausen (509 527-7587) Submitted On: 08-Apr-08
1-2	Backcheck Recommendation Close Comment A Tele-Conference was held on April 14th. The comment was discussed and clarified. Submitted By: Gareth Clausen (509 527-7587) Submitted On: 14-Apr-08
Current Comment Status: Comment Closed	
1830850	Cost Engineering Cost Estimate n/a' n/a n/a
<p>(Document Reference: MII Estimate) Coordinating Discipline(s): Cost Engineering</p> <p>Site Preparation The item unit of measure is the same for grubbing, screening, and hauling. It would be simple to account for quantity swell on the screening and hauling. Where is the cost to load the 2420 CY or the 2904 LCY?</p> <p>Submitted By: Gareth Clausen (509 527-7587). Submitted On: 13-Mar-08</p>	
1-0	Evaluation Concurred Earthwork quantities have been reviewed and reflect bank cubic yard (BCY), loose cubic yard (LCY), and embankment cubic yard (ECY) units of measure. Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08
1-1	Backcheck Recommendation Close Comment Closed without comment. Submitted By: Gareth Clausen (509 527-7587) Submitted On: 08-Apr-08
Current Comment Status: Comment Closed	
1830856	Cost Engineering Cost Estimate n/a' n/a n/a
<p>(Document Reference: MII Estimate) Coordinating Discipline(s): Cost Engineering, Cost Engineering</p> <p>Concrete, 1 LS; This is typical throughout the estimate. It is not right – It is not wrong. However, "concrete" doesn't</p>	

clearly describe the scope of work. The scope of work is not clearly described. The direct cost of this work is \$2,063,138 based on: Per Estimator. Cost based on previous work of similar scope. Assumes concrete pumping. This maybe acceptable for a reconnaissance level estimate, unit pricing is not acceptable for a feasibility level where the construction peices and parts can be estimated individually. In this case excavation, foundation prep, formwork, placement, finishing, curing, etc.

Submitted By: [Gareth Clausen](#) (509 527-7587). Submitted On: 13-Mar-08

Revised 17-Mar-08.

1-0	<p>Evaluation Concurred</p> <p>For concrete pricing, the ready mix price was obtained from a local supplier (\$75.00 per cubic yard). A cost of \$20 per cubic yard for a concrete pump was used based on local pricing. The crew mix for the concrete work was assumed to be 1 foreman, 2 carpenters, 3 laborers. The productivities assumed were 7 man-hours per cubic yard for the slab on grade, 10 man-hours per cubic yard for the retaining walls, and 13 man-hours per cubic yard for the elevated decks. A standard price per pound for reinforcing steel, installed, in the Dallas area was provided by a local subcontractor. Where feasible the MII estimate was updated to provide more detail. Due to current level of design some items were not further detailed and are covered in the gross cost of the wall. These items will be detailed in greater detail in future iterations of the MII estimate.</p> <p>Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08</p>
------------	---

1-1	<p>Backcheck Recommendation Close Comment</p> <p>Closed without comment.</p> <p>Submitted By: Gareth Clausen (509 527-7587) Submitted On: 08-Apr-08</p>
------------	---

Current Comment Status: **Comment Closed**

1830862	Cost Engineering	Cost Estimate	n/a'	n/a	n/a
---------	------------------	---------------	------	-----	-----

(Document Reference: [MII Estimate](#))
Coordinating Discipline(s): Cost Engineering

Electrical, Controls, and Instrumentation; 1 LS There is absolutely no electrical design. This indicates the scope of work is less than reconnaissance level. The risk and uncertainty is greater than the 20% indicated in the estimate. Regardless of the \$355,051 direct cost the cost risk for electrical work must be identified.

Submitted By: [Gareth Clausen](#) (509 527-7587). Submitted On: 13-Mar-08

1-0	<p>Evaluation Concurred</p> <p>Cost risks associated with electrical, controls and instrumentation have been added to the risk register and incorporated into the risk analysis.</p> <p>Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08</p>
------------	---

1-1	<p>Backcheck Recommendation Close Comment</p> <p>Closed without comment.</p> <p>Submitted By: Gareth Clausen (509 527-7587) Submitted On: 08-Apr-08</p>
------------	---

Current Comment Status: **Comment Closed**

1830865	Cost Engineering	Cost Estimate	n/a'	n/a	n/a
---------	------------------	---------------	------	-----	-----

(Document Reference: [MII Estimate](#))
Coordinating Discipline(s): Cost Engineering

Lands and Damages; This \$31million is not reviewable by Cost Engineering.

Submitted By: [Gareth Clausen](#) (509 527-7587). Submitted On: 13-Mar-08

1-0	<p>Evaluation Concurred Cost are based on land appraisals developed for project and reviewed by Fort Worth District Real Estate Staff</p> <p>Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08</p>				
1-1	<p>Backcheck Recommendation Close Comment Closed without comment.</p> <p>Submitted By: Gareth Clausen (509 527-7587) Submitted On: 08-Apr-08</p>				
Current Comment Status: Comment Closed					
1830873	Cost Engineering	Cost Estimate	n/a'	n/a	n/a
<p>(Document Reference: MII Estimate) Coordinating Discipline(s): Cost Engineering</p> <p>Feasibility Studies; The basis for \$2,228,508 is unknown and not presented in the estimate. From the Corps of Engineer's perspective; the activities in the note are Engineering and Design activities, not feasibility. The basis, logic, or the rationale for including legal fees in this estimate is beyond this review.</p> <p>Submitted By: Gareth Clausen (509 527-7587). Submitted On: 13-Mar-08</p>					
1-0	<p>Evaluation Concurred These fees are now included as part of PED activities. Clarification on basis, logic and rationale has been added to the General Notes.</p> <p>Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08</p>				
1-1	<p>Backcheck Recommendation Close Comment Closed without comment.</p> <p>Submitted By: Gareth Clausen (509 527-7587) Submitted On: 08-Apr-08</p>				
Current Comment Status: Comment Closed					
1830881	Cost Engineering	Cost Estimate	n/a'	Item Detail Comments	n/a
<p>(Document Reference: MII Estimate) Coordinating Discipline(s): Cost Engineering</p> <p>DEMO-02; Samuels Avenue Sites Demolition, handling, and disposal of building debris - single level building, 20' high, 1,583,575 square feet. On Drawings CG-04 through CG-08 it appears that there is only one building with a note indicating "to be removed by others". It appears to be less than 100' x 100' feet. There doesn't appear to be any basis for the 1.5 million square feet.</p> <p>Submitted By: Gareth Clausen (509 527-7587). Submitted On: 13-Mar-08</p>					
1-0	<p>Evaluation Concurred Building demolition has been removed from the estimate at the Samuels Avenue Valley Storage site.</p> <p>Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08</p>				
1-1	<p>Backcheck Recommendation Close Comment Closed without comment.</p> <p>Submitted By: Gareth Clausen (509 527-7587) Submitted On: 08-Apr-08</p>				
Current Comment Status: Comment Closed					
1830883	Cost Engineering	Cost Estimate	n/a'	Item Detail Comments	n/a

(Document Reference: [MII Estimate](#))
Coordinating Discipline(s): Cost Engineering

DEMO-03; Samuels Avenue Sites Demolition, handling, and disposal of chainlink fence, 8' to 10' high, 3 strand barbed wire 2,550 ft This item and quantity cannot be verified from the drawings.

Submitted By: [Gareth Clausen](#) (509 527-7587). Submitted On: 13-Mar-08

1-0	Evaluation Concurred Clarifications will be added to the plans Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08
------------	--

1-1	Backcheck Recommendation Close Comment Closed without comment. Submitted By: Gareth Clausen (509 527-7587) Submitted On: 08-Apr-08
------------	--

Current Comment Status: Comment Closed	
---	--

1830886	Cost Engineering	Cost Estimate	n/a'	Item Detail Comments	n/a
---------	------------------	---------------	------	-------------------------	-----

(Document Reference: [MII Estimate](#))
Coordinating Discipline(s): Cost Engineering

DEMO-04; Samuels Avenue Sites Demolition, handling, and disposal of mesh reinforced concrete to 6" thick - Concrete Trail; 16,500 sf; This item and quantity cannot be verified from the drawings.

Submitted By: [Gareth Clausen](#) (509 527-7587). Submitted On: 13-Mar-08

1-0	Evaluation Concurred Trail to be removed is shown on sheet CG-05 which serves as the basis of quantity. Notation added to estimate and additional labeling and notations will be added to the plans for clarity. Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08
------------	--

1-1	Backcheck Recommendation Close Comment Closed without comment. Submitted By: Gareth Clausen (509 527-7587) Submitted On: 08-Apr-08
------------	--

Current Comment Status: Comment Closed	
---	--

1830890	Cost Engineering	Cost Estimate	n/a'	Item Detail Comments	n/a
---------	------------------	---------------	------	-------------------------	-----

(Document Reference: [MII Estimate](#))
Coordinating Discipline(s): Cost Engineering

HAUL-03 Samuels Avenue Sites Hauling, 12 CY truck, 5 mile haul, soil Based on crew CTDHB34C. 15,300 LCY The UOM is in Loose Cubic Yards, the description is 12CY trucks but the crew shows a 17CY trailer dump truck. Reconcile differences.

Submitted By: [Gareth Clausen](#) (509 527-7587). Submitted On: 13-Mar-08

1-0	Evaluation Concurred The crew composition was reviewed corrected to reflect a 17 CY trailer dump truck. Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08
------------	---

1-1	Backcheck Recommendation Open Comment The crew composition was reviewed corrected to reflect a 17 CY trailer dump truck. OK, WHY DID
------------	---

THE QUANTITY CHANGE FROM 15,300 TO 47,820??????? ITS DIFFICULT TO BACK CHECK WHEN EVERYTHING SEEMS TO BE CHANGING. Submitted By: Gareth Clausen (509 527-7587) Submitted On: 08-Apr-08					
1-2 Backcheck Recommendation Close Comment A Tele-Conference was held on April 14th. The comment was discussed and clarified. A walk-thru of the changes was done. Submitted By: Gareth Clausen (509 527-7587) Submitted On: 14-Apr-08					
Current Comment Status: Comment Closed					
1830894	Cost Engineering	Cost Estimate	n/a'	Item Detail Comments	n/a
(Document Reference: MII Estimate) Coordinating Discipline(s): Cost Engineering EARTH-23 Excavate, load, haul onsite, medium material, 5 CY hydraulic excavator, 65 CY off hwy hauler Based on 023154260180 and USR-EARTH-02. The excavator is 80 BCY/HR The off-hwy truck is 240 LCY/HR The equipment mix is not logical. The production rates would indicate 1/3 of a truck to match production rates. Where is the standby time? Submitted By: Gareth Clausen (509 527-7587). Submitted On: 13-Mar-08					
1-0 Evaluation Concurred The crew composition was reviewed and updated. Standby time was evaluated and added to the estimate as necessary. Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08					
1-1 Backcheck Recommendation Open Comment EARTH-23 appears to be replaced with other items, the quantities associated with the previously reviewed EARTH-23 appear to have been changed. The review cannot back check this comment without explanation. Found a few standby times of .03hrs, .08hrs, .04hrs - without any explanation or rationale for the minimal time. - - - the evaluation statement "The crew composition was reviewed and updated" doesn't seem appropriate when it appears the estimate was re-structured and quantities changed significantly. Submitted By: Gareth Clausen (509 527-7587) Submitted On: 08-Apr-08					
1-2 Backcheck Recommendation Close Comment A Tele-Conference was held on April 14th. The comment was discussed and clarified. A walk-thru of the changes was done. Submitted By: Gareth Clausen (509 527-7587) Submitted On: 14-Apr-08					
Current Comment Status: Comment Closed					
1830898	Cost Engineering	Cost Estimate	n/a'	Item Detail Comments	n/a
(Document Reference: MII Estimate) Coordinating Discipline(s): Cost Engineering 023151205520 Backfill, structural, 6" lifts, backfill around foundation, with dozer Must reconcile the quantity which appears to be the addition of 130k (BCY? CY? LCY?) and 737k BCY Submitted By: Gareth Clausen (509 527-7587). Submitted On: 13-Mar-08					
1-0 Evaluation Concurred Earthwork quantities have been reviewed and reflect bank cubic yard (BCY), loose cubic yard (LCY), and embankment cubic yard (ECY) units of measure.					

Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08					
1-1	Backcheck Recommendation Open Comment The evaluation text doesnot appear reasonable or applicable to the comment. It would be beneficial if the evaluation text described the changes made and not just rhetoric. The estimate reviewed was one line item; Samuels Avenue Sites - Earthwork - 023151205520 Backfill, structural, 6" lifts, backfill around foundation, with dozer - 867,000 LCY. - - - The estimate provided for backcheck shows fill placemnt and compaction in two items of 506,400 and 378,000 LCY for a total of 884,400 LCY. - - - The backcheck estimate is still not clear because the estimate descriptions cannot be found on drawings CG06 & CG07. On the north side of the West Fork are two spoils disposal areas and one spoils disposal area south of the West Fork. Is the City Landfill on the north side of the West Fork? Is the City Impound Lot on the south side of the West Fork? - - - If 506K and 156K LCY is going to the City Landfill the quantity of backfill at the City Land Fill of 506K LCY is short 156K LCY. - - - THE RE-BUILD / RE-ORGANIZATION OF THE BACKCHECK ESTIMATE IS MUCH BETTER AND MORE DESCRIPTIVE - - GOOD - - - The evaluation text doesnot describe the improvements to the estimate. Submitted By: Gareth Clausen (509 527-7587) Submitted On: 08-Apr-08				
1-2	Backcheck Recommendation Close Comment A Tele-Conference was held on April 14th. The comment was discussed and clarified. A walk-thru of the changes was done. Submitted By: Gareth Clausen (509 527-7587) Submitted On: 14-Apr-08				
Current Comment Status: Comment Closed					
1830998	Cost Engineering	Cost Estimate	n/a'	n/a	n/a
(Document Reference: MII Estimate ITEM DETAIL Comments) Coordinating Discipline(s): Cost Engineering 11-01 Bypass Channel – North Earthwork Cofferdam - sheet pile 400 LF long by 30 LF, backed up with local spoils, removed at completion Per Estimator. Cost based on professional judgment. \$240,000 There is no reason to present this item as "Per Estimator. Cost based on professional judgement" when this work can be found in RSMMeans 31 41 16.10 Sheet Piling Systems. Per estimator and judgement is not traceable. Submitted By: Gareth Clausen (509 527-7587). Submitted On: 13-Mar-08					
1-0	Evaluation Concurred The Cofferdam line item was updated with RS Means 2008 Costworks data. Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08				
1-1	Backcheck Recommendation Open Comment Good, installation and removal of sheetpiling is now traceable and can be updated, etc. HOWEVER, WHERE IS THE WORK AND COST FOR PLACING AND REMOVING BACKUP SPOILS?? - - - This item is under the folder titled: Excavation, Hauling, and Placement, the note explains most of the work in the folder (not all), Recommend that separable work be included in its own folder e.g. Cofferdam, Dewatering, Imported Material (what's it for??), Retaining Wall Drainage Material, Retaining Wall Top Soil, Slope Protection (where??). When the elements are separated work associated with that element is more clearly identified. Submitted By: Gareth Clausen (509 527-7587) Submitted On: 08-Apr-08				
1-2	Backcheck Recommendation Close Comment A Tele-Conference was held on April 14th. The comment was discussed and clarified. A walk-thru of the changes was done. Submitted By: Gareth Clausen (509 527-7587) Submitted On: 14-Apr-08				
Current Comment Status: Comment Closed					
1831009	Cost Engineering	Cost Estimate	n/a'	n/a	n/a
(Document Reference: MII Estimate ITEM DETAIL Comments) Coordinating Discipline(s): Cost Engineering					

CARE-01 CARE-02 CARE-03 CARE-04 Bypass Channel – North Earthwork Care of Water Allowance per Estimator. Cost based on professional judgment. Total Direct Cost for these items is \$177,600 based on judgement. "Care of Water" implies that these pumps are to by-pass and maintain river flow. Settling basin implies the pumps maybe sump pumps or dewatering. Where is the operating cost of these? What is the basis for the cost?

Submitted By: [Gareth Clausen](#) (509 527-7587). Submitted On: 13-Mar-08

1-0 Evaluation **Concurred**
 The Care of Water in this portion of the estimate is for dewatering inside of the cofferdam at this location. It is not for bypassing the river. The pumps will only operate during construction hours, therefore, separate operation is not required. CARE-01, CARE-02, CARE-03, and CARE-04 were updated to reflect a crew and pumps on a daily cost basis. Number of days was be based on estimated length of site earthwork.
 Submitted By: [Michael Oleson](#) (817-332-8727) Submitted On: 31-Mar-08

1-1 Backcheck Recommendation **Open Comment**
 The evaluation text sounds good, SO why not organize the estimate, separate this element of work and include your evaluation text in the notes of the estimate. Don't keep the reader guessing.
 Submitted By: [Gareth Clausen](#) (509 527-7587) Submitted On: 08-Apr-08

1-2 Backcheck Recommendation **Close Comment**
 A Tele-Conference was held on April 14th. The comment was discussed and clarified. A walk-thru of the changes was done.
 Submitted By: [Gareth Clausen](#) (509 527-7587) Submitted On: 14-Apr-08

Current Comment Status: **Comment Closed**

1831010	Cost Engineering	Cost Estimate	n/a'	n/a	n/a
---------	------------------	---------------	------	-----	-----

(Document Reference: [MII Estimate ITEM DETAIL Comments](#))
Coordinating Discipline(s): Cost Engineering

EARTH-13 Bypass Channel – North Earthwork Backfill, spread and compact dumped gravel/fill, 6" layers - Valley fill Backfill, spread dumped gravel/fill, 6" layers. Compaction w/ riding vibrating roller, 6" lifts. Based on 023151102360 and USR-COMP-01. "Valley Fill" What is the purpose for this fill? Where is it going? What is the basis for 75,535 CY? The quantity is then mathematically adjusted by 20% for swell. If it is dumped why isn't the unit of measure in loose cubic yards? Where is the material cost?

Submitted By: [Gareth Clausen](#) (509 527-7587). Submitted On: 13-Mar-08

1-0 Evaluation **Concurred**
 The "Valley Fill" is the area to the east which is behind the retaining wall and retaining wall fill areas. The yardage quantity was provided by the civil designer based on MicroStation Inroad volume calculations. Earthwork quantities will be reviewed and updated to reflect BCY, LCY, and ECY units of measure.
 Submitted By: [Michael Oleson](#) (817-332-8727) Submitted On: 31-Mar-08

1-1 Backcheck Recommendation **Open Comment**
 Sorry the evaluation text doesnot provide any beneficial insite to what or where this is in the rebuilt / re-structured estimate. CANNOT BACKCHECK THIS COMMENT.
 Submitted By: [Gareth Clausen](#) (509 527-7587) Submitted On: 08-Apr-08

1-2 Backcheck Recommendation **Close Comment**
 A Tele-Conference was held on April 14th. The comment was discussed and clarified. A walk-thru of the changes was done.
 Submitted By: [Gareth Clausen](#) (509 527-7587) Submitted On: 14-Apr-08

Current Comment Status: **Comment Closed**

1831012	Cost Engineering	Cost Estimate	n/a'	n/a	n/a
---------	------------------	---------------	------	-----	-----

(Document Reference: [MII Estimate ITEM DETAIL Comments](#))
Coordinating Discipline(s): Cost Engineering

EARTH-13 Backfill, spread and compact dumped gravel/fill, 6" layers - Levee fill Backfill, spread dumped gravel/fill, 6" layers. Compaction w/ riding vibrating roller, 6" lifts. Based on 023151102360 and USR-COMP-01. "Levee Fill" What is the purpose for this fill? Where is it going? What is the basis for 176,249 cy?

Submitted By: [Gareth Clausen](#) (509 527-7587). Submitted On: 13-Mar-08

1-0	<p>Evaluation Concurred</p> <p>The "Levee Fill" is located on the western extents of the bypass channel as shown on the typical sections. The yardage quantity was provided by the civil designer based on MicroStation Inroad volume calculations. Earthwork quantities will be reviewed and updated to reflect BCY, LCY, and ECY units of measure.</p> <p>Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08</p>
------------	---

1-1	<p>Backcheck Recommendation Open Comment</p> <p>EARTH-13 is not found in the estimate, Cannot reconcile the 176,249 cy. Evaluation Text? doesn't tell the review what changes were made.</p> <p>Submitted By: Gareth Clausen (509 527-7587) Submitted On: 08-Apr-08</p>
------------	---

1-2	<p>Backcheck Recommendation Close Comment</p> <p>A Tele-Conference was held on April 14th. The comment was discussed and clarified. A walk-thru of the changes was done.</p> <p>Submitted By: Gareth Clausen (509 527-7587) Submitted On: 14-Apr-08</p>
------------	---

Current Comment Status: **Comment Closed**

1831014	Cost Engineering	Cost Estimate	n/a'	n/a	n/a
---------	------------------	---------------	------	-----	-----

(Document Reference: [MII Estimate ITEM DETAIL Comments](#))
Coordinating Discipline(s): Cost Engineering

EARTH-13 Backfill, spread and compact dumped gravel/fill, 6" layers - Retaining wall fill Backfill, spread dumped gravel/fill, 6" layers. Compaction w/ riding vibrating roller, 6" lifts. Based on 023151102360 and USR-COMP-01. "Retaining wall fill" Why isn't this work item with construction of the retaining wall? The quantity is then mathematically adjusted by 20% for swell. If it is dumped why isn't the unit of measure in loose cubic yards? 135,576 CY, The review cannot verify the quantities. "gravel fill" Where is the material cost?

Submitted By: [Gareth Clausen](#) (509 527-7587). Submitted On: 13-Mar-08

1-0	<p>Evaluation Concurred</p> <p>The "Retaining Wall fill" is estimated in the earthwork portion, because of the nature of the work requires placement of fill prior to the construction of the retaining walls. The retaining, itself, is estimated with concrete, as is it's nature. The yardage quantity was provided by the civil designer based on MicroStation Inroad volume calculations. Earthwork quantities will be reviewed and updated to reflect BCY, LCY, and ECY units of measure.</p> <p>Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08</p>
------------	--

1-1	<p>Backcheck Recommendation Open Comment</p> <p>Same as the previous comment.</p> <p>Submitted By: Gareth Clausen (509 527-7587) Submitted On: 08-Apr-08</p>
------------	--

1-2	<p>Backcheck Recommendation Close Comment</p> <p>A Tele-Conference was held on April 14th. The comment was discussed and clarified. A walk-thru of the changes was done. Additional folders was discussed to help distinguish items of associated work in the estimate.</p> <p>Submitted By: Gareth Clausen (509 527-7587) Submitted On: 14-Apr-08</p>
------------	--

Current Comment Status: Comment Closed					
1831016	Cost Engineering	Cost Estimate	n/a'	n/a	n/a
<p>(Document Reference: MII Estimate ITEM DETAIL Comments) Coordinating Discipline(s): Cost Engineering</p> <p>EARTH-09 Excavate, load, and haul, medium material, wheeled loader, hwy hauler (1.6 cyc/hr) Based on 023154260265 and 023154901100. The review cannot determine where this 146,336 cy of material is coming from or going to. Why is this uniquely different?</p> <p>Submitted By: Gareth Clausen (509 527-7587). Submitted On: 13-Mar-08</p>					
1-0	<p>Evaluation Concurred The quantities for the Bypass Channel have been reviewed. Descriptions of the work were included in the MII estimate for these types of line items.</p> <p>Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08</p>				
1-1	<p>Backcheck Recommendation Open Comment EARTH-09 or 146,336 cy cannot be found in the re-built / re-organized estimate. Evaluation text doesn't provide any clarity or changes made to the estimate.</p> <p>Submitted By: Gareth Clausen (509 527-7587) Submitted On: 08-Apr-08</p>				
1-2	<p>Backcheck Recommendation Close Comment A Tele-Conference was held on April 14th. The comment was discussed and clarified. A walk-thru of the changes was done.</p> <p>Submitted By: Gareth Clausen (509 527-7587) Submitted On: 14-Apr-08</p>				
Current Comment Status: Comment Closed					
1831017	Cost Engineering	Cost Estimate	n/a'	n/a	n/a
<p>(Document Reference: MII Estimate ITEM DETAIL Comments) Coordinating Discipline(s): Cost Engineering</p> <p>023155100020 Fill, borrow, for embankments, 1 mile haul, spread, by dozer - structural fill The review cannot determine where this 68,864 lcy of material is coming from or going to. Where is the loading of these trucks?</p> <p>Submitted By: Gareth Clausen (509 527-7587). Submitted On: 13-Mar-08</p>					
1-0	<p>Evaluation Concurred The quantities for the Bypass Channel have been reviewed. Descriptions of the work were included in the MII estimate for these types of line items.</p> <p>Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08</p>				
1-1	<p>Backcheck Recommendation Open Comment See the previous comments</p> <p>Submitted By: Gareth Clausen (509 527-7587) Submitted On: 08-Apr-08</p>				
1-2	<p>Backcheck Recommendation Close Comment A Tele-Conference was held on April 14th. The comment was discussed and clarified. A walk-thru of the changes was done. Additional folders were discussed to help distinguish items of associated work in the estimate.</p> <p>Submitted By: Gareth Clausen (509 527-7587) Submitted On: 14-Apr-08</p>				
Current Comment Status: Comment Closed					
1831019	Cost Engineering	Cost Estimate	n/a'	n/a	n/a
(Document Reference: MII Estimate ITEM DETAIL Comments)					

Coordinating Discipline(s): Cost Engineering					
023155100020 Fill, borrow, for embankments, 1 mile haul, spread, by dozer - gravel drainage behind retaining walls Material cost per Estimator. Cost based on previous work of similar scope. The description is totally misleading; fill, borrow, haul, gravel. The crew is a truck and dozer. A 1 mile haul doesn't appear reasonable.					
Submitted By: Gareth Clausen (509 527-7587). Submitted On: 13-Mar-08					
1-0	Evaluation Concurred The crew composition and the haul distance were reviewed and updated to reflect a reasonable import distance for gravel drainage material. Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08				
1-1	Backcheck Recommendation Open Comment ????? Submitted By: Gareth Clausen (509 527-7587) Submitted On: 08-Apr-08				
1-2	Backcheck Recommendation Close Comment A Tele-Conference was held on April 14th. The comment was discussed and clarified. A walk-thru of the changes was done. Additional folders were discussed to help distinguish items of associated work in the estimate. Submitted By: Gareth Clausen (509 527-7587) Submitted On: 14-Apr-08				
Current Comment Status: Comment Closed					
1831022	Cost Engineering	Cost Estimate	n/a'	n/a	n/a
(Document Reference: MII Estimate ITEM DETAIL Comments)					
Coordinating Discipline(s): Cost Engineering					
023704501200 Rip-rap, sand-cement rip rap "Sand-cement rip rap" What are these 5 labors doing? No equipment?					
Submitted By: Gareth Clausen (509 527-7587). Submitted On: 13-Mar-08					
1-0	Evaluation Concurred After a review of this cost line item it was determined that it should be deleted. Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08				
1-1	Backcheck Recommendation Close Comment Closed without comment. Submitted By: Gareth Clausen (509 527-7587) Submitted On: 08-Apr-08				
Current Comment Status: Comment Closed					
1831023	Cost Engineering	Cost Estimate	n/a'	n/a	n/a
(Document Reference: MII Estimate ITEM DETAIL Comments)					
Coordinating Discipline(s): Cost Engineering					
023704500110 Rip-rap, random, broken stone, 3/8 to 1/4 C.Y. pieces, machine placed for slope protection, grouted This estimate is at an October 2007 price level, using a 2006 cost book. A quick check of RSMeans 22nd ed. 2008 the total direct cost for this specific work is \$98.35 / SY the estimate shows a direct cost of \$72.83 / SY. Approximately \$108,000 increase 35% in direct cost.					
Submitted By: Gareth Clausen (509 527-7587). Submitted On: 13-Mar-08					
1-0	Evaluation Concurred The rip-rap line item was updated with RS Means 2008 Costworks data.				

Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08					
1-1	Backcheck Recommendation Close Comment Closed without comment.				
Submitted By: Gareth Clausen (509 527-7587) Submitted On: 08-Apr-08					
Current Comment Status: Comment Closed					
1831025	Cost Engineering	Cost Estimate	n/a'	n/a	n/a
(Document Reference: MII Estimate ITEM DETAIL Comments)					
Coordinating Discipline(s): Cost Engineering					
027752750350 Sidewalk, concrete, cast-in-place with 6 x 6 - W1.4 x W1.4 mesh, broomed finish, 3000 psi, 5" thick, excludes base This estimate is at an October 2007 price level, using a 2006 cost book. A quick check of RSMeans 22nd ed. 2008 the total direct cost for this specific work is \$3.77 / Sf the estimate shows a direct cost of \$2.62 / Sf. Approximately \$47,300 increase 43% in direct cost.					
Submitted By: Gareth Clausen (509 527-7587). Submitted On: 13-Mar-08					
1-0	Evaluation Concurred The 5" thick concrete sidewalk line item was updated with RS Means 2008 Costworks data.				
Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08					
1-1	Backcheck Recommendation Close Comment Closed without comment.				
Submitted By: Gareth Clausen (509 527-7587) Submitted On: 08-Apr-08					
Current Comment Status: Comment Closed					
1831028	Cost Engineering	Cost Estimate	n/a'	n/a	n/a
(Document Reference: MII Estimate ITEM DETAIL Comments)					
Coordinating Discipline(s): Cost Engineering					
027752750400 Sidewalk, concrete, cast-in-place with 6 x 6 - W1.4 x W1.4 mesh, broomed finish, 3000 psi, 6" thick, excludes base This estimate is at an October 2007 price level, using a 2006 cost book. A quick check of RSMeans 22nd ed. 2008 the total direct cost for this specific work is \$4.24 / Sf the estimate shows a direct cost of \$2.99 / Sf. Approximately \$85,800 increase 42% in direct cost.					
Submitted By: Gareth Clausen (509 527-7587). Submitted On: 13-Mar-08					
1-0	Evaluation Concurred The 6" thick concrete sidewalk line item was updated with RS Means 2008 Costworks data.				
Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08					
1-1	Backcheck Recommendation Close Comment Closed without comment.				
Submitted By: Gareth Clausen (509 527-7587) Submitted On: 08-Apr-08					
Current Comment Status: Comment Closed					
1831030	Cost Engineering	Cost Estimate	n/a'	n/a	n/a
(Document Reference: MII Estimate ITEM DETAIL Comments)					
Coordinating Discipline(s): Cost Engineering					
15-01 Cofferdam - sheet pile 300 LF long by 30 LF, backed up with local spoils, removed at completion Per Estimator. Cost based on professional judgment. There is no reason to present this item as "Per Estimator. Cost based on professional judgement" when this work can be found in RSMeans 31 41 16.10 Sheet Piling Systems. Per estimator					

and judgement is not traceable. The review cannot determine if the cost to place "local spoils" is included in the estimate. Also, the removal of local spoils after construction.

Submitted By: [Gareth Clausen](#) (509 527-7587). Submitted On: 13-Mar-08

1-0	<p>Evaluation Concurred The Coffe Dam line item was updated with RS Means 2008 Costworks data. The cost for removal of local spoils is not included in the cost. This statement has been removed from the cost item.</p> <p>Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08</p>
------------	---

1-1	<p>Backcheck Recommendation Close Comment Closed without comment.</p> <p>Submitted By: Gareth Clausen (509 527-7587) Submitted On: 08-Apr-08</p>
------------	--

Current Comment Status: **Comment Closed**

1831033	Cost Engineering	Cost Estimate	n/a'	n/a	n/a
---------	------------------	---------------	------	-----	-----

(Document Reference: [MII Estimate ITEM DETAIL Comments](#))

Coordinating Discipline(s): Cost Engineering

EARTH-10 Earthwork 264,550 CY Fill, borrow, for embankments, load, 1 mile haul, spread w/dozer, compact w/vibrating roller Based on 023155100020 and COMP-01. How are the trucks loaded? There is no equipment or operator to load 264,550 CY.

Submitted By: [Gareth Clausen](#) (509 527-7587). Submitted On: 13-Mar-08

1-0	<p>Evaluation Concurred The crew composition has been reviewed and updated.</p> <p>Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08</p>
------------	--

1-1	<p>Backcheck Recommendation Open Comment The crew composition has been reviewed and updated. OK, EARTH-10 is not used, WHAT TOOK ITS PLACE? WHAT HAPPENED TO THE 264,550 CY?</p> <p>Submitted By: Gareth Clausen (509 527-7587) Submitted On: 08-Apr-08</p>
------------	---

1-2	<p>Backcheck Recommendation Close Comment A Tele-Conference was held on April 14th. The comment was discussed and clarified. A walk-thru of the changes was done.</p> <p>Submitted By: Gareth Clausen (509 527-7587) Submitted On: 14-Apr-08</p>
------------	--

Current Comment Status: **Comment Closed**

1831035	Cost Engineering	Cost Estimate	n/a'	n/a	n/a
---------	------------------	---------------	------	-----	-----

(Document Reference: [MII Estimate ITEM DETAIL Comments](#))

Coordinating Discipline(s): Cost Engineering

023154325460 8,278 BCY Excavating, bulk, open site, bank measure, medium material, 335 H.P. dozer, 150' push What is done with the 8,278 BCY that is excavated? Is it spread and leveled? Will it go back as backfill?

Submitted By: [Gareth Clausen](#) (509 527-7587). Submitted On: 13-Mar-08

1-0	<p>Evaluation Concurred The 8,278 BCY is part of the backfill for the gate structure. The fill will be spread and leveled. The crew composition and quantities have been reviewed and updated.</p> <p>Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08</p>
------------	---

1-1	Backcheck Recommendation Open Comment Evaluation Text; OK, where is it in the re-built estiamte? Submitted By: Gareth Clausen (509 527-7587) Submitted On: 08-Apr-08				
1-2	Backcheck Recommendation Close Comment A Tele-Conference was held on April 14th. The comment was discussed and clarified. A walk-thru of the changes was done. Submitted By: Gareth Clausen (509 527-7587) Submitted On: 14-Apr-08				
Current Comment Status: Comment Closed					
1831038	Cost Engineering	Cost Estimate	n/a'	n/a	n/a
(Document Reference: MII Estimate ITEM DETAIL Comments) Coordinating Discipline(s): Cost Engineering HAUL-05 Embankment roads Allowance per Estimator. Cost based on professional judgment. The length of this road is given as 1,500 LF. This item can be estimated based on the necessary components; compact subgrade, compacted base, surface - ?gravel, ? asphalt. A \$75,000 Allowance per Estimator. Cost based on professional judgment. Is not satisfactory for feasibility Submitted By: Gareth Clausen (509 527-7587). Submitted On: 13-Mar-08					
1-0	Evaluation Concurred Detail has been added to estimate for embankment roads. Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08				
1-1	Backcheck Recommendation Open Comment Sorry, can't find any of this in the revised estimate. The evaluation text has a good folder title; "Embankment Roads" Recommend using it. Submitted By: Gareth Clausen (509 527-7587) Submitted On: 08-Apr-08				
1-2	Backcheck Recommendation Close Comment A Tele-Conference was held on April 14th. The comment was discussed and clarified. A walk-thru of the changes was done. Additional folders were discussed to help distinguish items of associated work in the estimate. Submitted By: Gareth Clausen (509 527-7587) Submitted On: 14-Apr-08				
Current Comment Status: Comment Closed					
1831039	Cost Engineering	Cost Estimate	n/a'	n/a	n/a
(Document Reference: MII Estimate ITEM DETAIL Comments) Coordinating Discipline(s): Cost Engineering CONC-14 Levee tie-in retaining walls, concrete 3' thick Per Estimator. Cost based on previous work of similar scope. Assumes concrete pumping. The unit of measure, SF, is not reasonable. It appears the cost is based on judgement. The basis for the kool \$450,000 direct cost is not provided. Submitted By: Gareth Clausen (509 527-7587). Submitted On: 13-Mar-08					
1-0	Evaluation Concurred Line item title has been changed to reflect appropriate title of Training Walls as shown on the plans (S-17). These items will be detailed in greater detail as the design is advanced in future iterations of the MII estimate. Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08				
1-1	Backcheck Recommendation Open Comment Line item title has been changed to reflect appropriate title of Training Walls as shown on the plans (S-17). I DON'T THINK SO, the re-build / revised estimate is identical to the estimate reviewed, NO				

		CHANGE! -- -- -- These items will be detailed in greater detail as the design is advanced in future iterations of the MII estimate. THIS SENTENCE IS IRRELEVANT TO THE REVIEW.			
		Submitted By: Gareth Clausen (509 527-7587) Submitted On: 08-Apr-08			
1-2	Backcheck Recommendation Close Comment A Tele-Conference was held on April 14th. The comment was discussed and clarified. A walk-thru of the changes was done. Additional folders were discussed to help distinguish items of associated work in the estimate.				
		Submitted By: Gareth Clausen (509 527-7587) Submitted On: 14-Apr-08			
		Current Comment Status: Comment Closed			
1831043	Cost Engineering	Cost Estimate	n/a'	n/a	n/a
(Document Reference: MII Estimate ITEM DETAIL Comments)					
Coordinating Discipline(s): Cost Engineering					
FINISHES-04 Architectural enhancement Allowance per Estimator. Cost based on professional judgment. There is absolutely no basis for the \$1,000,000 in direct cost. This feature should be included in the risk analysis and contribute to contingencies.					
Submitted By: Gareth Clausen (509 527-7587). Submitted On: 13-Mar-08					
1-0	Evaluation Non-concurred This cost element is a local sponsor enhancement which can not be defined until the COE design of the structure is advanced. Not included in the Federal Project Costs. It is the opinion of the Engineer that in these situations the use of an allowance is acceptable and used in similar instances where the item is not fully defined.				
		Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08			
1-1	Backcheck Recommendation Close Comment Agree to dis-agree				
		Submitted By: Gareth Clausen (509 527-7587) Submitted On: 08-Apr-08			
		Current Comment Status: Comment Closed			
1831045	Cost Engineering	Cost Estimate	n/a'	n/a	n/a
(Document Reference: MII Estimate ITEM DETAIL Comments)					
Coordinating Discipline(s): Cost Engineering					
EQUIP-08 Motor housing Allowance per Estimator. Cost based on professional judgment. There is no logical basis for 12.87% escalation on this "ALLOWANCE" or "judgment". Why not use the 160 SF estimated and use a building square foot cost adjusted for the physical size? Recommend estimating instead of guessing.					
Submitted By: Gareth Clausen (509 527-7587). Submitted On: 13-Mar-08					
1-0	Evaluation Concurred The crew composition was reviewed and the cost item has been estimated using available sources such as RS MEANS Costworks 2008.				
		Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08			
1-1	Backcheck Recommendation Close Comment Closed without comment.				
		Submitted By: Gareth Clausen (509 527-7587) Submitted On: 08-Apr-08			
		Current Comment Status: Comment Closed			
1831047	Cost Engineering	Cost Estimate	n/a'	n/a	n/a

(Document Reference: MII Estimate ITEM DETAIL Comments) **[This item is flagged as a critical issue.]**

Coordinating Discipline(s): Cost Engineering

RESTOR-03 Tree and shrub planting Assumes tree and shrub density of 25 trees per acre. Planting trees of 1-1/2" to 2" caliper. Species including ash, maple, oak, redbud, and walnut. Planting shrubs of 5 gallon caliper. Species including hibiscus, forsythia, burning bush, and hydrangea. 6 ACR Where is the 6 acres? Is this appropriately in the Federal 220 project?

Submitted By: [Gareth Clausen](#) (509 527-7587). Submitted On: 13-Mar-08

1-0	<p>Evaluation Concurred Given the conceptual natural of the design the location of plantings has not been defined. For initial estimating purposes assumed locations include areas along the top of the middle wall, and adjacent to the trail away from the Levee on the soft side. This is consistent with current practices on the existing Floodway</p> <p>Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08</p>
------------	--

1-1	<p>Backcheck Recommendation Close Comment GOOD, Recommend adding part of this text to the line item note to iliminate confusion and questions.</p> <p>Submitted By: Gareth Clausen (509 527-7587) Submitted On: 08-Apr-08</p>
------------	---

Current Comment Status: **Comment Closed**

1831091	Cost Engineering	Cost Estimate	n/a'	n/a	n/a
---------	------------------	---------------	------	-----	-----

(Document Reference: MII Estimate GENERAL COMMENT)

Coordinating Discipline(s): Cost Engineering

The level of detail and the number of items based on judgment in this estimate is reflective of a reconnaissance level estimate and not a feasibility level. Feasibility level estimates generally must have unit costs for the construction features computed by estimating the equipment, labor, material, and production rates suitable for the project being developed. This estimate for the Federal 220 project can be greatly improved by doing the afore mentioned.

Submitted By: [Gareth Clausen](#) (509 527-7587). Submitted On: 13-Mar-08

1-0	<p>Evaluation Concurred Suggestions have been incorporated in various costs items to improve the current estimate. This includes breakdowns of materials, labor, and production rates. As the project evolves it is acknowledged that it will be necessary for the cost estimate to be detailed in greater detail.</p> <p>Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08</p>
------------	---

1-1	<p>Backcheck Recommendation Close Comment Closed without comment.</p> <p>Submitted By: Gareth Clausen (509 527-7587) Submitted On: 08-Apr-08</p>
------------	--

Current Comment Status: **Comment Closed**

1831136	Cost Engineering	Cost Estimate	n/a'	n/a	n/a
---------	------------------	---------------	------	-----	-----

(Document Reference: MII Estimate GENERAL COMMENT)

Coordinating Discipline(s): Cost Engineering

The comments provided are representative. This review looked at one valley storage, the north channel section, one isolation gate to economize review time and preparation of repetitive comments. Please consider these comments throughout the entire estimate and revise / improve each folder and item detail throughout the estimate.

Submitted By: [Gareth Clausen](#) (509 527-7587). Submitted On: 13-Mar-08

1-0	<p>Evaluation Concurred The additions and clarifications to the estimate based on the focused comments have been applied to appropriate items throughout the estimate.</p> <p>Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08</p>				
1-1	<p>Backcheck Recommendation Close Comment Closed without comment.</p> <p>Submitted By: Gareth Clausen (509 527-7587) Submitted On: 08-Apr-08</p>				
<p>Current Comment Status: Comment Closed</p>					
1831199	Cost Engineering	Cost Estimate	n/a'	n/a	n/a
<p>(Document Reference: MII Estimate GENERAL COMMENT) Coordinating Discipline(s): Cost Engineering</p> <p>Experience has shown that preparing the construction cost estimate in MII without contingencies or inflation is the best. Presenting contingencies, escalation to a future price level, and inflation through the project schedule on a sheet of paper, Total Project Cost Summary" is most effective and understandable. See the draft information attachment (if it works)</p> <p>(Attachment: TPCS071101.doc)</p> <p>Submitted By: Gareth Clausen (509 527-7587). Submitted On: 13-Mar-08</p>					
1-0	<p>Evaluation Concurred The base estimate has been prepared without contingencies or escalation. These cost elements have been calculation and added the final project cost estimate and summarized on the Total Project Cost Summary These costs were determined following the guidance and procedures as outline in the USACE, Cost and Schedule Risk Analysis Process incorporating the ICR comments.</p> <p>Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08</p>				
1-1	<p>Backcheck Recommendation Close Comment Closed without comment.</p> <p>Submitted By: Gareth Clausen (509 527-7587) Submitted On: 08-Apr-08</p>				
<p>Current Comment Status: Comment Closed</p>					
1835413	Cost Engineering	Cost Estimate	n/a'	n/a	n/a
<p>(Document Reference: MII Estimate) [This item is flagged as a critical issue.] Coordinating Discipline(s): Cost Engineering</p> <p>Of the \$149 million, construction cost (Oct 07 price level), 33% is based on unit prices per the estimator and allowance or judgment. Cost items less than \$10,000 are not included in these percentages. This clearly indicates to this review that 1/3 of the estimate may have a greater cost risk than the other 2/3.</p> <p>Submitted By: Gareth Clausen (509 527-7587). Submitted On: 17-Mar-08</p>					
1-0	<p>Evaluation Concurred Additional detail was added to the estimate based upon quantity and cost data not itemized in the original estimate. However the judgment of the estimating team where the design was still of preliminary concept nature was that use of detailed pricing could result in a less accurate estimate. In these cases allowances or estimator judgments were used. Risk analysis and development of contingencies is reflective of confidence in current estimate.</p> <p>Submitted By: Michael Oleson (817-332-8727) Submitted On: 31-Mar-08</p>				
1-1	<p>Backcheck Recommendation Close Comment However the judgment of the estimating team where the design was still of preliminary concept nature was that use of detailed pricing could result in a less accurate estimate. AGREE TO DISAGREE.</p>				

Submitted By: Gareth Clausen (509 527-7587) Submitted On: 08-Apr-08
Current Comment Status: Comment Closed

There are currently a total of [202](#) users online as of 04:50 PM 22-Apr-08.

Patent 11/892,984. | [About ProjNetSM](#) | [About Us](#) | [Privacy Policy](#) | [Test Browser](#) | [Test Connection](#) | [Call Center](#) |
SBU Only | SM property of ERDC since 2004.

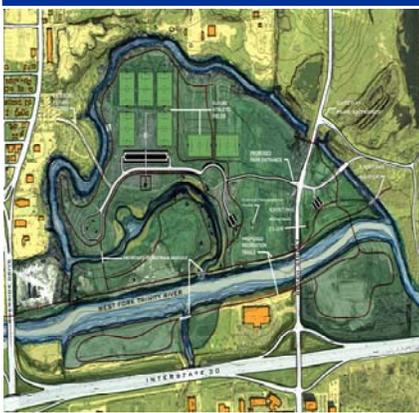
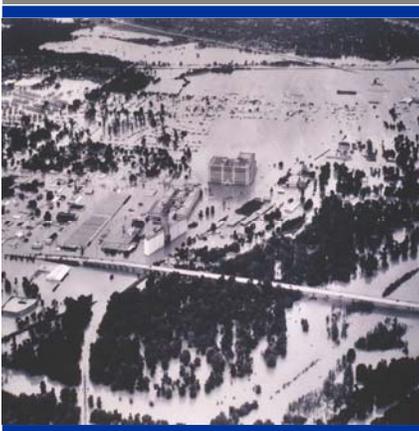
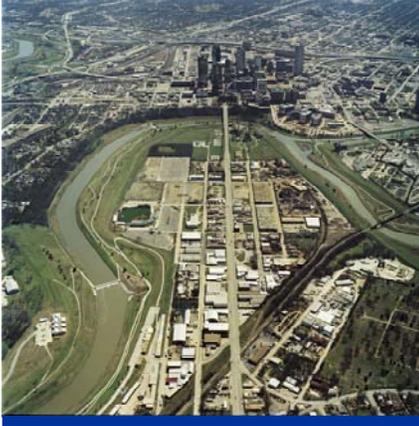
Questions and comments to Call Center staff@rcesupport.com, 217-367-3273 or 800-428-HELP (4357)

Classified information is NOT permitted on this site. Do NOT share your ProjNet password.

Additional Proposal Information

(This is as uploaded, a blank page will show if nothing was submitted)

**Enclosure 2b - FSEIS_FortWorthCentralCity(Mar08) w
Appendices.pdf**



Upper Trinity River Central City Fort Worth, Texas

Final Supplement No. 1
to the Final
Environmental Impact
Statement

Prepared by:
U.S. Army Corps of Engineers
Fort Worth District



March 2008

Rendering Image courtesy of CDM



**Final
Supplement No. 1 to the
Final Environmental Impact Statement
for the
Central City Project,
Upper Trinity River, Texas**

Lead Agency: U. S. Army Corps of Engineers,
Fort Worth District

Cooperating Agencies: N/A

Title of Proposed Action: Project Modification

Affected Jurisdiction: Upper Trinity River Basin, Trinity River, Texas

ABSTRACT:

The Central City Project is located within the vicinity of the downtown area of Fort Worth, Texas, along the West Fork and Clear Fork of the Trinity River and consists of a bypass channel, levee system, and associated improvements to divert flood flows around a segment of the existing floodway system. Included in the Corps of Engineers (Corps) portion of the project are hydraulic (valley storage) and related environmental and cultural resource mitigation requirements. Federal costs of the Corps portion of Central City Project are defined by PL 108-447 at \$110,000,000. The non-Federal sponsor is the Tarrant Regional Water District and the City of Fort Worth is one of the local partners. These entities are also sponsors for the Riverside Oxbow Ecosystem Restoration Project, which encompasses about 1,060 acres along a 3-mile reach just downstream of the Central City Project including a portion of the old natural channel of the West Fork that was severed as a cut-off oxbow when the channel was realigned. Federal Cost for the Riverside Oxbow project is estimated (2002 price levels) at about \$8,300,000. By letter dated 22 June 2006, the City of Fort Worth requested that the Corps conduct an evaluation of the potential benefits of modifying the Central City Project to incorporate the Riverside Oxbow Ecosystem Restoration project area to accommodate valley storage requirements. In response to that letter request, the Corps' initial evaluation suggested the concept merited additional study. Alternatives considered in more detailed evaluation of the proposal include the No Action Plan, which assumes that each project would proceed separately as currently approved and a Modified Central City Project alternative. This alternative has been formulated to integrate features of the Riverside Oxbow project and includes areas within the Riverside Oxbow project area for replacement valley storage. This analysis considers contingency valley storage sites that could be used in the event that hydraulic analyses conducted during more detailed design indicate that primary storage sites are not sufficient to achieve the required storage. The Modified Central City Project alternative would also involve relocation of the Samuels Avenue dam to a location slightly upstream of the approved dam site. To assure a comprehensive analysis, the total hydraulic system including the Central City and Riverside Oxbow areas and the channels upstream and downstream of these areas was evaluated. The recommended plan in this Supplement No. 1 to the Final EIS for the Central City Project is the Modified Central City alternative.

U.S. Army Corps of Engineers
Fort Worth District
ATTN: CESWF-EC-D (Mr. Saji Alummuttil)
P.O. Box 17300
Fort Worth, Texas 76102-0300

Commercial Telephone: (817) 886-1764

Summary

Final Supplement No. 1 to the Final Environmental Impact Statement for the Central City Project, Upper Trinity River, Texas

Draft

Final

U.S. Army Corps of Engineers
Fort Worth District
ATTN: CESWF-EC-D (Mr. Saji Alummuttil)
P.O. Box 17300
Fort Worth, Texas 76102-0300

Type of Action: Administrative
 Legislative

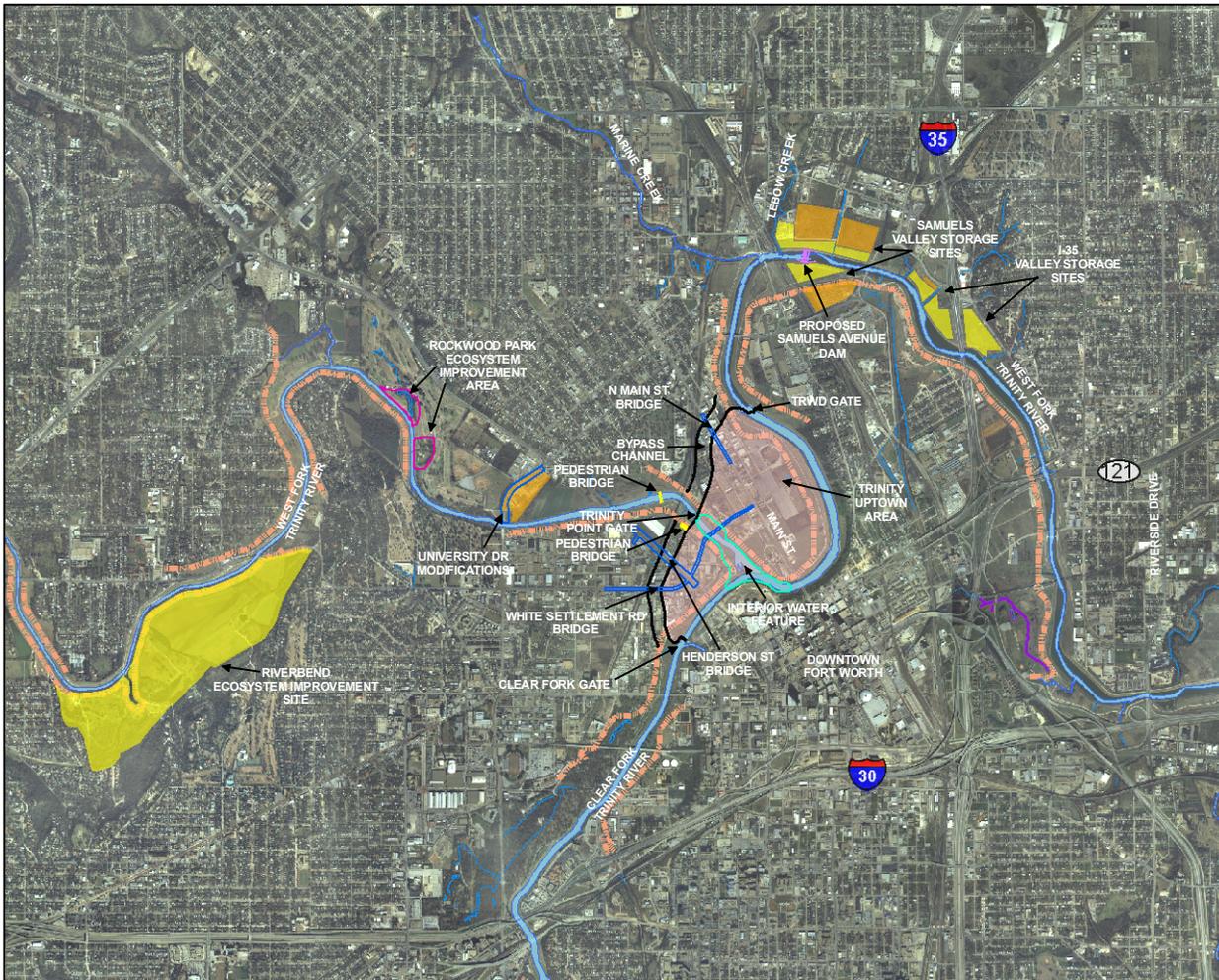
Project Description:

The overall public infrastructure project, termed the Central City project, is a multi-agency endeavor involving several Federal agencies and at least three non-Federal entities. The Tarrant Regional Water District is the non-Federal sponsor for the Authorized U.S. Army Corps of Engineers (Corps) component of the Central City project, with funding supplemented from the Trinity River Vision Tax Increment Financing District. As the project's name would suggest, the Central City Project is located within the immediate vicinity of the downtown area of Fort Worth, Texas, along the West Fork and Clear Fork of the Trinity River. The river is currently channelized with levees along the entire project area as part of the original Fort Worth Floodway, a Federal flood control project.

The currently approved Central City project consists of a bypass channel, levee system, and associated improvements to divert flood flows around a segment of the existing Floodway system adjacent to downtown Fort Worth. Water levels in the bypass channel and adjacent waterways would be controlled by a dam (Samuels Avenue Dam) with crest gates. The dam would be located on the West Fork of the Trinity River just east of Samuels Avenue with three isolation gates to protect the interior area east of the bypass channel from flood flows during large events. Two miles of the existing West Fork would function as a controlled, quiescent watercourse with a water feature or urban lake approximately 900-feet long in the interior area. Land acquisition and excavation would be required in the Riverbend area along the West Fork just west of downtown, and existing levees would be modified to provide hydraulic mitigation for the downtown features. Six bridges, four vehicular and two pedestrian, are proposed for the project. Pertinent features of the Central City Project are displayed in Figure 1.

The Corps component of the project, as originally defined, includes the bypass channel the isolation gates, the Samuels Avenue Dam, valley storage mitigation, and real estate, business and property owner relocations, and some engineering and design costs associated with these features. Included in the Corps project is all hydraulic mitigation (valley storage) and ecosystem mitigation, and all cultural resources mitigation excepting mitigation of impacts to buried archeological resources that may be discovered in conjunction with project features other than those included in the Corps project. The primary valley storage site for the Central City Project is the Riverbend site, which is located upstream of the primary Central City project features. Utilization of the Riverbend valley storage site would require

Central City
Figure 1
Central City Project



Legend

- BYPASS CHANNEL
- PROPOSED SAMUELS AVE DAM
- INTERIOR WATER FEATURE
- PEDESTRIAN BRIDGE
- EXISTING LEVEE
- ROAD IMPROVEMENT
- ECOSYSTEM RESTORATION AREA
- AQUATIC HABITAT MITIGATION AREA
- TRINITY UPTOWN AREA
- STREAMS

VALLEY STORAGE SITE WORK DESCRIPTION

- CUT
- FILL/SPOIL

0 0.25 0.5 1 Miles

Aerial Photography Date: January 2005



ATTENTION

This product is reproduced from geospatial information prepared by the U.S. Army Corps of Engineers. GIS data and product accuracy may vary. They may be developed from sources of differing accuracy, accurate only at certain scales, based on modeling or interpretation, incomplete while being created or revised, etc... Using GIS products for purposes other than those for which they were created may yield inaccurate or misleading results. The Corps of Engineers reserves the right to correct, update, modify, or replace GIS products without notification. For more information contact the Fort Worth District Planning office. As of 8/24/2007

fairly substantial habitat mitigation. The Corps project also includes additional ecosystem improvement measures, some in the Riverbend site and some in the Rockwood Ecosystem Improvement Area. The Corps of Engineers component of the Central City Project was authorized for construction by Section 116 of Public Law 108-447, dated 8 December 2004. Under that authority, Corps participation is limited to \$110 million with a total project cost \$220 million for that portion of the infrastructure plan in which the Corps can participate. A Final Environmental Impact Statement (FEIS) was completed for the Central City Project in January 2006 and the Project Report was completed in March 2006. The Record of Decision (ROD) was signed, and the Project Report recommending the Community-Based Alternative was endorsed as being technically sound and environmentally acceptable, by the Assistant Secretary Army for Civil Works (ASA (CW) on 7 April 2006.

The Riverside Oxbow Project, like the Central City Project, includes the Tarrant Regional Water District as the non-Federal sponsor with the City of Fort Worth as a local partner. The Riverside Oxbow project area encompasses about 1,060 acres just east of downtown Fort Worth, Texas, on the West Fork of the Trinity River. The project area is located downstream of Riverside Drive (the downstream end of the Fort Worth Floodway) and extends to the East 1st Street bridge crossing of the West Fork. This project was recommended to Congress by the Chief of Engineers for construction authorization in 2002; however that authorization has not yet occurred. Features of the Riverside Oxbow Project are displayed on Figure 2. This 3-mile reach includes a portion of the old natural channel of the West Fork, which was severed as a cut-off oxbow when the channel was realigned, the West Fork and Sycamore Creek confluence, and a low water dam downstream of Beach Street. Generally, the project area falls between Interstate Highway (IH) 30 on the south and the 100-year floodplain boundary to the north. Corps of Engineers participation in the Riverside Oxbow Project consists of reestablishment of low flows through the old river oxbow, including replacement of the Beach Street bridge; creation of about 50 acres of emergent wetlands; riparian habitat improvement on about 180 acres of existing forest tracks including establishment of a 150-foot wide riparian buffer (native grassland) along the West Fork from Riverside Drive to East 1st Street; establishment of native grasses and forb buffer zones on 46 acres; reforestation of 66 acres using a variety of native hard and soft mast trees and shrubs; and preservation and habitat improvement to about 207 acres of native floodplain grasslands. Corps participation also includes linear recreation along 9,000 feet of concrete trail, 1,400 feet of crushed aggregate trail, 7,600 feet of wood mulch equestrian trail as well as associated access points, and parking and restroom facilities.

An Interim Feasibility Report and Integrated Environmental Assessment was completed in April 2003 for the Riverside Oxbow Project. A Finding of No Significant Impact (FONSI) was signed by the Acting Fort Worth District Commander on 22 May 2003. The Interim Feasibility Report recommends implementation of the Locally Preferred Plan (LPP), which consists of the National Ecosystem Restoration (NER) Plan along with additional local features. On 29 May 2003 the recommended Plan for the Riverside Oxbow was approved by the Chief of Engineers. An addendum, dated April 2005, was prepared that changed the extent of the various habitat types to be restored. Total cost of the project was estimated in the 2005 addendum at about \$20,800,000 with a Federal cost of about \$8,300,000 based on October 2002 dollars. (Those costs are \$23,625,413 and \$9,426,540, respectively, when updated to 2005 dollars for this SEIS). Neither construction funding nor authority for implementation of this project has been provided by Congress and it was not included in the projects authorized in the Water Resource Development Act enacted on 8 November 2007.

By letter dated 22 June 2006, the City of Fort Worth requested that the Corps of Engineers conduct an evaluation to consider the potential benefits of modifying the Central City Project to incorporate the Riverside Oxbow project. The City's request recognized that each of these projects were moving forward as individual projects and that they are located adjacent to one another. The City and the Tarrant Regional Water District, both non-Federal sponsors for these two projects, indicated their opinion that based on their adjacency, there might be merit in merging the two projects. In their letter, the City of Fort Worth identified potential benefits of combining the projects that would not be achieved if they were to continue to proceed as individual projects. In response to that letter request, the Fort Worth District Corps of Engineers performed an initial evaluation which suggested that the concept merited detailed study. The result of those detailed evaluations is presented in this Supplement No. 1 to the Final EIS for the Central City Project.

Alternatives considered in the evaluation of the proposal by the City of Fort Worth include the No Action Plan, which assumes that each project would proceed separately as currently approved and a Modified Central City alternative. Although the Riverside Oxbow project is not currently authorized or funded for construction, it or a variant of it is expected to be implemented. The modified Central City alternative was formulated to integrate features of the Riverside Oxbow project and includes areas within the Riverside Oxbow area as replacement hydraulic mitigation sites where habitat development can occur. In order to assure a comprehensive analysis, the total hydraulic system was evaluated, including the Central City and Riverside Oxbow areas and the channels upstream and downstream of these areas. The analysis also considers five contingency valley storage sites that could be used in the event analyses conducted during the detailed design phase of the project indicate that the primary storage sites are not sufficient to achieve the required valley storage or that other factors preclude their use. One or more of these sites could be used to replace any of the primary sites depending on how much valley storage is required.

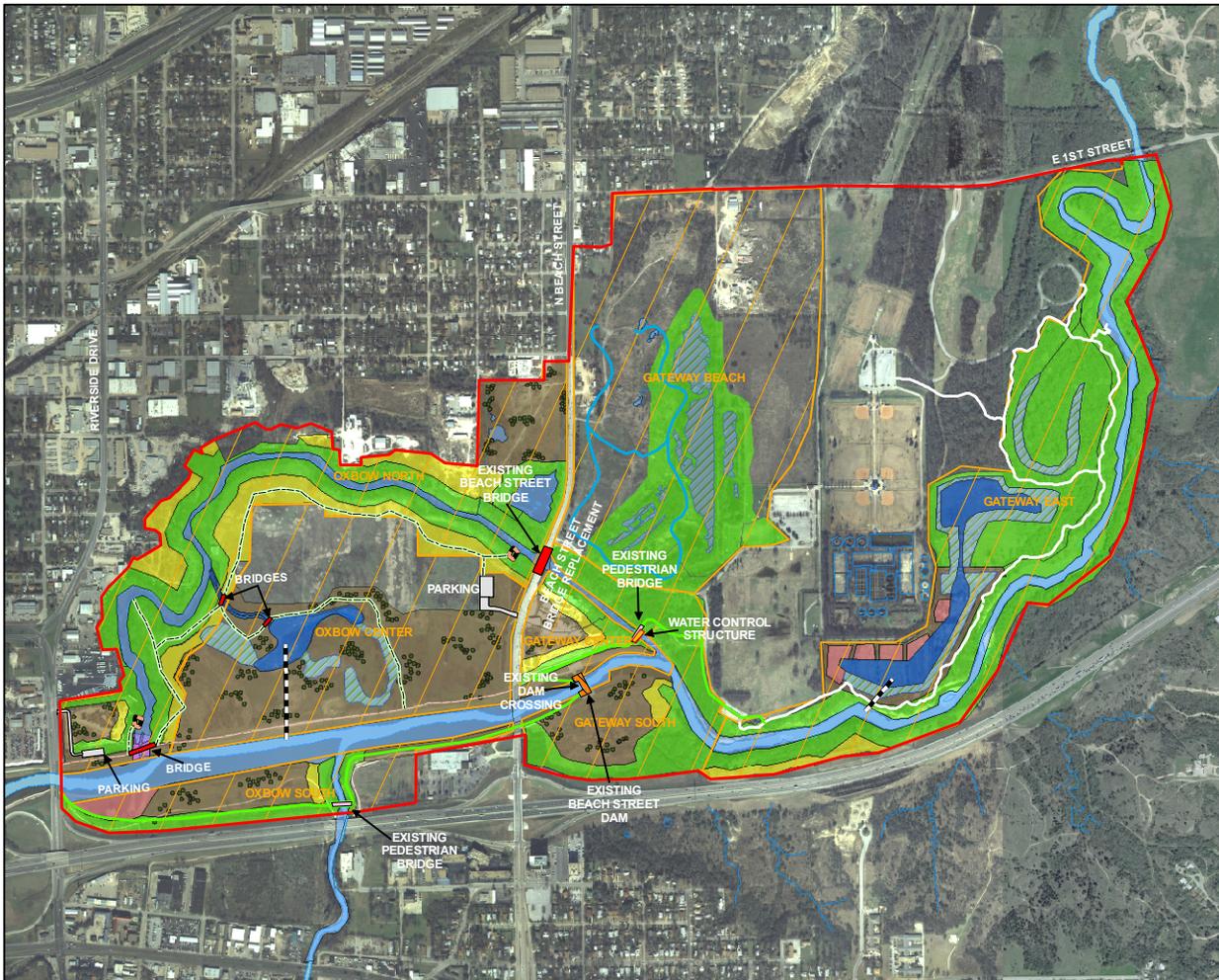
Based upon detailed evaluations presented in this Supplement No.1 to the Final EIS for the Central City Project, and on public coordination under the National Environmental Policy Act, the Fort Worth District has selected the Modified Central City alternative for recommendation, pending receipt of any substantial comments that would lead to a decision to the contrary. The major difference between the Modified and original Central City Projects is in location of valley storage sites required to accommodate the increased hydraulic efficiency of the bypass channel. The Modified Central City alternative retains the major features of the original Central City Project but utilizes existing public lands and minimizes use of private lands to a greater extent to accommodate the valley storage requirement. The Modified Central City alternative also involves relocation of the Samuels Avenue Dam to a location upstream of the Marine Creek confluence for geotechnical and environmental reasons. To maintain small boat access between the Trinity River and Marine Creek, a low water dam on Marine Creek and a boat channel with lock structure will be constructed between the Trinity River impoundment and Marine Creek. Figure 3 provides an overview of the Modified Central City Project Alternative.

Summary of Major Environmental Effects:

From a hydraulic standpoint, implementation of the Modified Central City alternative would accommodate the valley storage requirements of the overall Central City Project by using lands within the Riverside Oxbow restoration area rather than lands upstream of the project. Land acquisition costs would be reduced with implementation of the Modified Central City alternative due to the fact that much of the land within the Riverside Oxbow project area is already in public ownership. The Modified Central City alternative would avoid much of the initial impact to riparian woodland that would occur with the original Central City project. Upon completion of the habitat development and compensating for these impacts, the Modified Central City alternative would result in more riparian woodland habitat outputs with the development of over 147 acres of trees but less wetland habitat outputs relative to the No Action alternative. The Modified Central City alternative would have similar upland woodland impacts and outputs as the No Action alternative but would impact a greater amount of grassland habitat than the No Action alternative. Most of the grassland impacts will occur to areas dominated by non-native species and therefore no mitigation is deemed necessary. These changes in habitat outputs are primarily due to relocating the valley storage sites from the Riverbend area to the Riverside Oxbow project area and replacing grassland habitat at these sites with Bottomland Hardwood habitat.

Relocation of the Samuels Avenue dam site to upstream of the Marine Creek confluence would avoid some adverse effects to riparian and aquatic habitat along lower Marine Creek and all impacts to Lebow Creek. However, construction of a low water dam on Marine Creek and a boat channel from the Trinity River impoundment to Marine Creek would still result in inundation (albeit to a lesser extent) of riparian and aquatic habitat in Marine Creek that would still require mitigation. This aquatic habitat mitigation is proposed to occur in the Ham Branch tributary and in the remnant Sycamore Creek. Overall, implementation of the recommended Modified Central City alternative would increase flood protection,

Central City
Figure 2 - Approved
Riverside Oxbow Ecosystem
Restoration Project
 (Plan Approved by
 Secretary of the Army)



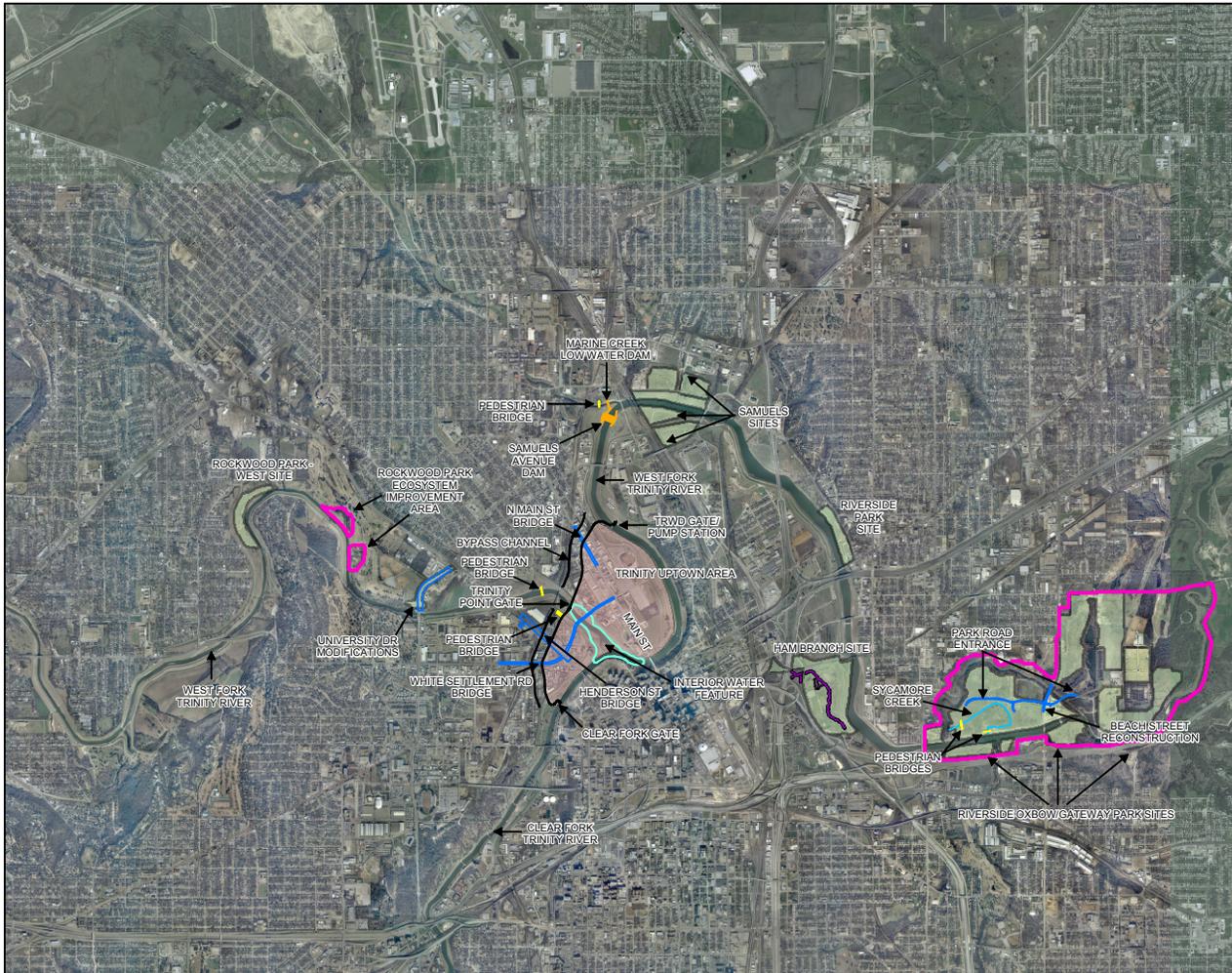
- Legend**
- ORIGINAL STUDY AREA BOUNDARY
 - STUDY AREA ZONE BOUNDARIES
 - BRIDGE
 - STREAMS
 - PLAN FEATURES
 - MAINTENANCE ACCESS
 - WETLAND PUMP
 - TXDOT TRAIL
 - EQUESTRIAN TRAIL
 - EXISTING TRAIL
 - EXISTING TRAIL TO BE REBUILT
 - PROPOSED TRAIL
 - PROPOSED TREES
 - EXISTING WATER
 - NEW LAKES
 - PLUG/CHANNEL VEGETATION
 - RIPARIAN WOODLANDS
 - RIPARIAN BUFFER
 - WET SOIL MANAGEMENT
 - WETLAND
 - NATIVE GRASSLANDS

0 0.1 0.2 0.4 Miles

Aerial Photography Date: January 2005



ATTENTION
 This product is reproduced from geospatial information prepared by the U.S. Army Corps of Engineers. GIS data and product accuracy may vary. They may be developed from sources of differing accuracy, accurate only at certain scales, based on modeling or interpretation, incomplete while being created or revised, etc... Using GIS products for purposes other than those for which they were created may yield inaccurate or misleading results. The Corps of Engineers reserves the right to correct, update, modify, or replace GIS products without notification. For more information contact the Fort Worth District Planning office. As of 8/24/2007



Central City
Figure 3 - Modified Central City Project Alternative

Legend

- BYPASS CHANNEL
- ROAD IMPROVEMENT
- PEDESTRIAN BRIDGE
- VALLEY STORAGE SITE
- ECOSYSTEM RESTORATION AREA
- AQUATIC HABITAT MITIGATION AREA
- TRINITY UPTOWN AREA

0 1,645 3,290 6,580
 Feet
 Aerial Photography Date: January 2005

US Army Corps of Engineers
 Fort Worth District

ATTENTION
 This product is reproduced from geospatial information prepared by the U.S. Army Corps of Engineers. GIS data and product accuracy may vary. They may be developed from sources of differing accuracy, accurate only at certain scales, based on modeling or interpretation, incomplete while being created or revised, etc... Using GIS products for purposes other than those for which they were created may yield inaccurate or misleading results. The Corps of Engineers reserves the right to correct, update, modify, or replace GIS products without notification. For more information contact the Fort Worth District Planning office.
 As of 10/1/07

habitat outputs, recreation, and local project costs, but would reduce habitat mitigation requirements and acquisition of private lands by over half relative to the No Action alternative.

Areas of Controversy:

Prior to publication of the Notice of Intent to prepare this Supplement No. 1 to the Final EIS for the Central City Project, and prior to release of the Draft Supplement for public review, areas of concern were derived through the National Environmental Policy Act compliance process. No areas of concern were raised by the public in regard to the Riverside Oxbow project during preparation or review of that Environmental Assessment. A number of issues have been identified through the review process associated with the Central City Project. Neighborhood groups raised concerns about maintaining the historical integrity of their neighborhoods, and to accessibility to project amenities from neighborhoods such as Oakhurst and Riverside, as well as those neighborhoods with limited amounts of park space. Additional concerns addressed the availability of mass transit to relieve anticipated traffic congestion, and the potential acquisition and relocation of businesses. Discussions with the Hispanic community included construction and bidding opportunities for Hispanic businesses and public outreach to the community through Spanish language television and radio. Overall, some public opposition was expressed over the public expenditure in general, by either the Federal Government or the project sponsors (or both) and over the potential use of eminent domain to acquire needed real estate. Project costs and acquisition of private lands are, therefore, considered to be areas of concern to be addressed in this Supplement. Very few concerns relative to environmental or technical issues were received.

Public Involvement:

A Notice of Intent (NOI) to prepare a draft Supplement No. 1 to the Final EIS for the Central City Project was published in the Federal Register on February 14, 2007. The NOI provided background information and rationale for preparing the Supplement to the Final EIS. Although no formal public Scoping meeting was held, a Public Notice was mailed to the known interested public with more than 2,000 notices being mailed concurrently with publication of the NOI in the Federal Register. A total of 11 telephone contacts or visits to Corps offices and five letters were received in response to the NOI and Public Notice. Two of the phone calls were from the local media seeking interviews with the Corps' Project Manager regarding the proposed study of modification of the Central City Project. Three calls or visits were by individuals seeking to determine whether their property would be affected. Four calls were to either correct mailing addresses or to obtain digital copies of the Public Notice. One call was from a State Representative's office to clarify that the local cost of the proposal was not from State general funds, but from the Tarrant Regional Water District's flood operation funding. The three additional telephone contacts were to inquire about status of the study and Supplemental EIS.

Of the five letters received, three were from land owners or attorneys representing land owners in the project study area. One individual, although in support of re-opening the oxbow to flows, was not in favor of integrating features of the Riverside Oxbow project because funding has not been authorized for the Riverside Oxbow project, and he was opposed to restoring riparian woodlands on his property. Another individual expressed concern regarding the taking of private lands for public purposes, health hazards, increased flooding in the Riverside Oxbow area for political expediency, project costs, and questioned whether the Corps could participate in small canals that are "essential for a water theme". An attorney representing two land owners suggested that the Supplement No. 1 to the EIS offered an opportunity to correct any alleged flaws in the Final EIS for Central City and to address additional hydraulic storage alternatives, including possible additional valley storage that could be achieved with design of the Samuels Avenue dam site. A scoping letter was received from the U.S. Fish and Wildlife Service, which indicated that changes have occurred within the study areas of the two projects that warrant additional field verification, and that opportunities exist to avoid adverse impacts that would occur with the original Central City Project. The League of Women Voters expressed support for the study as an opportunity to improve Gateway Park and to preserve riverbank trees and restore previously damaged or destroyed forest areas. The League suggested maximizing reforestation in the Oxbow area as a fair balance to the dense urban development expected in the main Trinity Uptown area.

The draft Supplement No. 1 to the Final EIS for the Central City project was filed with EPA and a Notice of Availability was published in the Federal Register on January 4, 2008. Approximately 3000 Notices of Availability were mailed to interested citizens and the document was made available on the Corps' Fort Worth District website, at local libraries, and on CD's available upon request. A Public Meeting was held on January 24, 2008 during the 45-day public comment period which ended on February 19, 2008.

The majority of comments received during the public comment period were in support of the Modified Central City project, specifically supporting the recreational and habitat improvements in the Riverside Oxbow and Gateway Park areas. Some comments were received that expressed concern regarding the effects of the valley storage mitigation sites on existing recreation facilities, neighborhood roads, and public use in the Riverside Oxbow and Gateway Park areas. Comments from agencies such as the Department of Interior Texas Council on Environmental Quality, and Texas Parks and Wildlife were primarily concerned with avoiding impacts to important ecological resources during detailed design and provided specific recommendations regarding habitat development and mitigation design.

**Supplement No. 1 to the
Final Environmental Impact Statement
for the
Central City Project,
Upper Trinity River, Texas**

Table of Contents

ABSTRACT:	i
Summary	S-i
Project Description:	S-i
Summary of Major Environmental Effects:	S-iii
Areas of Controversy:	S-iv
Public Involvement:	S-iv
Table of Contents	TOC-1
List of Tables	TOC-5
List of Figures	TOC-7
List of Appendices	TOC-9
Chapter 1 - Authority and Purpose	1-1
Study Authority	1-1
Purpose and Need	1-2
National Environmental Policy Act Requirements	1-3
Public Concerns	1-4
Study Objectives	1-4
Chapter 2 - Affected Environment	2-1
Climatology	2-1
Geology	2-1
Physiography	2-2
Soils	2-2
Hydrology and Hydraulics	2-2
Vegetative Cover	2-3
Wildlife	2-4
Threatened and Endangered Species	2-5
Aquatic Resources	2-5
Air Quality	2-7
Noise	2-7
Hazardous, Toxic, and Radioactive Waste	2-7
Cultural Resources	2-8
Socioeconomic Setting	2-8
Environmental Justice	2-10
Recreation and Open Space	2-11
Chapter 3 - Alternatives	3-1
No Action Alternative	3-1
Central City Project Description	3-2
Riverside Oxbow Ecosystem Restoration Project Description	3-3
Modified Central City Alternative	3-5

Formulation.....	3-6
Modified Central City Description:.....	3-11
Project Costs:.....	3-16
Project Outputs:.....	3-16
Other Considerations:.....	3-16
Comparison of Alternatives.....	3-17
Chapter 4 - Environmental Consequences.....	4-1
No Action Alternative.....	4-1
Land Use, Hydrology, and Hydraulics.....	4-1
Water Quality.....	4-2
Aquatic Resources.....	4-5
Vegetative Cover and Wildlife Habitat Values.....	4-6
Air Quality.....	4-7
Noise.....	4-8
Cultural Resources.....	4-9
Recreation.....	4-9
Public Versus Private Lands.....	4-9
Project Costs.....	4-9
Modified Central City Alternative.....	4-10
Hydrology and Hydraulics.....	4-10
Water Quality.....	4-11
Aquatic Resources.....	4-12
Vegetative Cover and Wildlife Habitat Values.....	4-13
Air Quality.....	4-15
Noise.....	4-15
Cultural Resources.....	4-16
Recreation.....	4-17
Public Versus Private Lands.....	4-18
Project Costs.....	4-18
Comparison of Project Alternatives.....	4-18
Technical Soundness.....	4-18
Habitat Impacts.....	4-19
Habitat Outputs.....	4-22
Recreation.....	4-22
Real Estate.....	4-23
Total Project Costs.....	4-23
Other Considerations.....	4-23
Irreversible or Irrecoverable Commitment of Resources.....	4-24
Cumulative Impact Analysis.....	4-26
Identification of Reasonably Foreseeable Projects.....	4-26
Assumptions.....	4-28
Methodology.....	4-28
Cumulative Impact by Resource.....	4-29
Hydrology and Hydraulics.....	4-29
Water Quality.....	4-30
Wetlands.....	4-30
Terrestrial Habitat.....	4-30
Aquatic Habitat.....	4-31
Cultural Resources.....	4-31
Hazardous, Toxic, and Radioactive Waste.....	4-32
Recreation Resources.....	4-32
Socio-Economic Variables, Environmental Justice, Community Structure.....	4-33

Aesthetics	4-35
Air Quality	4-35
Noise and Light	4-35
Public Services and Facilities.....	4-36
Environmental Compliance	4-37
Endangered Species	4-37
Section 404 Clean Water Act	4-37
Sections 9 and 10 Rivers and Harbors Act	4-37
Executive Order 11988 - Flood Plain Management	4-38
Executive Order 11990 - Protection of Wetlands.....	4-38
Executive Order 12898 - Environmental Justice.....	4-38
Section 106 of the National Historic Preservation Act	4-38
Cumulative Impacts.....	4-38
Hydrology and Hydraulics	4-39
Chapter 5 - Public Involvement.....	5-1
Scoping.....	5-1
Review of the Draft Supplemental EIS.....	5-1
Conclusions and Recommendations	C&R-1
Conclusions.....	C&R-1
Recommendations	C&R-3
List of Preparers.....	LOP-1

List of Tables

Table 2-1	Vegetation/Land Use Within Central City and Riverside Oxbow Study Areas.....	2 - 4
Table 2-2	Federal Listed or Candidate Species, Upper Trinity River	2 - 5
Table 2-3	Racial Composition – County, Original Study Area, Riverside Oxbow Area, and Combined Study Area	2 - 9
Table 2-4	Predicted Population Growth for Tarrant County by Ethnicity	2 -10
Table 3-1	Valley Storage Analysis.....	3 - 6
Table 3-2	Initial Screening of Potential Valley Storage Sites	3 - 8
Table 3-3	Initially Identified Valley Storage Sites (Minimum Requirement).....	3 - 9
Table 3-4	Locally Preferred Valley Storage Plan.....	3 -10
Table 4-1	Habitat Outputs of Modified Central City and No Action Alternative	4 -14
Table 4-2	Comparison of Alternative Outputs and Effects	4 -20
Table 4-3	Reasonably Foreseeable Projects Considered	4 - 27
Table 4-4	Cumulative Impact Analysis of Alternatives	4 - 29

List of Figures

Figure 1	Central City Project.....	after S - i
Figure 2	Riverside Oxbow Project	after S - iii
Figure 3	Modified Central City Alternative	after S - iii
Figure 4	Modified Central City Study Area	after 2 - 1
Figure 5	Valley Storage Sites for the Original Central City Project	after 3 - 3
Figure 6	Valley Storage Analysis (47 Sites)	after 3 - 7
Figure 7	Environmentally Sensitive Areas in Riverside Oxbow.....	after 3 - 7
Figure 8	Potential Valley Storage Sites (22 Sites).....	after 3 - 7
Figure 9	Identified Valley Storage Sited to Meet Minimum Requirement (17 sites).....	after 3 - 9
Figure 10	Valley Storage Sites with the Locally Preferred Plan	after 3 - 9
Figure 11	Proposed Samuels Avenue Dam Location and Structural Features	after 3-15
Figure 12	Habitat Development Plan for the Riverside/Gateway Area	after 4-13
Figure 13	Conceptual Recreation Plan for the Riverside/Gateway Area	after 4-17
Figure 14	Modified Alternative Recreational Features	after 4-17

List of Appendices

APPENDIX A	Hydrology and Hydraulics
APPENDIX B	Geotechnical
APPENDIX C	Civil/ Structural
APPENDIX D	Socioeconomics and Environmental Justice
APPENDIX E	Habitat Evaluations
APPENDIX F	404 (B)(1) Analysis
APPENDIX G	Fish and Wildlife Coordination Act Report
APPENDIX H	Public Review Comments and Response

**Supplement No. 1 to the
Final Environmental Impact Statement
for the
Central City Project,
Upper Trinity River, Texas**

Chapter 1 - Authority and Purpose

Study Authority

The initial study effort leading to the Central City and Riverside Oxbow Project Reports was an Interim Feasibility study of the Clear Fork and West Fork of the Upper Trinity River Basin, Fort Worth, Texas. This Interim Feasibility study was conducted in response to the authority contained in the following United States Senate Committee on Environment and Public Works Resolution dated April 22, 1988, as quoted below:

"Resolved by the Committee on Environment and Public Works of the United States Senate, that the Board of Engineers for Rivers and Harbors is hereby requested to review the report of the Chief of Engineers on the Trinity River and Tributaries, Texas, House Document No. 276, Eighty-Ninth Congress, and other pertinent reports, with a view to determining the advisability of modifying the proposal for further studies contained therein, with particular reference to providing improvements in the interest of flood protection, environmental enhancement, water quality, recreation, and other allied purposes in the Upper Trinity River Basin with specific attention on the Dallas-Fort Worth Metroplex.

The study area for that broader investigation generally includes the Standard Project Flood (SPF) floodplain of the Clear Fork and West Fork of the Trinity River from Interstate Highway (IH) 820 in east Fort Worth to the Lake Worth Dam on the West Fork and the Benbrook Dam on the Clear Fork. Site reconnaissance and documentation of existing conditions were completed for the overall study area in the fall of 2001. The Central City Channel Realignment Feasibility Study was completed by TRWD in April 2003 in association with the Texas Water Development Board (TWDB). This study concluded that various configurations of a bypass channel to divert flood flows around the Central City were feasible, and paved the way for furthering the bypass channel concept. During the study process of the Central City project area, the Corps' study authority was modified by Public Law 108-447, dated 8 December 2004, which authorized Corps of Engineers' participation for construction as follows:

"Sec. 116. CENTRAL CITY, FORT WORTH, TEXAS. The project for flood control and other purposes on the Trinity River and Tributaries, Texas, authorized by the River and Harbor Act of 1965 (Public Law 89-298), as modified, is further modified (Public Law 108-447, Section 116) to authorize the Secretary to undertake the Central City River Project, as generally described in the Trinity River Vision Master Plan, dated April 2003, as amended, at a total cost not to exceed \$220,000,000, at a Federal cost of \$110,000,000, and a non-Federal cost of \$110,000,000, if the Secretary determines the work is technically sound and environmentally acceptable. The cost of the work undertaken by the non-Federal interests before the date of execution of a project cooperation agreement shall be credited against the non-Federal share of the project costs if the Secretary determines that the work is integral to the project."

The Trinity River Vision Master Plan explicitly describes ultimate removal of a portion of the existing levee system as a component of the Vision, and the authorization, being based on the Vision document, provides for said modification to the existing floodway system.

Earlier during investigations under the Interim Feasibility study of the Clear Fork and West Fork of the Upper Trinity River Basin, the Tarrant Regional Water District (TRWD) and the City of Fort Worth (project sponsors), expressed an interest in moving into plan formulation for the Riverside Oxbow area. An Interim Feasibility Report with an Integrated Environmental Assessment was completed for the Riverside Oxbow Project in April 2003. A Finding of No Significant Impact (FONSI) was signed by the Acting Fort Worth District Commander on 22 May 2003. The Interim Feasibility Report recommends implementation of the Locally Preferred Plan (LPP), which consists of the National Ecosystem Restoration (NER) Plan along with additional local features. On 29 May 2003 the recommended Plan for the Riverside Oxbow was approved by the Chief of Engineers. An Addendum to the Riverside Oxbow Interim Feasibility Report was completed in April 2005 that further refines certain features of the Riverside Oxbow Project and changed the extent of the various habitat types to be restored. To date, neither construction funding nor authority for implementation of the Riverside Oxbow Project has been provided by Congress.

Purpose and Need

In 1999, Streams and Valleys of Fort Worth, a citizen organization that works with government and community agencies to improve the Trinity River, published the Streams and Valleys Trinity River Master Plan (SVTRMP). This Master Plan was the result of a broad scale community-based effort to develop a plan for 88 miles of the West and Clear Forks of the Trinity River including Marine Creek, Mary's Creek, and Sycamore Creek. The primary objective of the plan was to preserve the environmental quality of the river while enhancing the quality of life in the surrounding community. Modifications to the floodway levees to provide enhanced public access were another objective of this plan. Study of the Riverside Oxbow Project on the West Fork was initiated at the request of the TRWD at a meeting of the Upper Trinity River Feasibility Study Flood Management Task Force on 20 September 1999, and with approval for modification of the Upper Trinity River Feasibility Cost Sharing Agreement (FCSA) during a meeting of the Upper Trinity River Feasibility Study Flood Management Executive Committee on 24 September 1999. In August 2000, Tarrant Regional Water District (TRWD), in association with Streams and Valleys, the City of Fort Worth, the Corps, and Tarrant County, with assistance from the architecture/planning firm of Gideon Toal initiated development of the Trinity River Vision (TRV) Master Plan under the auspices of the Interim Feasibility Study for the Clear Fork and West Fork of the Trinity River. An important goal of the TRV Master Plan focused on the preservation and enhancement of the river and its corridors so that they remain essential greenways for open space, trails, neighborhoods, wildlife, and special recreation. The TRV Master Plan addressed eight segments of the Trinity River and its tributaries: Central City, Clear Fork (North), Clear Fork (South), Marine Creek, Mary's Creek, Sycamore Creek, West Fork (East), and West Fork (West). The City of Fort Worth approved the TRV Master Plan in May 2003 as a guide for future development along the Trinity River and its tributaries. The City Council also amended the City of Fort Worth Comprehensive Plan and the Park, Recreation, and Open Space Master Plan to incorporate the TRV Master Plan and authorized the Mayor to appoint representatives to the TRV Leadership Council.

The Interim Feasibility Report and Integrated Environmental Assessment for the Riverside Oxbow Project, also completed in April 2003, was approved by the Chief of Engineers on 29 May 2003. An addendum, dated April 2005, was completed that changed the extent of the various habitat types to be restored. As has been stated, Public Law 108-447, dated 8 December 2004, authorizes the Secretary to undertake the Central City Project "as generally described in the Trinity River Master Plan, dated April 2003." The Corps' Central City Project Report recommending the Community-Based Alternative was endorsed as being technically sound and environmentally acceptable by the Assistant Secretary Army for Civil Works ASA (CW) on 7 April 2006. Many components of the Community Based Alternative described in the Central City Project Report were developed from the goals presented in Trinity River Vision Master Plan. This Supplement No. 1 to the Final EIS for the Central City Project has been prepared in response to the City of Fort Worth's 22 June 2006 request for the Corps to consider the potential benefits of modifying the Central City Project to incorporate the Riverside Oxbow project.

National Environmental Policy Act Requirements

This document has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969 and guidance contained in pertinent implementing regulations. NEPA is the primary legislation that sets forth regulations for the consideration of environmental consequences, both beneficial and adverse, in the decision-making process of proposed major Federal actions. Title II of this act created the Council on Environmental Quality (CEQ) and in 1978 the CEQ issued regulations (40 CFR Parts 1500-1508) which established statutes for implementing the provisions of NEPA. This Supplement No. 1 to the Final EIS for the Central City Project (SEIS) serves to fulfill the requirements of NEPA and pertinent USACE regulatory guidance for implementing the procedural provisions of NEPA found in Engineer Regulation (ER) 200-2-2.

Due to the fact that documentation of effects under NEPA on both projects was completed very recently, much of the information regarding environmental setting and problems and opportunities is not repeated within this document. Rather, that background information relative to evaluations contained in this report is incorporated by reference to those recent reports. Detailed documentation of this background information is contained in the Final EIS for the Central City Project dated January 2006, and the Interim Feasibility Report with Integrated Environmental Assessment for the Riverside Oxbow Project dated April 2003 with Addendum dated April 2005. Additional background information is contained, and may be referenced, in the Record of Decision (ROD) for the Central City Project and endorsement of the Central City Project Report, both by the ASA (CW) dated 7 April 2006. Also available for reference are the Finding of No Significant Impact (FONSI) for the Riverside Oxbow Project signed on 22 May 2003 and the Chief of Engineers Report on the Riverside Oxbow dated 29 May 2003.

In addition to the NEPA documentation for the Central City Project and the Riverside Oxbow Project, two other NEPA documents of relevance are also hereby incorporated by reference. Those documents are the Trinity River and Tributaries Environmental Impact Statement (TREIS) and the Programmatic EIS for the Upper Trinity River Basin (PEIS) dated June 2000.

The TREIS was prepared by the Corps in the mid-1980s to address the increase in floodplain development that was occurring in the upper Trinity River basin. The TREIS focused on actions requiring Corps permits under Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act (CWA) of 1972, as amended, with emphasis on addressing cumulative impacts of granting multiple permits. Two conclusions of this planning effort were that existing regional floodplain management policies were inadequate to maintain existing levels of flood protection within the region's major urban areas and that additional, more stringent, floodplain management criterion were needed. In particular, this effort identified the system's valley storage as a critical element requiring protection through the permitting process. The Record of Decision (ROD) for the TREIS was signed in 1988. The TREIS ROD included hydrologic and hydraulic criteria for actions that require Corps permits, such as the 100-year flood and Standard Project Flood (SPF) water surface elevations along the Clear Fork, Elm Fork, and West Fork of the Trinity River, as well as tributaries that have drainage areas in excess of 100 square miles. The ROD also included criteria for projects in the floodplains of other tributaries of the Trinity River and established guidelines for mitigation of habitat losses resulting from projects in floodplain areas covered by the TREIS.

The Programmatic EIS for the Upper Trinity River Basin focuses on various potential Corps projects that were being investigated or considered at the time. Reasonably foreseeable projects being pursued by other entities within the study area were also identified and potential direct and cumulative impacts resulting from implementation of the entire suite of projects on the human and natural environment were assessed. The document provides a general description of the environmental setting of the Upper Trinity River Basin. The Programmatic EIS for the Upper Trinity River Basin identifies the Clear Fork and West Fork watersheds, inclusive of the Central City and Riverside Oxbow segments, as actively under study at that time for flood damage reduction, ecosystem restoration, and recreation purposes. The previous NEPA documents for the Central City Project and the Riverside Oxbow Project, as well as this Supplement No. 1 to the Final EIS for the Central City Project are "tiered" to the Programmatic EIS.

Public Concerns

Two primary areas of public concern were identified during coordination of the Draft and Final EIS for the Central City Project. These concerns are the public expenditure of funds in general and the potential use of eminent domain to acquire needed real estate. Project costs and acquisition of private lands therefore are considered to be primary areas of public concern to be addressed in this Supplement. Public and agency support was expressed for and compatible recreational access during the planning and coordination of the Riverside Oxbow Project but no major areas of public concern were identified in association with that project.

Study Objectives

Initial evaluation of the Central City Project identified four general categories of problems and opportunities as Flood Protection, Ecosystem Improvement, Urban Revitalization, and Recreation. The objective identified during planning of the Riverside Oxbow Project is Ecosystem Restoration with a secondary goal of Recreation. Corps participation in the development of water resource related opportunities is limited to the primary Federal purposes of Flood Protection and Ecosystem Restoration, with compatible Recreation as a secondary Federal purpose. Any development not considered to be a Federal purpose may be incorporated into the project proposal as the responsibility of the non-Federal or non-Corps project sponsors and/or participants. Those goals and objectives identified during initial formulation remain valid in this current evaluation.

The goals and objectives established for Flood Protection were (and remain) to restore the design level of protection (SPF+4 feet) where it exists throughout the system and to maintain or improve flood protection associated with interior drainage to the floodway system. The objectives for Ecosystem Improvement are to restore, improve, and diversify aquatic habitat associated with the Clear and West Forks of the Trinity River for native aquatic organisms, to improve and increase quantity of emergent wetland habitat for migratory birds of ecological importance, to establish continuity and connectivity within and between regionally and nationally significant ecosystems, and to protect and improve existing pockets of high quality bottomland hardwoods adjacent to the river system.

Urban Revitalization objectives of the project sponsors are to provide aesthetic and recreational focal points for the Central City, encourage a higher density of people living, working, playing, and learning in the Central City, orient mixed use development directed toward the river, create an interior water feature or focal point, provide a higher normal water level, eliminate or modify levees where feasible while maintaining the design level of flood protection, create new and enhance existing linkages to neighborhoods and districts, and to enhance redevelopment potential of Central City lands. Recreation objectives are to provide extensive and direct public access to the river and waterfront, facilitate a water-based system of linkages between Downtown, the Stockyards, and the Cultural District, provide recreational and open space amenities, provide a continuity of urban trails through Downtown consistent with the Trinity Trails system, and to create additional trail linkages with neighborhoods and cultural amenities.

While the original study objectives remain in effect, this supplement is being prepared to analyze the potential effects of modifying the Central City project to incorporate features of the Riverside Oxbow Ecosystem Restoration project and to consider areas within Riverside Oxbow as replacement hydraulic mitigation sites. A further objective of this current analysis is to avoid or at least minimize adverse environmental effects of the approved Samuels Avenue dam site by identifying a potential alternate site.

Chapter 2 - Affected Environment

This chapter describes the area of the affected environment (as displayed in Figure 4) within the Upper Trinity River Basin and outlines its major features and existing conditions with respect to various categories pertinent to this study. A forecast of environmental conditions over a 50-year period of analysis was used as a basis for assessing impacts of the alternatives in Chapter 4. The categories include climatology, geology, physiography, soils, hydrology and hydraulics, vegetative cover, terrestrial resources, aquatic resources, water quality, air quality, cultural resources, socioeconomics environmental justice, and recreation and open space. Comprehensive scientific lists by category have been included in the Final EIS for the Central City Project, the Riverside Oxbow Interim Feasibility Report with Integrated Environmental Assessment, and the Programmatic EIS for the Upper Trinity River Basin. In order to reduce redundant paperwork, consistent with the provisions of the National Environmental Policy Act, those comprehensive lists are not repeated here but are incorporated by reference. The following paragraphs, therefore, are presented to provide brief overview or summary of the affected environment.

Climatology

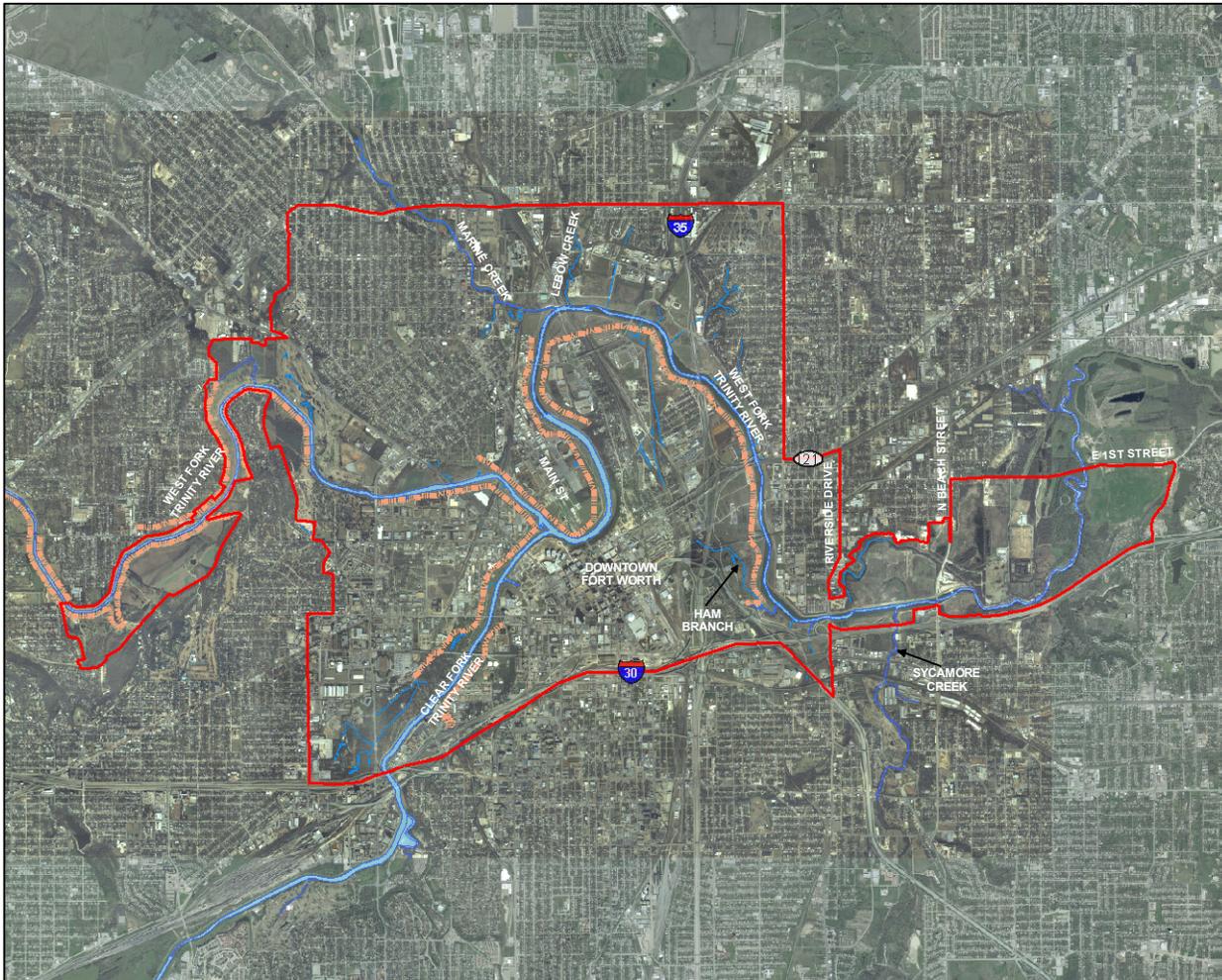
The climate in the Upper Trinity watershed and the study area is humid subtropical with hot summers and mild winters. Snowfall and sub-freezing temperatures are experienced occasionally during the winter season. Generally, the winter temperatures are mild with occasional cold periods of short duration resulting from the rapid movement of cold pressure air masses from the Northwestern polar regions and the continental western highlands. Recorded temperatures at the Dallas - Fort Worth (DFW) International Airport have ranged from a high of 113^o F in June 1980 to a low of -1^o F in December 1989. The average annual temperature over the watershed varies from 64^o F at Bridgeport in the northwestern extremity of the watershed to 66^o F at DFW International Airport. The mean annual relative humidity for the DFW Metroplex is about 65 percent. The average annual precipitation over the watershed varies from about 30 inches at Jacksboro, in the northwestern extremity of the watershed, to about 32 inches in the DFW Metroplex. The extreme annual precipitation amounts since 1887 include a maximum of 53.54 inches in 1991 at the DFW International Airport and a minimum of 17.91 inches in 1921 at Fort Worth. The maximum recorded precipitation in a 24 hour period was 9.57 inches, at Fort Worth on the 4th and 5th of September 1932. A large part of the annual precipitation results from thunderstorm activity, with occasional very heavy rainfall over brief periods of time. Thunderstorms occur throughout the year, but are more frequent in the late spring and early summer. The average annual evaporation rate is estimated to be approximately 60 inches per year.

Geology

The regional geology of the Upper Trinity River Basin reflects the various depositional phases and environments that took place during Pennsylvanian, Cretaceous, and Quaternary geologic times. The oldest strata, which are exposed in the northwestern reaches of the basin, are Pennsylvanian in age and consist of marine and near shore sand, shale, and limestone strata. Cretaceous strata, consisting of near shore sand and marine shale and limestone are exposed at the surface over most of the Upper basin. The Cretaceous sediments, which dip gently toward the east and southeast, were deposited unconformably over the northwest dipping Pennsylvanian strata after a period of lifting and erosion. The sediments found in the study area as a result of the processes of weathering and erosion of the older rocks during the Quaternary Period are composed of unconsolidated sand, gravel, silt, and clay which comprise the alluvial deposits which occur in the Trinity River floodplain and its major tributaries. The highest terraces located at the outer edge of the floodplain represent the oldest remnant floodplain. Cycles of successive down-cutting produced terraces of lower and younger floodplain levels. Within the study area, three separate terrace levels are recognized. The present floodplain is approximately 20 feet above the river with successively older terraces lying about 50, 70, and 90+ feet above the river level. All three of the terraces correlate with periodic advances and retreat of continental glaciations with resulted in periods of heavy rainfall and low sea levels.

Central City

Figure 4 - Modified Project Study Area



Legend

-  MODIFIED PROJECT STUDY AREA BDY
-  STREAMS
-  EXISTING LEVEE



0 0.45 0.9 1.8 Miles

Aerial Photography Date: January 2005



**US Army Corps
of Engineers**
Fort Worth District

ATTENTION

This product is reproduced from geospatial information prepared by the U.S. Army Corps of Engineers. GIS data and product accuracy may vary. They may be developed from sources of differing accuracy, accurate only at certain scales, based on modeling or interpretation, incomplete while being created or revised, etc... Using GIS products for purposes other than those for which they were created may yield inaccurate or misleading results. The Corps of Engineers reserves the right to correct, update, modify, or replace GIS products without notification. For more information contact the Fort Worth District Planning office. As of 8/24/2007

Ground water in the terrace and floodplain deposits is hydraulically connected to the river, its major tributaries, and larger lakes. The source is chiefly the infiltration of rainfall on the surface of the alluvial terrace and floodplain deposits. Most of the ground water accumulating in the floodplain deposits is discharged into surface water bodies, evaporated, or transpired. The primary aquifer for most of the ground water production in the study area is the Trinity Group which is of Lower Crustaceous age and consists of two sandstone formations.

Physiography

The study area falls within the Fort Worth Prairies area of the Cross Timbers and Prairies ecoregion of Texas as outlined by Correll and Johnston (1970), Gould (1975), Shinnery (1988), Simpson (1988), (Hatch et al. 1990). The vegetation in the region displays tremendous biological diversity as a result of numerous factors, including the region's climatic and geologic variations and its location as a transition zone between the eastern deciduous forests and the central North American grasslands.

Fort Worth Prairie: Although often confused with the Blackland Prairie, the Fort Worth Prairie differs in many minor features. The chief one of these is that the Fort Worth Prairie typically has dark-colored calcareous soils established upon firm, persistent bands of limestone, as opposed to the softer underlying clayey substructure of the Blackland Prairie region. The Fort Worth Prairie, which along with the Lampasas Cut Plains comprises the Grand Prairie, extends as a continuous body of open grasslands, roughly 10 to 30 miles wide, from near the Red River in the north, south about 110 miles to where it ends in the wooded area along the Brazos River near the Johnson County-Hill County line. It is generally level, rolling, and hilly limestone country with extensive shallow or gravelly soils with some areas of deep clay soils. Original plant cover was mid to tall grass prairie broken by an occasional mesquite or juniper (cedar), or rocky places with desert species or endemics.

Soils

The various soil associations found in the study area can also be divided into three general depositional categories: Floodplain soils, river terrace soils, and upland soils. The Trinity River is located in the Fort Worth Prairies area of the Cross Timbers and Prairies vegetative ecoregion. Mollisols are found on the Fort Worth Prairie on various limestone layers and on the Blackland Prairie on rocks of the Austin Group. All these areas have high calcium carbonate levels and consolidated parent rocks. The shallow depth of the soils tend to restrict rooting and soil water storage. Under natural conditions, Blackland Prairies are dominated by grasses such as little bluestem, big bluestem, switch grass, Indian grass, and side-oats grama with narrow fringes of bottomland hardwoods being found along rivers and streams (Nixon and Willet 1974). Within the mainstem segment of the Trinity River, the topography is gently rolling to nearly level and elevations are approximately 400 feet above sea level (USFWS 1989). The predominant floodplain soil is classified as frequently flooded Trinity Clay (Coffee et al. 1980).

Hydrology and Hydraulics

Basic Hydraulic analyses were performed on the West Fork and the Clear Fork of the Trinity River for both the Trinity Regional EIS and the Upper Trinity River Programmatic EIS. The limits of the hydraulic analysis for the model for the West Fork extends from the confluence of the Elm Fork and the West Fork upstream to the Lake Worth Dam and the model for the Clear Fork extends from the confluence of the Clear Fork and the West Fork upstream to the Benbrook Lake Dam.

Water surface profiles were computed for a wide range of flood events including the 1-year, 2-year, 5-year, 10-year, 25-year, 50-year, 100-year, 500-year, and the Standard Project Flood (SPF). The Standard Project Flood is defined as the flood that would be expected from the most severe combination of meteorological and hydrologic conditions that are considered to be reasonably characteristic of the geographical region involved, excluding extremely rare combinations. The SPF usually has a 0.3 to 0.08 percent probability of being equaled or exceeded in any year, and is usually between 40 and 60 percent of a Probable Maximum Flood (PMF). The SPF represents a "standard" against which the degree of

protection for a project may be judged and compared with protection provided at similar projects in other localities.

High watermarks from the June 1989 and May 1990 flood events supplemented with United States Geologic Survey (USGS) gage data were used in the calibration process. The 1991 topographic data represented hydraulic conditions at the time of the June 1989 and May 1990 floods sufficiently to be used without revision for the calibration. The calibrated conveyance models were used as a basis for the development of the Existing Conditions storage models. The storage models were developed for the computation of elevation-discharge-storage ratings used in the hydrologic watershed models for the computation of flood event discharges. Flow areas that were considered ineffective in the conveyance models were included in the storage models to more accurately compute storage volumes. Development of the Baseline models was based on the requirements of the Upper Trinity River Feasibility Study to have certain projects that influence the hydraulic and hydrologic conditions within the floodplain incorporated into the models to form a basis for future hydraulic studies within the Trinity River corridor.

Vegetative Cover

Riparian and Bottomland Vegetation: Bottomlands occur in the transition zone between aquatic and upland ecosystems. Bottomland hardwood systems are considered to be Texas' most diverse ecosystem. Prior to European settlement, Texas had approximately 16 million acres of bottomland hardwood riparian habitat. Today the state has less than 5.9 million acres (Texas Center for Policy Studies 1995). Bottomlands serve several important functions. They contribute to the state's biodiversity. According to the Texas Environmental Almanac (1995), 189 species of trees and shrubs, 42 woody vines, 75 grasses, and 802 herbaceous plants occur in Texas' bottomlands. They are also known to support 116 species of fish, 31 species of amphibians, 54 species of reptiles, 273 bird species and 45 species of mammals. At least 74 species of threatened and endangered animals depend directly on bottomland hardwood systems and over 50 percent of Neotropical songbirds not listed as endangered or threatened are associated with these systems. Besides providing critical wildlife and bird habitat, bottomland hardwood systems 1) serve as catchments and water retention areas in times of flooding; 2) help control erosion; 3) contribute to the nutrient cycle, and 4) play a vital role in maintaining water quality by serving as a depository for sediments, wastes and pollutants from runoff. Despite these important functions, bottomland hardwoods ecosystems are one to the most endangered ecosystems in the United States (MacDonald et al. 1979). For all these reasons, the bottomland vegetation system is of great environmental concern in the analysis of the study area.

Wetlands: Interior wetlands which include bottomland hardwood forests, riparian vegetation, inland freshwater marshes, and the playa lakes of West Texas account for 80 percent of the total wetland acreage in Texas and the vast majority are located on private property. In the last 200 years, Texas has lost over 60 percent of these inland wetlands due to agriculture conversion, timber production, reservoir construction and urban and industrial development.

Open Water Areas: These are bodies of water that retain water on a continuous basis and includes rivers, perennial streams, and small ponds. In most cases there is little or no emergent vegetation and no evidence of any submersed or floating plants, especially within the open water zone. This lack of vegetation is due to a combination of reasons. The banks of these water bodies tend to be relatively steep making it difficult for vegetation to become established. A second reason is the continuous presence of water of varying depths prohibits the growth of most plant species which are not able to tolerate prolonged and/or deep water conditions. A final reason is the lack of light penetration needed to support this type of vegetation as the water in the ponds located within the floodplain is extremely turbid due to the continual addition and stirring of sediments resulting from rainfall events and runoff. Because the Trinity is an urban river and a main artery for a series of reservoirs, the amount and quality of water it receives is influenced by more factors than just upstream and local rainfall amounts.

Upland Vegetation: Open grasslands are located on upland sites and within the manicured floodway. Common grass species include purple threeawn, King Ranch bluestem, side-oats grama, Japanese brome, windmill grass, Bermuda grass, jungle rice, barnyard grass, plains lovegrass, perennial

rye grass, Texas winter grass, Dallis grass, annual bluegrass, and Johnson grass. A few remnant stands of mature post oak forest with openings dominated by little and silver bluestem may still be found in some high floodplain terraces and upland slopes of that portion of the study area which falls within the Cross Timbers and Prairies ecoregion.

During studies of the identified Central City and Riverside Oxbow projects, detailed vegetation and land use analyses were conducted. "Existing Conditions" were described and the "Future Without a Corps of Engineers Project Conditions" were forecast and discussed in the respective project reports. During this evaluation, revision of the previous analyses was required to a greater level of detail in some cases to assure avoidance of important resources on sites that would not have been affected by the prior valley storage requirements and to establish a similar level of detail for the study area. For example, the analysis conducted on the original Riverside Oxbow was based upon spectral analysis and limited ground-truthing to meet funding and time constraints for that study as compared to more detailed analysis with significantly more ground-truthing for the original Central City Study. Existing vegetation mapping for the Riverside Oxbow study was upgraded to match the level of analysis conducted for Central City. In addition, two additional areas that were not included in either of the previous study areas may potentially be affected by fill. One site is located on an existing closed sanitary landfill on the east side of the West Fork of the Trinity River just east of Gateway Park. The other potential fill site is within an old limestone quarry near North Interstate Highway Loop 820 near Meacham International Airport. Vegetation/land use mapping of both these sites was conducted solely for impact assessment as no habitat development would be feasible in these two sites. The vegetation data and mapping outputs for the study area are stored electronically and maintained by the Fort Worth District. See Figure E-1 of Appendix E for revised map of the vegetation of the entire study area. Table 2-1 summarizes the vegetative conditions determined during the current study.

Table 2-1
Vegetation Type or Land Use (acres) Within Central City and Riverside Oxbow Study Areas

	Disturbed	Forbland	Grassland	Grassland Savannah	Riparian Forest	Upland Forest	Shrub land	Water	Emergent Wetland
Central City	1827.6	0.0	2313.8	17.4	314.8	535.4	1.3	299.6	14.9
Riverside Oxbow	172.3	8.6	509.3	16	278	68.3	44.4	84.6	19
Total	1999.9	8.6	2823.1	33.4	592.8	603.7	45.7	384.2	33.9

Wildlife

The river channel, wetlands, open water areas, and bottomland hardwood forests support a variety of wildlife species for cover, food, and den or nesting sites. Bird species which were observed or have been reported in the area include migratory warblers, sparrows, meadowlark, mourning dove, crow, red-tailed hawk, red-shoulder hawk, American kestrel, herons, egrets, mallard, wood duck, blue-winged teal, green-winged teal, lesser scaup, grackle scissor-tailed flycatcher, kingbird, logger-head shrike, black bird, swallows, blue jay, chickadees, downy woodpecker, red-bellied woodpecker, and barred owl. Amphibians, reptiles, and mammals common to the area include frogs, toads, snakes, turtles, cottontail rabbit, cotton rat, field mice, opossum, raccoon, bobcat, beaver, nutria, and coyotes.

Wildlife habitats along the Clear Fork have been significantly altered and clearing of riparian vegetation has eliminated much of the terrestrial habitat; however, riparian corridors are still used by waterfowl, shorebirds, and mammals such as beaver and nutria. Wildlife species found along the Clear Fork are similar to other segments or streams located within the study area. The West Fork area contains a large resource base, which includes terrestrial, open water, and wetland habitats within the study area, such as the raccoon, striped skunks, grey and red foxes, coyote, bobcat, cottontail and swamp rabbits, fox squirrels, beaver, nutria and numerous small rodents and insectivores. A similar situation exists for birds and aquatic species. Species that are sensitive to human activity have declined, due to development along the corridor, while tolerant species; such as the house sparrow and red eared slider

(turtle) have flourished. The West Fork is home to a vast number of bird species. Both year-round residents (most significantly the wood duck) and migratory species (such as, waterfowl and warblers) rely on the resources that this area provides for survival. Turkey and white-tailed deer have recently been noted as increasing in distribution throughout both stream reaches.

Existing habitat conditions were determined by utilizing the U.S. Fish and Wildlife Service's Habitat Evaluation Procedures (HEP). HEP utilizes models selected to reflect the potential usability of each habitat type being evaluated. Specific parameters are measured in the field as required by the models used. Computation of habitat suitability is done for each species modeled at each field site. Habitat suitability varies from 0 to 1.0 with 1.0 reflecting the best suitability that could be expected within this ecoregion. Finally existing habitat quality is determined by multiplying the average habitat suitability for a habitat type by the number of acres of that habitat type. As this study was complex and covered a large area that is anticipated to have significantly varying existing and future without a project conditions, several study reaches were evaluated. A detailed discussion of the analysis conducted is contained in Appendix E of this SEIS as well as in the US Fish and Wildlife Service planning aid letters and Fish and Wildlife Coordination Act reports attached to this SEIS.

Threatened and Endangered Species

According to USFWS (2005), three federally listed threatened or endangered species could occur within the project area in Tarrant County Texas. In June 2007, the USFWS officially down-listed the bald eagle so the remaining federally listed species that might occur in the project area are the Interior least tern and the whooping crane as indicated in Table 2-2.

Table 2-2
Federally Listed Species, Upper Trinity River

Common Name	Scientific Name	Status	Distribution
Interior least tern	<i>Sterna antillarum</i>	E	Statewide/migrant/localized nesting Dallas County
Whooping crane	<i>Grus Americana</i>	E	Migrant - western basin

Aquatic Resources

Existing water quality in the project area is primarily influenced by base flows from upstream Lake Benbrook and Eagle Mountain Lake releases, urban runoff from upstream adjacent watershed areas, and the check dams at various locations along the watercourse. More details about existing water quality conditions were previously identified in the environmental discussion documented in the Final EIS for the Central City Project and the Riverside Oxbow Interim Feasibility Report with Integrated Environmental Assessment.

Water Quality and Designated Uses: According to the Draft 2004 Texas Water Quality Inventory Status of All Water, November 23, 2004 the immediate study area is designated for aquatic life use, contact recreation use, general use, fish consumption use, and public water supply use. The immediate study area is located in stream segments *0806 West Fork Trinity River below Lake Worth* and *0829 Clear Fork Trinity River below Benbrook Lake*. West Fork Segment 0806 extends from the Lake Worth dam in west-central Tarrant County downstream to the confluence of Village Creek in east-central Tarrant County. Segment 0806 is approximately 33 miles long and, and a relatively large portion of the project study area lies within the middle reach of this segment. Clear Fork Segment 0829 is located in Fort Worth and extends from Benbrook Lake dam in southwest Tarrant County, downstream to the confluence with the West Fork Trinity River. The study area on Clear Fork includes approximately 2 miles upstream from its confluence with the West Fork of the Trinity River. TCEQ has designated segments 0806 and 0829 as fully supporting their designated use for public water supply and general use (which includes parameters of pH, chlorides, sulfates, and total dissolved solids). TCEQ has indicated that the water quality of assessed portions of Segments 0806 and 0829 are either "fully supporting" aquatic life use or of "no concern" to aquatic life use. However, TCEQ has deemed both segments as not supporting fish

consumption because of PCBs and chlordane in fish tissue. Fishing is not prohibited, but State law prohibits the possession of fish from water bodies with consumption advisories. Therefore, any fish caught must be released. There have been three fish kills documented in the West Fork Segment 0806 occurring from August 1996 to April 2000. Only one of these fish kills occurred in the vicinity of the project area (August 9, 1996). TCEQ has not fully assessed Segment 0829 with regard to contact recreation (such as swimming where there is a concern of water ingestion), but has determined that Segment 0806 does not fully support contact recreation because bacteria presence/counts in lower 22-mile segment portion. More details regarding designated uses are listed in the Final EIS for the Central City Project, the Riverside Oxbow Interim Feasibility Report with Integrated Environmental Assessment.

Water Quality Aesthetics: Aesthetics of the water course depend on water appearance, odor, and taste (if a potential drinking source). Water color and clarity in the general vicinity of the study area are similar to most portions of the Trinity River through Fort Worth. On occasion, stream water becomes occasionally turbid with suspended sediment following heavy rainfall events. Algae at certain times of the summer months are visible. In deeper impounded areas of the stream, the water may stratify in late summer and subsequently lead to notable odor changes in late fall as water in the stream impoundments overturn due to thermal changes and/or inflows from storms. TCEQ has stated that a mid-reach portion of existing waters on Clear Fork below Lake Benbrook and upstream of the project area is of "no algal growth concern" but the other two portions, one 4-mile segment immediately below the dam and one 1-mile segment above the West Fork confluence were "not assessed" regarding algal growth. TCEQ did not assess the Trinity West Fork immediately below the Lake Worth dam through most of the project area, but did indicate that there is an "algal growth concern" in the downstream 22-mile reach beginning near 4th Street and extending to Village Creek confluence.

Aquatic Habitat: The types of aquatic systems that are in the Upper Trinity River drainage area include wetlands, shallow ponds, oxbow lakes or their remnants, flooded sand and gravel quarry operations, large water supply reservoirs, second and third order streams, and larger river systems such as the Trinity River. Streams throughout the study area exhibit a wide variety of physical characteristics. Many of the smaller order streams have an annual detectable velocity and contain abundant typical riffle-run-pool complexes, while some of the larger aquatic systems are long, continuous unbroken channelized segments or a series of long interconnected pools with low exchange rates like the Clear Fork of the Trinity River. Physical features in an aquatic system which yield high aquatic habitat values are those which either directly or indirectly support some aspect of an aquatic organisms life history. Examples of these are features or objects that provide spawning substrate, shelter, food, or improve the water quality. Specific aquatic features include overhanging vegetation, stable stream banks with irregular features, silt-free, gravel or sandy bottom and in-stream structures. Aquatic systems of the study area range from sites that have very low quality and are virtually devoid of any habitat, to systems that are ecologically and structurally diverse having a great number of features representative of habitat value ecosystems.

Overhanging vegetation can provide shade, food, shelter or temperature moderation. Stream canopy cover can be anywhere from very heavy and thick around the headwater and lesser developed areas to nonexistent in sections of the streams and rivers which have been highly disturbed and developed. Stream banks in the study area range from being extremely steep and deeply incised around sections of the mainstem river and higher order streams, to the gently sloped banks which contain lower order streams and the mainstem river enclosed within levees. The composition of bank material in the study area includes concrete, calcareous rock, limestone rip rap, clay, loose silty mud, gravelly alluvium conglomerate, and urban refuse. Bottom substrate is important for providing shelter, food organisms, and spawning areas. Sand, clay mud, fine silt, sorted and unsorted small to large unconsolidated gravel, concrete, and solid limestone bedrock can be found comprising the bottom of the aquatic systems in the study area. The composition of stream bottoms throughout the study area is extremely variable ranging from areas that have clean, well-sorted gravel bottoms that provide excellent habitat for spawning and food such as the upper reaches of the small tributaries, to sites like the Trinity River mainstem that are primarily mud and silt and have little aquatic habitat value.

In-stream structure provides cover, resting areas, havens for food organisms and spatial reference points for higher aquatic organisms. In-stream structure of various types can be found

throughout the study area, some desirable and some less so. Common in-stream structural habitat features of aquatic systems in the study area include: snags, dead-fall trees and branches, rock-shelf outcrops, overhanging terrestrial vegetation, low water dams, bridge pilings, concrete slabs and rip-rap placed for shoreline and bank stabilization.

A detailed analysis of aquatic systems within the Central City study area was conducted by the U.S. Fish and Wildlife Service, Texas Parks and Wildlife Department and the U.S Army Corps of Engineers. Aquatic Index of Biotic Integrity was determined for the Clear Fork and West Forks of the Trinity River, Marine Creek, Lebow Creek and Ham Branch. High quality habitat was found in the lower reaches of Marine Creek and Lebow Creeks and moderate scores were found higher in those streams, in Ham Branch and in parts of the Trinity River reaches. From these scores habitat suitability was derived and utilized to assess existing and future with and without project conditions. A detailed description of that aquatic analysis is contained in the main body of the Central City FEIS and within the Environmental Appendix to that report.

Aquatic conditions within the Riverside oxbow portion of the study area were not addressed as extensively as there were no substantial modifications proposed that would impact those resources. New aquatic resources were proposed, but the values that were attributed to these new resources were reflective of potential gains that could be expected to be obtained from similar aquatic habitat development on a regional basis.

Air Quality

This proposed project is located within EPA Air Quality Control Region (AQCR) 215 for the state of Texas. AQCR 215 consists of 19 counties including Dallas, Denton, Collin, and Tarrant counties, Texas. The EPA uses six "criteria pollutants" as indicators of air quality. These six are particulate matter, sulfur dioxide, carbon monoxide, ozone, nitrogen dioxide, and lead. AQCR 215 is classified as a non-attainment area for the eight-hour ozone standard (0.08 parts per million determined as average for 8-hour period) and as an attainment/unclassified area for all other criteria pollutants (particulate matter, sulfur dioxide, carbon monoxide, nitrogen dioxide, and lead). Other information concerning these criteria pollutants are documented in Final EIS for the Central City Project and the Riverside Oxbow Interim Feasibility Report with Integrated Environmental Assessment.

Noise

The study area is located adjacent to Downtown, but is generally buffered from the main urban traffic noises. The western portion of the study area is located primarily in commercial retail/industrial land use area with outlying residential areas. Localized low speed traffic crosses the study area on Seventh, Henderson, Northside and Main Streets. On-going construction near the study area has increased the background sound level temporarily. Traffic conditions vary but generally are more intense during morning and evening rush hour periods. Traffic on I-30 and I-35 generally travels at higher speeds and often consists of trucks in addition to automobiles. The study area lies within the southern flight path of Fort Worth Meacham International Airport and is east of the Naval Air Station Joint Reserve Base Fort Worth. The eastern portion of the project area, also known as the Riverside/Gateway Park Area, is primarily vacated floodplain and parkland areas with adjacent residential areas. Noise in the Riverside/Gateway Park Area is primarily associated with adjacent residential traffic and park activities with some contributing highway noise from I-30. The Riverside/Gateway Park Area is generally considered to be a quieter environment than the western portion of the project area. No sound monitoring data or other existing background noise information are currently available for the study area.

Hazardous, Toxic, and Radioactive Waste

The Final Environmental Impact Statement (EIS) for the Central City Project, Appendix D dated January 2006 and the Interim Feasibility Report and Integrated Environmental Assessment for the Riverside Oxbow Project were reviewed for technical adequacy, completeness, accuracy, and continuing relevance to the project. Upon review, the reports demonstrated a comprehensive breakdown of the

current land uses and expected challenges in the study area. To this end, the reports provide a framework and priority for conducting the needed future site characterizations. To date, the U.S Army Corps of Engineers has received continuing project updates from the Tarrant Regional Water District. From this information, it is concluded with confidence, that information contained within the reports are still relevant, have not changed appreciably, and continue to provide accurate information on expected project conditions. The recommended actions stated in the reports will provide a clear and manageable plan for achieving a project that will eventually pave the way for a cleaner Fort Worth.

Cultural Resources

Cultural resources are defined as the broad pattern of events, real properties, and cultural lifeways or practices that have significance to humans. Buildings and places where significant events occurred, archeological sites containing significant information about human activities, traditional places or activities that hold special significance, and folkways which are practiced as either cultural or life sustaining, are all part of the broad spectrum of cultural resources. These resources are usually identified through visual survey, a variety of excavation techniques, and through consultation with federally recognized Native American tribes who historically used, or continue to use the study area.

Surveys conducted in support of the Central City project, the Riverside Oxbow project and other undertakings carried out by various agencies indicate that the majority of cultural resources within the Upper Trinity River consist of prehistoric and historic archeological sites, as well standing structures with historic significance. No Traditional Cultural Properties or Sacred Sites have been identified by any Native American Indian tribal group as occurring within the Upper Trinity River area, however, properties of this type are not easily identifiable because of the non-specific nature of the site or its associated significance as identified by its Native American Indian participants. In addition, many tribal groups are reluctant to reveal such locations to non tribe members, therefore it is possible that TCPs and/or sacred sites could exist within the project vicinity but have not yet been identified. While it has never been demonstrated, it is possible that cultural resources of significance to maintaining traditional lifeways to groups other than Native American Indians may be identified within the Upper Trinity River project area as well.

Socioeconomic Setting

The socioeconomic assessment for the original Central City EIS found that the study area, as defined in that document, is predominantly Hispanic with several Census blocks displaying populations that are predominantly black. The inclusion of the Riverside Oxbow project does not significantly change the racial and ethnic composition of the study proposed in the Central City EIS. While there is essentially no one living within the actual footprint of the Riverside Oxbow project, the boundary does intersect two Census blocks containing subdivisions that may be potentially impacted due to their proximity. The following is a revision of the Central City study area demographics amended to reflect the addition of the Riverside Oxbow project. The revised study area adds two Census blocks that intersect the Riverside Oxbow project. A detailed analysis of the revised study area demographics is contained in Appendix C to this SEIS.

As was noted in the original Central City EIS, total population for Tarrant County increased almost 24 percent from 1990 to 2000 while the total population for the original study area increased by five percent. The Riverside Oxbow area increased by 28 percent between 1990 and 2000, giving the new study area an increase of 6.4 percent. All ethnic groups saw increases in population in Tarrant County with the Hispanic population having the largest, an increase of 113 percent. The Hispanic population increased almost 25 percent in the original study area and increased almost 200 percent for the Riverside Oxbow area. The revised study area Hispanic population increased by 28.2 percent.

The following table (Table 2-3) depicts the racial and ethnic makeup for Tarrant County, the Central City study area, the Riverside Oxbow area, and the combined study area for the years 2000 and 1990.

Table 2-3

Racial Composition – County, Original Study Area, Riverside Oxbow Area, and Combined Study Area

	Tarrant County				Original Study Area			
	1990		2000		1990		2000	
Total Population	1,170,103	100.0%	1,446,219	100.0%	36,932	100.0%	38,945	100.0%
Male	578,095	49.4%	713,549	49.3%	19,245	52.1%	20,409	52.4%
Female	592,008	50.6%	732,670	50.7%	17,687	47.9%	18,536	47.6%
Hispanic	133,979	11.5%	285,338	19.7%	18,930	51.3%	23,658	60.7%
White	859,883	73.5%	895,446	61.9%	11,348	30.7%	10,373	26.6%
Black	140,512	12.0%	180,457	12.5%	6,078	16.5%	4,275	11.0%
Asian, Hawaiian, PI	29,175	2.5%	52,303	3.6%	285	0.8%	306	0.8%
American Indian	5,575	0.5%	6,856	0.5%	189	0.5%	171	0.4%
Other	979	0.1%	25,819	1.8%	116	0.3%	162	0.4%

	Riverside Oxbow				Combined Study Area			
	1990		2000		1990		2000	
Total Population	1,602	100.0%	2,053	100.0%	38,534	100.0%	40,998	100.0%
Male	868	54.2%	1,091	53.1%	20,113	52.2%	21,500	52.4%
Female	734	45.8%	962	46.9%	18,421	47.8%	19,498	47.6%
Hispanic	375	23.4%	1,095	53.3%	19,305	50.1%	24,753	60.4%
White	1,123	70.1%	910	44.3%	12,471	32.4%	11,283	27.5%
Black	18	1.1%	11	0.5%	6,096	15.8%	4,286	10.5%
Asian, Hawaiian, PI	56	3.5%	0	0.0%	341	0.9%	306	0.7%
American Indian	30	1.9%	22	1.1%	219	0.6%	193	0.5%
Other	0	0.0%	15	0.7%	116	0.3%	177	0.4%

Average household income for the original study area was 32 percent less than the county in 1990 and 25 percent less than that of the county in 2000. The Riverside Oxbow area was almost 39 percent less than the county in 1990 but the gap shrunk to just over 10 percent in 2000. The patterns for the revised study area are very close to that of the original study area. The percentage of the population in Tarrant County living below the poverty level was eleven percent for 1990 and declined slightly to 10.6 percent in 2000. The original study area had 31.4 percent of its population living below the poverty level in 1990 and decreased to 22.4 percent in 2000. The Riverside Oxbow area by contrast, had 20.1 percent of its population living below the poverty level in 1990. The percentage living below the poverty decreased to 15.6 percent in 2000, a larger drop relative to the county. The study area is within a percentage point of the original study area in both 1990 and 2000.

In 1990, almost 28 percent of the population of the original study area had less than a ninth grade education of those 25 and over. This compares with only 7.4 percent of the population 25 and over for Tarrant County. Almost 26 percent of the population of the Riverside Oxbow area had less than a ninth grade education in 1990. The Riverside Oxbow area also had substantially lower rates of college attendance than the county as a whole. The combined study area had roughly the same educational pattern as the original study area.

The unemployment rate for Tarrant County for 1990 stood at 5.7 percent while the rate for the original study area was 11.9 percent (11.7 percent for the combined study area). The Riverside Oxbow area was 8.6 percent. In 2000, the unemployment rate for Tarrant was 4.6 percent for the combined area, 9.8 percent for the original study area (9.5 for the revised), and 3.9 percent for the Riverside Oxbow area. The original and revised study areas have lower home ownership rates than the County. The study area sees slightly higher average values for owner occupied housing compared to the original study area due to slightly higher values for the Riverside Oxbow area.

A forecast of population estimates has been developed by the Texas State Data Center for use in measuring economic growth. Because this forecast also provides population increases by ethnicity, it is useful here in demonstrating long term shifts in population makeup. Table 2-4 reflects estimates from the current 2000 Census levels and as projected thru 2000, 2010, 2020, and 2030.

Table 2-4
Predicted Population Growth for Tarrant County by Ethnicity

County	Year	Total	Non-Hispanic White	Hispanic	Non-Hispanic Black	Non-Hispanic Other
Tarrant	1990	1,170,103	858,901	139,886	138,608	32,708
	2000	1,446,219	908,197	285,290	188,144	64,588
	2010	1,662,880	911,369	430,915	225,189	95,407
	2020	1,896,328	886,652	617,564	260,444	131,668
	2030	2,153,223	829,786	858,506	290,030	174,901

In general, Fort Worth had a 2000 census population of 534,694 persons. The 2003 population estimate is 585,122, an increase of 50,428 persons. Current individual households for the city were 195,078 and 534,019 for Tarrant County in 2000. Vacant land within the city limits is currently at 49 percent of the city's 348 total square miles. Approximately 24 percent, 84 square miles, of the total land base were developed residential lands in 2005 and 15 percent, 52 square miles, were utilized for employable facilities. A total of 34.8 additional square miles is either part of dedicated parklands, or within the floodplain margins of the West and Clear Forks of the Trinity River. Employment in the City of Fort Worth in 2000 was 240,119, an increase of 33,152 since 1990. Unemployment for the City of Fort Worth was 6.0 percent of the employable labor force (256,942) living within the city limits.

Environmental Justice

On February 11, 1994, President Clinton issued Executive Order (EO) number 12898, "*Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations.*" The order states in general that Federal agencies shall specifically analyze environmental effects of Federal actions, including health, economic, and social effects, on minority and low-income populations, as part of the analysis prepared for the National Environmental Policy Act (NEPA). The EO is designed to focus the attention of Federal agencies on the disproportionate impacts to health or environment that could result from undertakings in areas of minority and/or low income communities. Further, agencies are directed to identify potential effects and possible mitigation measures in consultation with the identified affected communities. In order to determine these potential impacts to minority and/or low-income populations within the study areas that are planning or participating in projects described in this SEIS, the information obtained from a review of the existing demographic and census data should be combined with a series of community participation meetings designed to draw responses from segments of the community which typically will not be responsive to traditional NEPA information requests and meetings.

As part of the collection of existing socioeconomic conditions, the Interagency Working Group (IWG) on Environmental Justice guidelines were consulted to assist in the assessment of minority and low-income populations that could be impacted by planned, proposed, or potential future, projects. The IWG guidance specifically notes that the minority population in the affected area should be meaningfully greater than the general population, or area of geographic analysis. The specific guidance suggests that the minority population in the affected area exceed 50 percent of the general population. The consideration for determining low-income populations is taken from the Bureau of Census reports as suggested by the IWG guidance. The review of existing general demographic and census data has identified potential areas where the criteria for minority and/or low-income populations may occur within

planned or potential project areas. While the general demographic data and a large portion of the aggregated census information reviewed may mask specific locations of populations where environmental justice may be of concern, it is possible to draw some inferences which allow the identification of specific areas which should be specifically sought out to determine what the project effects may be on the population and how to avoid disproportionate application of project impacts.

Within the study area associated with the Central City and Riverside Oxbow Projects, a number of areas within a core portion of the central portion of Fort Worth indicates areas of low income and/or poverty. Median income for census tract 1017 nearest the center of Fort Worth was \$9,273. This tract, plus census tracts 1008, 1010 1017, 1012.02, and 1018 all indicate higher percentages of Hispanic and African-American populations and meet the criteria for specific consideration as minority communities that have the potential to be impacted by potential future projects in the area. Each of these areas and portions of the surrounding geographic areas should have a community outreach and participation to ensure potential issues are identified.

Recreation and Open Space

Public Use of Rivers, Tributaries, and Corridors. The study area is located within Region 4 of the Texas Outdoor Recreation Plan (TORP), which is prepared and coordinated by the Texas Parks and Wildlife Department. The most scenic wooded areas in Region 4 are often found in stream and river corridors. Scenic corridors along the Trinity, with natural meandering watercourses bordered by riparian hardwoods or dense stands of trees and shrubs, are the most desirable segments of the river and the portions most intensely used by the recreating public. Use of these segments is the heaviest during higher stream flow periods, generally during the spring and fall seasons. Recreation providers have expressed concern over stream bank erosion, instream flows and the quality of the water for contact recreation. Minimum instream flows are also needed to preserve fish and wildlife habitat and historical and recreational resources.

Recreational Needs. While there are substantial amounts of open space and recreational facilities available to the residents of the study area, projections show that the demand for these facilities is continuing to increase. Fresh water fishing, swimming, and picnicking will attract the most participation in the region for resource-based activities. Participation in urban oriented activities projected for 1995 were over eight times as high as the participation in resource based activities in the region. This ratio is one of the highest in Texas. Texans from outside Region 4 will have little impact on the region's resources.

Increases of more than 100 percent over existing supply are needed for five facilities (hiking, horseback, and multi-use trails, playgrounds, and freshwater swimming areas). Multi-use trails are the highest need followed by freshwater swimming, playgrounds, and hiking trails. Public recreation providers in the region have repeatedly expressed a need for more parks and passive open space. In recent years, park land and open space have become increasingly scarce as available sites have been reduced. Rapid development has replaced many natural areas with buildings and pavement. Most park providers have identified undeveloped land as their highest priority need (park sites, open space, and greenbelt acquisition). The next greatest need expressed is for upgrading facilities.

The cities and counties in the region have specific plans to acquire additional lands to meet future public recreational demands. Most of the larger municipalities and county governments have bond funded open space acquisition programs. Proposed acquisitions are usually dependent on the availability of public funds and are influenced by private development pressures and development permit approvals.

Chapter 3 - Alternatives

The Fort Worth District, U.S. Army Corps of Engineers (Corps), initiated evaluations of the technical feasibility and environmental acceptability of modifying the Central City project to incorporate features of the Riverside Oxbow project at the request of the City of Fort Worth. cursory investigations by the Corps at the outset indicated that there could be merit in modifying the Central City project. In response to the proposal by the City of Fort Worth, alternatives considered in this Supplement include the No Action alternative, which assumes that each project would proceed separately as currently approved, and a Modified Central City alternative which has been formulated to incorporate the Riverside Oxbow project area to accommodate valley storage requirements. The Central City Project is described in detail in the Final Environmental Impact Statement for Central City and is defined as the Community Based Alternative in that document. The Riverside Oxbow Ecosystem Restoration Project is described in detail in the Interim Feasibility Report and Integrated Environmental Assessment for the Riverside Oxbow, Upper Trinity River, Fort Worth, Texas. The Riverside Oxbow project is defined as the Locally Preferred Plan in that document. An addendum to the feasibility report, dated April 2005, was completed which revised the recommended project. A detailed description of each project will not be repeated here but each is summarized to the extent necessary to understand the differences in the alternatives.

It should be noted that during early evaluation of the City of Fort Worth's request to evaluate incorporating the Riverside Oxbow project area to accommodate valley storage requirements it became apparent to the study team that the location of the Samuel Avenue Dam should be reevaluated for geotechnical and environmental reasons. The geology of the originally proposed site is not ideal for that feature and the location would cause adverse effects to the aquatic and riparian systems. Therefore, the location of Samuels Avenue Dam has been reevaluated during the formulation of the Modified Central City alternative.

No Action Alternative

The "No Action" Alternative would be to continue with implementation of both the Central City project and the Riverside Oxbow project as they are currently described in their respective project reports. The Corps portion of the overall Central City project is authorized and funded for construction by Section 116 of Public Law 108-447. Although the Riverside Oxbow project is not currently authorized or funded for construction it or a variant of it is expected to be implemented.

For the "No Action" alternative, Corps of Engineers participation in the Central City project is limited by law to \$110,000,000 and the total cost of features in which the Corps may cost share is limited to \$220,000,000. Costs for the recommended Riverside Oxbow project were estimated in October 2002 to be \$22,198,000 with the Corps share estimated at \$9,178,500. The Addendum to the Riverside Oxbow Project Interim Feasibility Report, approved in April 2005 (still based on October 2002 price levels) modifies those costs to \$20,797,000 for the total project and a Corps share of \$8,280,300. Therefore, the total cost of features that the Corps can participate under the "No Action" alternative is estimated at \$240,797,000, and the Corps share is \$118,280,300 prior to any adjustments for inflation. When updated to 2005 dollars for comparative purposes for this SEIS, total cost of the Riverside Oxbow becomes \$23,625,413 with a Federal cost of \$9,426,540. Updated costs for the portion of the "No Action" alternative in which the Corps is authorized to participate are \$243,625,413 total cost and \$119,426,540 Federal cost in 2005 dollars.

The original Central City project, as part of the No Action alternative, requires hydraulic storage to compensate for the shortened channel length and the resultant increased stages or water surface elevations. Valley storage sites are located on the West Fork and include primarily the Riverbend site and in smaller areas near University Drive and upstream of Riverside Park. With these valley storage sites, construction of the original Central City project as part of the No Action alternative would attain an SPF +4 design level of protection throughout the project work areas. Although flood control modifications have not been constructed to provide an SPF level of protection, the Riverside Oxbow project includes planting densities and flow conveyance measures which assure that the project will not increase existing

flood elevations. Therefore, the No Action alternative, which assumes both projects to be implemented independently, would provide 100% of the required valley storage and would be in full compliance with the criteria established by the Trinity Regional EIS and the North Central Texas Council of Government's (NCTCOG's) Corridor Development Certificate program.

The Central City Project is authorized for construction and the Riverside Oxbow Project as described in the Addendum to the feasibility report are considered part of the No Action alternative. No project purpose would be added or deleted with the implementation of the No Action plan. No further approval is required by or within the Corps or by the Assistant Secretary of the Army for Civil Works (ASA(CW)) for implementation of the No Action alternative. Additional authorization by Congress is required for implementation and funding of the Riverside Oxbow Project. The following paragraphs in this section provide brief descriptions of both projects as they are currently approved and as they are considered for the No Action alternative. More detailed descriptions can be found in the Project Reports and NEPA documentation for each project.

Central City Project Description

The bypass channel for the original Central City project is approximately 8,400 feet long and approximately 300 feet wide between the top of levees and would be approximately 15-30 feet below the existing grade. The channel would extend from the Clear Fork downstream of West Seventh Street to the West Fork, intersecting the West Fork approximately 2,600 feet upstream of the existing confluence with the Clear Fork. The channel would continue to the northeast and rejoins the West Fork 8,500 feet downstream of the existing confluence with the Clear Fork. Water levels in the bypass channel and adjacent waterways would be controlled by a dam located on the West Fork of the Trinity River just east of Samuels Avenue Bridge and would include adjustable gates designed to open downward, thus lowering the crest to allow major flood events to pass. The normal crest would be at 524.3 feet NGVD, and the dam is designed to maintain normal water levels of approximately 525 feet NGVD in the bypass channel and interior area. Three isolation gates would be located upstream at the confluence of the bypass channel and the Clear Fork, at the midpoint of the bypass channel and the West Fork confluence, and downstream at the confluence of the bypass channel and the West Fork. These gates are designed to protect the interior area east of the bypass channel from flood flows during large events.

Construction of the bypass channel, dam, and isolation gates would allow approximately two miles of the existing West Fork Trinity River to function as a controlled, quiescent watercourse. A water feature or urban lake, approximately 900 feet long, is proposed for the interior area. The interior water feature would extend from the bypass channel southeast to the existing West Fork and Clear Fork confluence of the Trinity River. Six bridges are proposed for the project, including four vehicular bridges and two pedestrian bridges. Vehicular bridges are proposed over the bypass channel at North Main Street, over the bypass channel and the Fort Worth and Western Railroad (FW&W Railroad) at Henderson Street and White Settlement Road, and on the White Settlement Road extension over the interior water feature. Two pedestrian bridges are also proposed, across the bypass channel downstream of Henderson Street, and across the West Fork, approximately 500 feet upstream of the existing FW&W Railroad Bridge. The project also includes proposed modifications to University Drive, which would effectively raise the roadway approximately 10 feet from existing grade and out of the 100-year floodplain. The proposed modifications begin north of the existing bridge over the West Fork extending to Jacksboro Highway (State Highway 199).

The Trinity Uptown Plan describes additional features which could be added to the project area by private developers once the infrastructure components have been implemented. These features represent the full maturation of the urban design. As such, they are a statement of design intent rather than a set of specific proposals having identified proponents. The actual private market response to the project could, in fact, take an infinite variety of forms over the anticipated 50-year build out period. Although it is impossible to predict with certainty the final outcome of future private development, the Trinity Uptown Features do represent the best description of the future development scenario anticipated. As such, and in order to meet the purpose of NEPA to disclose as fully as possible the impacts of all reasonable alternatives to both the decision-maker and the public, these features were used in the

Central City EIS as the basis for assessing impacts of actions related to and stemming from implementation of the Central City Project.

The Central City project would require approximately 5,250 acre-feet of additional valley storage to accommodate flow alterations caused by the project's configuration. That additional valley storage is provided for primarily in the Riverbend Valley Storage site and also in smaller areas near University Drive, Samuels Avenue, and in the I-35 sites slightly downstream of the dam in proximity to Riverside Park (Figure 5 – Valley Storage Sites for the Original Central City Project). Construction of the bypass channel with associated valley storage sites would not increase downstream water surface elevations or downstream flow.

Reestablishment of vegetation and habitat at the Riverbend valley storage site following excavation to increase hydraulic capacity and at the Rockwood Ecosystem Improvement Area is included to compensate for adverse impacts to wetland, riparian, and terrestrial resources and to develop or improve additional habitat. Following habitat development and compensation for adverse effects, the Central City project would result in 43.5 average annual habitat units (AAHUs) of riparian woodland outputs (this includes 2.04 AAHUs calculated following refinement of the Ham Branch mitigation plan and after finalization of the Central City EIS), 12.5 AAHUs of emergent wetland outputs, a loss of 33.4 AAHUs of upland woodland, and a loss of 163.9 AAHU of grassland. It was proposed that the loss of upland woodland could be compensated for by the riparian woodland outputs resulting in a gain of 10.1 AAHUs of riparian woodland. The loss of grassland is not considered significant since much of it is composed of non-native species such as Bermuda grass which has a low value to wildlife.

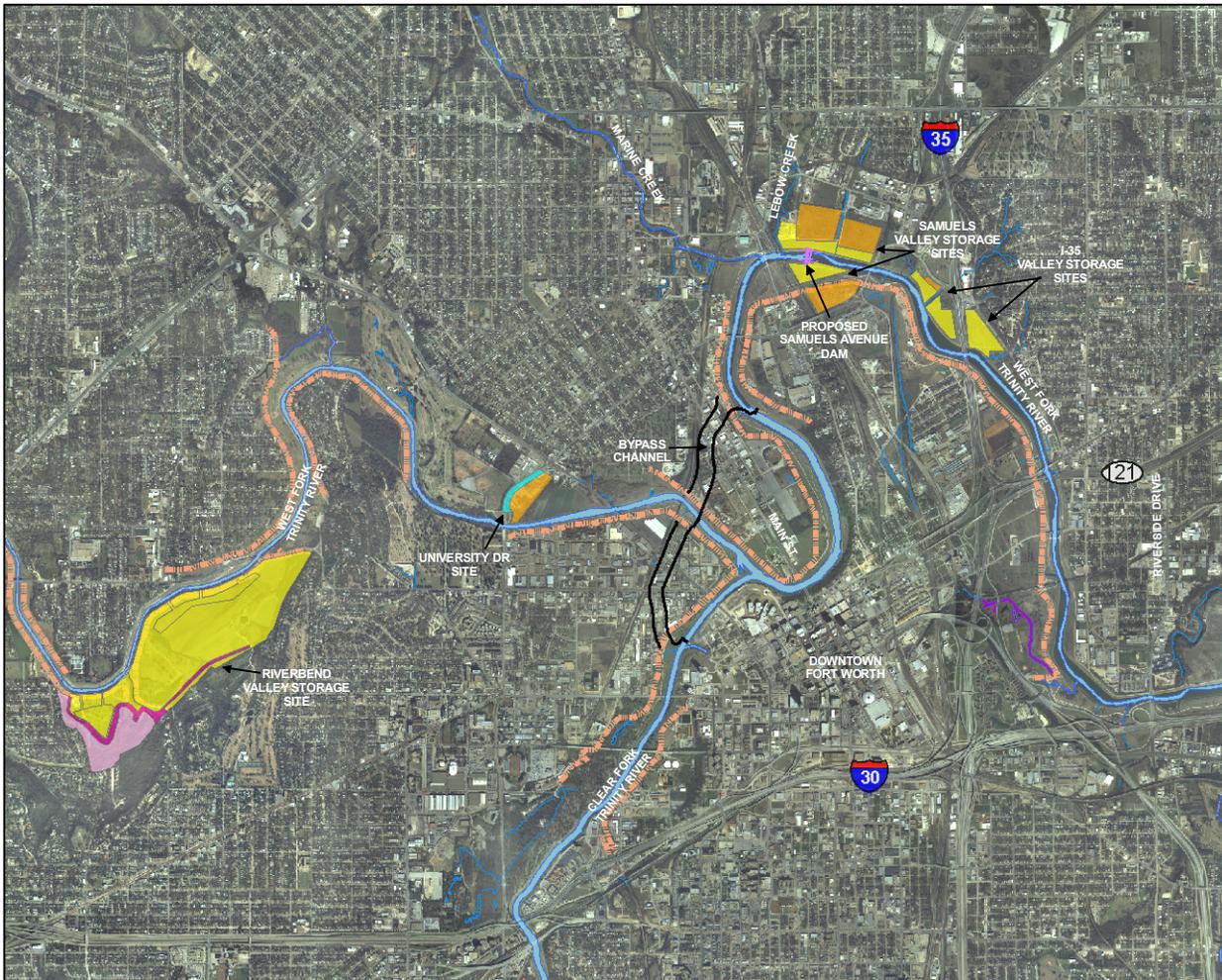
Significant impacts to aquatic habitat occur by the inundation of 3.2 acres of Marine Creek and filling approximately 400 feet of lower Lebow Creek. Mitigation measures for these impacts would occur in Lebow Creek and Ham Branch, a tributary of the West Fork of the Trinity River which enters the system a distance downstream of the Samuels Avenue Dam. Terrestrial and aquatic habitat mitigation measures required as part of the Central City Project are considered to be part of the No Action Alternative.

Riverside Oxbow Ecosystem Restoration Project Description

The approved plan for the Riverside Oxbow would restore the biological integrity of wetland and bottomland hardwood communities through a combination of measures directed at specific habitat types or specific ecological problems within the project area. Collectively, these restoration measures will help to restore the integrity, function, and dynamic processes of floodplain habitats and adjacent uplands to a less degraded, more natural condition. The project consists primarily of reconnecting the severed channel to the West Fork of the Trinity River. This restoration feature would involve a notched control structure in the existing floodway channel to allow reconnection to the old cutoff oxbow, thereby facilitating restoration of the oxbow's aquatic and riparian woodland complex. Restoration of the cutoff oxbow would include demolition and replacement the existing Beach Street Bridge. Additional features of the Riverside Oxbow Ecosystem Restoration plan include the creation of about 50 acres of emergent wetland maintained through a low water dam and pumping system, open water, and vegetative fringe habitat within the project area. Various hardwood improvement measures would be implemented on about 180 acres of existing riparian forest within the floodplain, including a 150 foot wide riparian corridor along the West Fork from Riverside Drive to East 1st Street. Additional features of the approved plan include reforestation of approximately 66 acres disturbed and grassland areas with a variety of native trees and shrubs along with preservation and habitat improvement measures of native prairie and scrub/shrub floodplain terrace.

Since the proposed overall restoration plan for the Riverside Oxbow Project is relatively complex, the description of specific project features has been broken down into zones as identified within Figure 2. Restoration measures for each zone including the number of acres for each restoration planting type are described below.

Central City
Figure 5 - Valley Storage Sites for the Original Central City Project



- Legend**
- BYPASS CHANNEL
 - PROPOSED SAMUELS AVE DAM
 - EXISTING LEVEE
 - STREAMS
 - AQUATIC HABITAT MITIGATION AREA
 - VALLEY STORAGE SITE WORK DESCRIPTION**
 - ROADWAY IMPROVEMENT
 - CUT
 - FILL/SPOIL
 - SUMP
 - PROPOSED LEVEE



0 0.25 0.5 1 Miles
 Aerial Photography Date: January 2005



ATTENTION
 This product is reproduced from geospatial information prepared by the U.S. Army Corps of Engineers. GIS data and product accuracy may vary. They may be developed from sources of differing accuracy, accurate only at certain scales, based on modeling or interpretation, incomplete while being created or revised, etc... Using GIS products for purposes other than those for which they were created may yield inaccurate or misleading results. The Corps of Engineers reserves the right to correct, update, modify, or replace GIS products without notification. For more information contact the Fort Worth District Planning office. As of 8/24/2007

Oxbow North. Restoration activities or features included in the approved plan for the Oxbow North zone include widening the riparian corridor to 330 feet (approximately 100 meters) by reforestation of 20 acres of grass and disturbed lands, habitat improvement of 20.33 acres of existing wood stands, establishing a 100-foot wide native grass buffer (36.4 acres), conversion of existing grasslands with a native grassland and tree mott combination (12 acres total – 10.8 acres of grasslands with 1.2 acres of reforestation). Within this zone the project would reconnect the upstream end of the oxbow to the river by removal of the earthen plug along with a maintenance bridge to span the opening. The plan would replace the culvert at Beach Street with a full span bridge and involve construction of an in-channel weir just upstream of the downstream confluence of the oxbow with the West Fork. Improvement of in-stream aquatic habitat would be accomplished by adding a series of boulder cluster complexes. It is anticipated that once the oxbow is reconnected to flows at both the upstream and downstream ends and is open to flush flows from flooding events, it will return to a more natural, less degraded condition and once again begin to reflect the more natural floodplain of the West Fork.

Oxbow Center. Various restoration activities or features included in the approved plan for the Oxbow Center zone include: creation of a 12.3 acre wetland complex with the addition of emergent wetland plantings (7.2 acres), a water control structure, and a permanent pump station; conversion of existing grasslands with a native grassland and tree mott combination (71.6 acres total – 64.4 acres of grasslands with 7.2 acres of reforestation); and preserving 3.1 acres of existing riparian woodlands.

Oxbow South. Restoration activities included in the approved plan for the Oxbow South zone include reforestation of 2 acres of bottomland hardwood corridor along IH-30 and Sycamore Creek, habitat improvement of 7.8 acres of existing wood stands, establishing 0.9 acres of native grass buffer, and conversion of existing grasslands or disturbed areas with a native grassland and tree mott combination (14.9 acres total – 13.4 acres of grasslands with 1.5 acres of reforestation).

Gateway Center. This zone consists of 27.3 acres of mostly disturbed area and/or mowed grasslands, of which 12.9 acres of native grassland and tree mott combination (1.3 acres of reforestation and 11.6 acres of native grasslands) would be restored.

Gateway South. The following restoration activities or features are included in the approved plan for the Gateway South zone. Restoration within this combined zone includes: reforestation of gaps in the existing riparian corridor along the oxbow; establishment of a bottomland hardwood corridor along IH-30 from Beach Street to the eastern boundary of the zone (13.3 acres); habitat improvement of 15.7 acres of existing hardwood stands; establishing 1.3 acres of native grass buffer; and conversion of existing grasslands with a native grassland and tree mott combination (15.6 acres total – 14 acres of grasslands with 1.6 acres of reforestation).

Gateway Beach. The Gateway Beach Zone restoration plan project area was modified by the 2005 Addendum to the project report from an original 138 acres to approximately 59 acres. The modified restoration plan for this zone now calls for habitat improvement of existing wetlands (approximately 10 acres) by recontouring slopes, planting emergent wetland vegetation, adding a water control structure and a permanent water supply, and removing the existing park road to reestablish the hydraulic connection between the wetland ponds and the oxbow; habitat improvement of existing forested wetland vegetation (27.4 acres), and reforestation of an additional 16 acres of this forested buffer habitat type. Additionally, the plan for the Oxbow Beach zone includes the removal of a culvert at the Beach Street crossing and replacement with a span bridge to allow flows for stream aquatic restoration.

Gateway East. Restoration activities for the Gateway East zone include reforestation of gaps and narrow areas in the existing riparian corridor along the West Fork (7 acres); habitat improvement of 97.1 acres of existing riparian woodland stands; creation of a 26.8-acre wetland complex, adding a water control structure, planting 10 acres of emergent wetland plants and 4 acres of moist soil plants, and adding a permanent water supply along with construction of a water control structure to u-shaped wetlands (old oxbow remnant); establishing 3.8 acres of native grass buffer to protect riparian habitat along the West Fork; and conversion of existing grasslands with a native grassland and tree mott combination (4.02 acres total – 3.62 acres of grasslands with 0.4 acres of reforestation).

It should be noted that the Riverside Oxbow report as revised by the 2005 Addendum did not separate habitat outputs by habitat type. In order to compare high priority habitat types between the No Action and Modified Central City alternatives, total outputs were separated by habitat type based on the extent of specific habitat type restoration measures described in the report and addendum. Following this, and to enable a direct comparison of habitat impacts and outputs between the alternatives, the updated vegetation mapping and habitat values used in the Modified Central City alternative for similar habitat measures were used to generate AAHUs by habitat type for the Riverside Oxbow project. This resulted in approximately 63.3 AAHUs of riparian woodland, 42.72 AAHUs of Emergent Wetland, 0 AAHUs of upland woodland, and 64.26 AAHUs of Grassland/Savannah.

Recreation features that are not specifically required for project construction or operations and maintenance are included in the Locally Preferred plan. These features are compatible with the purpose but are considered to be strictly recreational and would be cost shared accordingly between the Corps and the non-Federal project sponsors. Recreation features include about 7,520 feet of 10-foot wide equestrian trail, 8,970 feet of 10-foot wide reinforced concrete pedestrian trail along the improved channel and along the west side of Beach Street from the improved channel north to the limits of the project area and an additional 1,400 feet of 8-foot wide crushed aggregate pedestrian trail. Recreation access points with associated drives and parking would be located off of Riverside Drive just north of the river channel and west of the oxbow and to provide access to the project area near the upstream end of the oxbow channel. A second access point would be located west of Beach Street and south of the oxbow channel to provide access to the project area upstream of Beach Street. Restroom facilities would be provided at each of the access points.

The Tarrant Regional Water District, the City of Fort Worth, and Streams and Valleys support the incorporation of compatible recreation features into the Riverside Oxbow Project. The plan, as approved, is consistent with the city's Gateway Park Master Plan and the Fort Worth portion of the Trinity River Vision Master Plan, and it provides links to the east and west for trails as part the regional Trinity Trails Plan.

Additional features to be incorporated by local interests include relocation of the entrance to Gateway Park to include a new access road and bridge over the oxbow channel and three observation decks. As a feature of the Locally Preferred Plan for the Riverside Oxbow Project the local sponsor intends to acquire a 112-acre portion of Tandy Hills adjacent to and south of I-20, which drains to the Riverside Oxbow project area. The City plans to restore native prairie grasslands of that tract by removing eastern red cedar, mesquite, and other woody invasive species and to clear invading exotic species from the understory of the riparian woodlands and to replant with native understory vegetation. The City plans to fence the perimeter to limit access to off road vehicles and protect the natural resources of tract. Access parking and about 7,700 feet of crushed aggregate pedestrian trail are also planned for the area.

Modified Central City Alternative

The City of Fort Worth's request for the Corps to conduct an evaluation to consider the potential benefits of modifying the Central City Project to incorporate features of the Riverside Oxbow project was the driving force in the formulation of alternatives. The two primary public concerns that had been identified during the original coordination the Central City Project were the expenditure of public funds, in general and the acquisition of private lands for public purposes. Keeping these factors in mind, the initial focus of formulation of a modified Central City Project alternative was placed on reducing use of eminent domain by minimizing acquisition of private lands and considering publicly owned land within the Riverside Oxbow area for hydraulic mitigation. Following this the potential for habitat development within these hydraulic mitigation areas was evaluated.

Formulation

Valley Storage. Starting with a goal of minimizing acquisition of private lands, the first step in the formulation process was to evaluate the capability of the lands within the Riverside Oxbow Project area to accommodate the valley storage requirements of the Central City Project. This was an obvious first step, since a large percentage of the lands within the 1,060 acre footprint of the Riverside Oxbow Project are already either in public ownership or would be required for that project as the two projects proceed independently.

During the first step in the process of identifying potential valley storage sites in the combined project area, an inventory was made of all areas potentially available. This inventory included sites that had previously been considered for the Central City project, lands within the footprint of the Riverside Oxbow project, several modified areas and a few additional areas not previously considered. A total of 47 potential valley storage sites, as shown in Figure 6 – Valley Storage Analysis, were identified within the study area. Table 3-1 (Valley Storage Analysis) presents a summary of all sites initially considered, along with a break out of those lands that were identified for valley storage in the original Central City Project. The acre-feet of storage shown in the table for the potential valley storage sites are based upon preliminary planning estimates without detailed information of ultimate site configuration.

Table 3-1
Valley Storage Analysis
Initial Screening

Site Description	Original Project Valley Storage (acre-feet)	Potential Sites ⁽⁴⁾ Est. Valley Storage (acre-feet)
Riverbend Mitigation Site	3250	-
Riverbend (TRWD)		246
Riverbend (Rivercrest)		517
Riverbend (TRWD, Rivercrest Combined)		929
Samuels Mitigation Sites (II, III, & IV)	355	573
I-35 Mitigation Sites (V, VI, & XVI)	370	671
University Drive Modifications	1275	1275
Riverside Oxbow		1619
Riverside Gateway North		432
Riverside Gateway South		361
Ham Branch ⁽²⁾		435
Riverside Park		269
Rockwood Park West		113
Rockwood Park East ⁽¹⁾		1050
Helipad / Delga Park		210
Northside Sump ⁽²⁾		170
East of New Dam		187
Dam Relocation (drawdown reduction) ⁽³⁾		350
Interior Storage		250

(1) Rockwood Park East, City property only

(2) Impact on Federal Floodway and sump to be determined

(3) Variable based on Dam re-sizing

(4) Estimated valley storage based on potential excavation volume. Volumes for preliminary screening only.

As can be noted from comparing Figure 6 with Table 3-1 in the initial valley storage analysis, not all of the identified 47 sites shown on the figure are specifically displayed in the table. Because of its very preliminary nature, this initial valley storage analysis as displayed in the table includes groupings of potential storage areas along with the estimated potential storage capacity of the overall area. For instance, the site identified as “Riverside Oxbow” in Table 3-1 potentially includes seven separate storage areas and the “Riverside Gateway North” potentially includes four sites. Absence of sufficient detail on depth and configuration of each of these potential individual sites at this early planning stage necessitated that estimates of the acre-feet of valley storage were based of optimum potential of the combined groupings.

Corps biologists working with representatives of the U.S. Fish and Wildlife Service (USFWS) and the Texas Parks and Wildlife Department (TPWD) then visited the sites within the study area with emphasis on the Riverside Oxbow project area to verify and update existing habitat types and condition. Using current (2007) digital orthophotography within a Geographic Information System (GIS) the team delineated and field verified the various habitats in the study area into the major types of Riparian Woodland, Emergent Wetland, Upland Woodland, Grassland/Savannah, and Disturbed. This classification scheme is consistent with that used previously in both the Central City and Riverside Oxbow project evaluations. The "Disturbed" classification includes roads, bare ground, gas well pads, and open water; all sites with minimal to no value to terrestrial species to be used in the habitat evaluations. Acreages of these habitats were computed through the GIS application with some minor changes from previous planning conditions noted in the imagery and verified in the field.

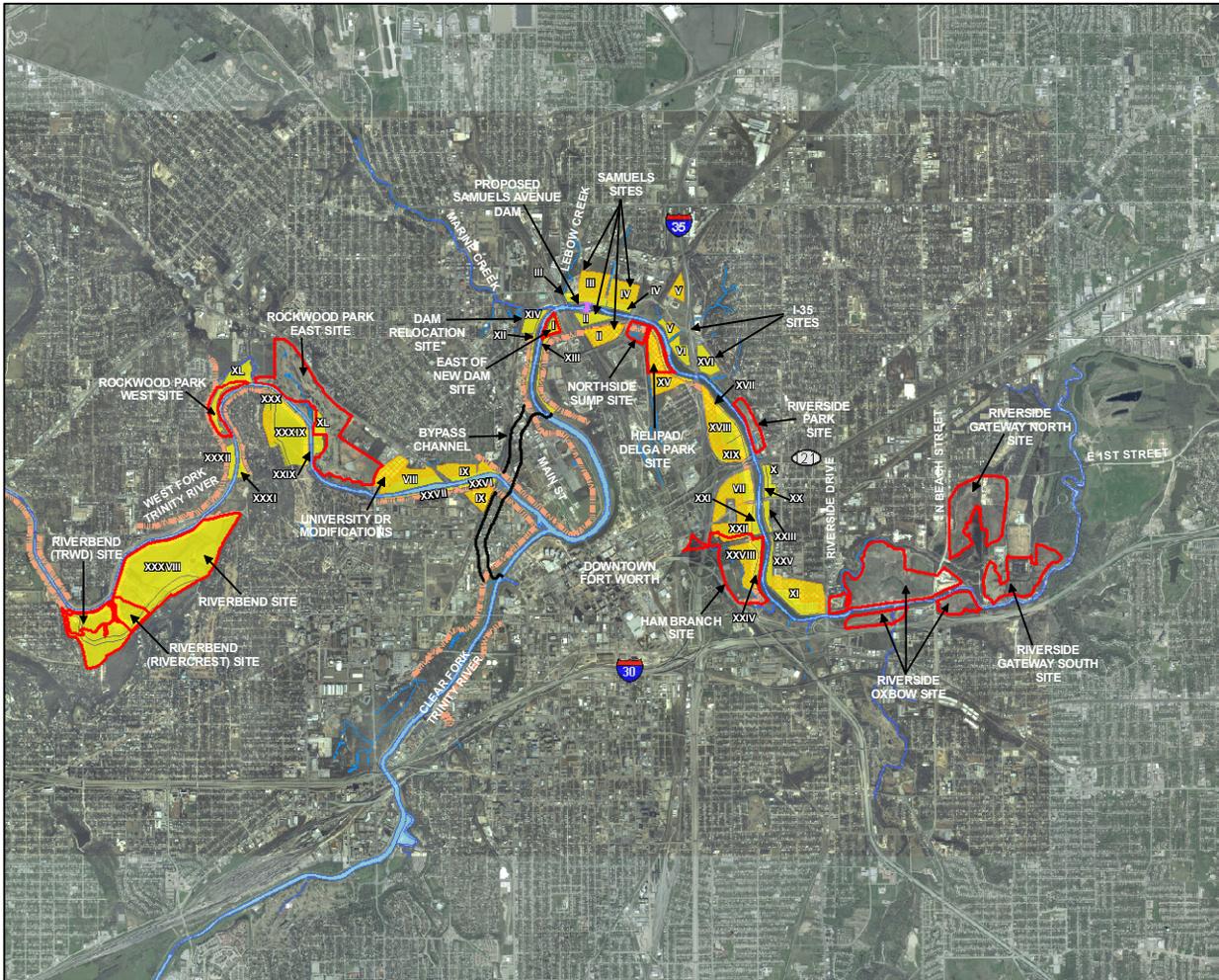
Working with the Corps' GIS personnel, the interagency team of biologists then prepared a GIS map of the Riverside Oxbow project area that delineates features of the Riverside Oxbow Project as well as other environmentally sensitive areas (Figure 7 – Environmentally Sensitive Areas within the Riverside Oxbow area). The areas identified as sensitive were predominantly Riparian Woodland and Emergent Wetlands, both of which are considered to be Resource Category II under USFWS's resource category system. Resource Category II includes habitats that are considered to have regional or national significance and for which adverse impacts either should be avoided or, if adverse impacts are unavoidable, should be mitigated equally and in-kind. This map was then provided to the study team's hydraulic engineers with the task of refining potential valley storage areas that would avoid adverse impacts to high quality habitats while still providing for implementation of features associated of the Riverside Oxbow Project.

Using the valley storage requirement of 5,250 acre-feet, the GIS map of environmentally sensitive areas, and a topographic layer within the GIS, hydraulic engineers preliminarily selected areas from the initial valley storage analysis that could, with excavation or appurtenant control structures accommodate additional valley storage. The engineers and biologists then worked together in an iterative process to maximize opportunities to accommodate valley storage while avoiding or minimizing adverse effects to significant habitats. Opportunities were also identified to optimize the dual purposes of attaining valley storage and potential habitat development by identifying valley storage areas that are primarily grassland and disturbed. It became apparent that some, but not all, of the valley storage requirement could be met within the Riverside Oxbow project area. Subsequently, the study team revisited other valley storage sites considered in the Central City Project with a view to minimizing sites within either area that would require the acquisition of private lands. The result of this analysis was the identification of a total of 22 sites within the modified study area that could accommodate the Central City Project's valley storage requirement while minimizing acquisition of private lands and retaining or optimizing opportunities for habitat development (Figure 8 – Potential Valley Storage Sites). Site ID numbers were assigned for ease of discussion and for future reference.

After identifying the 22 sites considered to have potential for valley storage, the Corps interdisciplinary study team met with the City of Fort Worth and the Tarrant Regional Water District to determine whether there were any known constraints to the use of any of the sites for valley storage. Based upon those discussions a number of sites were considered to have potential constraints that would make them a lower priority for more detailed consideration. Table 3-2 (Screening of Potential Valley Storage Sites) provides a summary of the considerations associated with this initial screening. In addition to screening the 22 potential valley storage sites, the Tarrant Regional Water District made it clear that their intention was to implement all of the features of the Riverside Oxbow Project to the extent that those features could be incorporated into a Modified Central City project. In that regard, the Water District plans to acquire all properties which may not be included in the potential valley storage sites, but which are essential to the purpose of the Riverside Oxbow project.

Central City

Figure 6 - Valley Storage Analysis



Legend

- BYPASS CHANNEL
- PROPOSED SAMUELS AVE DAM
- EXISTING LEVEE
- STREAMS
- SITES CONSIDERED FROM AUTHORIZED PROJECT
- FILL SITES CONSIDERED FROM AUTHORIZED PROJECT
- ADDITIONALLY CONSIDERED SITES



0 0.375 0.75 1.5 Miles

Aerial Photography Date: January 2005



US Army Corps of Engineers
Fort Worth District

ATTENTION

This product is reproduced from geospatial information prepared by the U.S. Army Corps of Engineers. GIS data and product accuracy may vary. They may be developed from sources of differing accuracy, accurate only at certain scales, based on modeling or interpretation, incomplete while being created or revised, etc... Using GIS products for purposes other than those for which they were created may yield inaccurate or misleading results. The Corps of Engineers reserves the right to correct, update, modify, or replace GIS products without notification. For more information contact the Fort Worth District Planning office. As of 8/24/2007