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Fort Worth Central City Preliminary Design

Habitat Evaluations

Final Supplement No. 1
to the Final Environmental
Impact Statement
Appendix E - Attachment 1

March 2008



ATTACHMENT 1

to

APPENDIX E

Contents of this Workbook

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AAHUs With vs Without Project	Summary of the habitat outputs of the Modified Project Alternative
WO Project AAHUs	Average Annual Habitat Units for the "Without Project" condition
WO Project Assumptions	Assumptions used in projecting the "Without Project" condition
WO Project Calculations	Calculations for the "Without Project" Condition
With Project AAHUs	Average Annual Habitat Units for the "With Modified Project" alternative
With Project Assumptions	Assumptions used in projecting the "With Modified Project" condition
With Project Calculations	Calculations for the "With Modified Project" Condition
RO AAHUs Updated to 2007	AAHUs for the Riverside Oxbow portion of the "No Action" Condition based on 2007 data
With RO Updated, GRASSLANDS	Recalculations for Grasslands for the "No Action" Condition using 2007 field data
With RO Updated, WETLANDS	Recalculations for Wetlands for the "No Action" Condition using 2007 field data
With RO Updated, RIPARIAN	Recalculations for Riparian with the "No Action" Condition using 2007 field data
Site 17 With & WO	Average Annual Habitat Units for the "With" and "Without" Project c
Site 17 Assumps	Assumptions used in projecting the "With" and "Without" Project conditions for Site 17
Site 17 Calcs	Calculations for the "With" and "Without" Project conditions for Site 17

WITHOUT PROJECT VERSUS WITH PROJECT CONDITIONS MODIFIED CENTRAL CITY PROJECT

Values are Average Annual Habitat Units (AAHUs)												
Study Reach	Riparian Woodland			Emergent Wetland			Upland Wooded			Grassland/Savannah		
	Without Project	With Modified Project	Change due to Project	Without Project	With Modified Project	Change due to Project	Without Project	With Modified Project	Change due to Project	Without Project	With Modified Project	Change due to Project
Clear Fork West ⁽¹⁾	110.23	110.23	0.00	0	0	0.00	36.15	36.15	0	175.91	175.91	0
Clear Fork East ⁽¹⁾	0.00	0	0.00	0	0	0.00	17.1	17.1	0	32.75	32.75	0
North Main ⁽¹⁾	7.29	7.29	0.00	0.25	0.25	0.00	65.45	65.45	0	175.38	175.38	0
West Fork North ⁽¹⁾	3.94	3.94	0.00	0	0	0.00	24.53	24.53	0	97.51	97.51	0
West Fork South	2.10	4.14	2.04	0.25	0.25	0.00	51.78	51.78	0	208.24	205.87	-2.37
West Fork Riverbend ⁽²⁾	13.00	13	0.00	1.12	1.12	0.00	41.26	41.26	0	57.07	57.07	0
West Fork Rockwood	37.31	44.48	7.17	0	0	0.00	3.08	3.08	0	122.44	116.49	-5.95
Oxbow North	19.31	42.31	22.99	0	0	0.00	2.29	2.29	0	18.01	21.51	3.50
Oxbow Central	1.37	17.76	16.39	0.14	0.14	0.00	0	0	0	41.57	41.58	0.01
Oxbow South	0.93	10.42	9.50	0	0	0.00	0	0	0	1.23	2.02	0.79
Gateway Central	0.70	1.74	1.04	0	0	0.00	0	0	0	0.46	11.11	10.65
Gateway South	16.24	25.23	8.99	0	0	0.00	0.09	0.09	0	1.83	0.40	-1.43
Gateway Beach	21.29	45.81	24.52	2.05	18.77	16.71	3.34	3.34	0	6.45	40.05	33.60
Gateway Park	42.71	48.16	5.46	0	0	0.00	1.23	1.23	0	7.79	11.22	3.43
Gateway East	73.71	93.52	19.81	0.24	31.45	31.21	0.78	0.73	0	0.92	0.05	-0.87
TOTALS	228.66	468.03	117.91	4.05	51.98	47.92	103.84	103.80	0.00	465.99	507.37	41.38

⁽¹⁾ These sites are included in the original Central City Project and no change is proposed with their inclusion in the Modified Project Alternative.

⁽²⁾ West Fork Riverbend is included in the original Central City Project but is not proposed as a primary valley storage site with the Modified Project Alternative

WITHOUT PROJECT HABITAT CONDITIONS MODIFIED CENTRAL CITY PROJECT

SITE	Riparian Woodland				Emergent Wetland				Upland Woodland				Grassland/Savannah				Total	
	Base HSI	Base Acres	Baseline HU	AAHU	Base HSI	Base Acres	Baseline HU	AAHU	Base HSI	Base Acres	Baseline HU	AAHU	Base HSI	Base Acres	Baseline HU	AAHU	Baseline Acres	Acres
Clear Fork West	0.62	188	116.31	110.23														
Clear Fork East	0	0	0.00	0.00														
North Main	0.62	12	7.69	7.29														
West Fork North	0.66	6	4.16	3.94														
West Fork Riverbend	0.54	25	13.72	13.00														
West Fork South	0.30	7	2.22	2.10	0.19	3	0.59	0.25	0.19	127	24.11	51.78	0.35	650	227.47	208.24	787	
West Fork Rockwood	0.52	76	37.31	37.31	0.00	0	0.00		0.51	7	3.77	3.08	0.45	297	133.74	122.44	380	
Oxbow North	0.70	39	27.16	19.31	0.00	0	0.00		0.56	5	2.80	2.29	0.76	46	35.26	18.01	90	
Oxbow Central	0.62	3	1.92	1.37	0.19	2	0.30	0.14	0.00	0	0.00		0.76	107	81.62	41.57	112	
Oxbow South	0.62	2	1.30	0.93	0.00	0	0.00		0.00	0	0.00		0.10	24	2.41	1.23	26	
Gateway Central	0.72	1	0.65	0.70	0.00	0	0.00		0.00	0	0.00		0.10	6	0.60	0.46	7	
Gateway South	0.72	21	15.05	16.24	0.00	0	0.00		0.19	0	0.04	0.09	0.10	21	2.08	1.83	42	
Gateway Beach	0.72	27	19.73	21.29	0.33	7	2.28	2.05	0.19	7	1.39	3.34	0.10	74	7.35	6.45	115	
Gateway Park	0.72	55	39.03	42.71	0.00	0	0.00		0.19	3	0.51	1.23	0.10	87	8.70	7.79	145	
Gateway East	0.72	92	66.13	73.71	0.38	10	3.91	0.24	0.33	2	0.53	0.78	0.10	6	0.59	0.92	110	
		323				22				151				1318			1814	
Notes:																		
1. Base acres are shown rounded to nearest unit, calculations were based on acres to the nearest one-tenth																		
2. Gateway Park and Gateway East include shrublands added to Riparian																		
3. Gateway East includes forblnd in the grasslands analysis																		

WITHOUT PROJECT ASSUMPTIONS
MODIFIED CENTRAL CITY PROJECT

Determination of Baseline Conditions:

Acreages used in calculating Habitat Units (HU's) and Average Annual Habitat Units (AAHU's) were derived through Geographic Information System (GIS) interpretation of recent digital-orthophotography and color IR with field verification of habitat types by biologists with the Corps of Engineers, US Fish and Wildlife Service, and Texas Parks and Wildlife Department from August 2006 through July 2007. Species models used to determine baseline Habitat Suitability index (HSI) values were developed by that same team for the previous Central City and Riverside Oxbow studies.

Without Project Condition Assumptions for the LPP:

A 50 year period of analysis will be used to calculate AAHU's for the "Without Project" condition (and all subsequent "With Project" conditions).

It is assumed that the HSI for Riparian Woodlands within the valley storage sites in the Central City portion of the study area will decrease to 0.975 (i.e., 97.5%) of the baseline value by TY 10 (Target Year 10) and will continue to decrease in HSI value to 0.90 of the existing or baseline value by TY 50. Acreages of Riparian Woodlands in the original Central City study area are assumed to remain constant through the period of analysis. Within the Riverside Oxbow sites it is assumed that both acreages and HSIs will decrease to 0.8 at TY 10 and then rebound to 0.85 of baseline value by TY 50. In the Gateway Park sites, just east of the oxbow sites, it is assumed that both HSIs and acreages will improve to 1.03 and 1.06 of baseline values by TY 10 and TY 50, respectively. HSIs at Site 17 within the Gateway Park area, however, will go to 0.0 at TY 10 due to soils cleanup to be conducted by the City of Fort Worth during that time.

HSI's within Upland Woodlands, which would only be impacted within the original Central City reaches, will decrease in value to 0.95 of the baseline value by TY 10 and to 0.90 at TY50. Acreages of Upland Woodlands those sites containing Upland Woodland will decrease to 0.90 of baseline by TY 10 and to 0.80 by TY50.

Emergent wetlands within sites the original Central City study area sites will decrease in both value and acreage to 0.50 of the baseline values by TY 10 and to 0.0 HSI and 0.0 acreage by TY 50. Emergent wetlands within the Riverside Oxbow reach will decrease to 0.95 of the baseline HSI value by TY 10 and 0.0 for HSI and acreage by TY 50. Within the Gateway Park reach the HSI will go to 0.93 of its baseline value by TY 10 and to 0.84 of the acreage and baseline value by TY 50.

Grassland and Grassland Savannah habitat types within potential valley storage in the Central City reaches will retain baseline HSI values through the period of analysis. Acreages of grasslands within that reach will decrease to 0.95 of the baseline through TY 10 and then to 0.85 of the baseline acreage by TY 50. Acreages of grasslands at the Riverside Oxbow sites will go to 0.87 of baseline at TY 10 and to 0.29 at TY 50. HSIs of grasslands in the Riverside Oxbow reach will go to 0.90 at TY 10 and to 0.45 at TY 50. remain constant through the period of analysis. Grassland HSI's on sites 10, 12, 14a, and 14b will go to 0.78 of baseline by TY 10 and then to 0.13 of baseline by TY 50. Grassland HSI's on sites within the Gateway Park reach will go to 0.96 of the baseline value through TY 10 and then will decrease to 0.85 of the baseline value by TY 50. HSIs in that reach will not change through TY 10 but will then go to 0.88 of the baseline by TY 50.

No terrestrial habitat value will be assigned to open water and disturbed areas such as roads, gas well pads, debris disposal areas, etc. Acreage declines in woodlands, wetlands, and grasslands will be reflected in comparative increases in acreage of disturbed areas.

Calculations used in these Habitat Evaluations are based upon the US Fish and Wildlife Service's Habitat Evaluation Procedures (HEP) published in Ecological Services Manual example below:

EXAMPLE AAHU CALCULATIONS (From USFWS's ESM 102)							
*Input data in the bolded areas, see formulas by clicking cell							
100 year Pro	Target Year	0	1	20	100	Cumulative Hu's	AAHU's
Forest (with	Year Interval	0	1	19	80		
	HSI	0.75	0.75	0.6	0.6		
	ACRES	1000	1000	900	600		
	Target Year H	750	750	540	360		
	Interval HU's		750.00	12207.50	36000.00		
100 year Pro	Target Year's	0	1	20	100	Cumulative Hu's	AAHU's
Forest (with	Year Interval	0	1	19	80		
	HSI	0.75	0.7	0.2	0.2		
	ACRES	1000	500	500	500		
	Target Year H	750	350	100	100		
	Interval HU's		545.83	4275.00	8000.00		
Net AAHU C		-361.37					

WITHOUT PROJECT AAHU CALCULATIONS

Clear Fork West

<u>Riparian Woodland</u>						Cumulative Hu's	AAHU's
50 year Project Life	TY	0	1	10	50		
Year Interval		0	1	9	40		
HSI		0.62	0.62	0.60	0.56		
ACRES		187.6	187.6	187.6	187.6		
Target Year HU's		116.31	116.31	113.40	104.68		
Interval HU's			116.31	1033.72	4361.70	5511.73	110.23

<u>Upland Woodland</u>						Cumulative Hu's	AAHU's
50 year Project Life	TY	0	1	10	50		
Year Interval		0	1	9	40		
HSI		0.56	0.56	0.53	0.50		
ACRES		79.1	79.1	71.19	63.28		
Target Year HU's		44.30	44.30	37.87	31.89		
Interval HU's			44.30	369.43	1393.85	1807.57	36.15

<u>Grassland/Savannah</u>						Cumulative Hu's	AAHU's
50 year Project Life	TY	0	1	10	50		
Year Interval		0	1	9	40		
HSI		0.48	0.48	0.48	0.48		
ACRES		400.3	400.3	380.29	340.26		
Target Year HU's		192.14	192.14	182.54	163.32		
Interval HU's			192.14	1686.06	6917.18	8795.39	175.91

Clear Fork East

<u>Riparian Woodland</u>						Cumulative Hu's	AAHU's
50 year Project Life	TY	0	1	10	50		
Year Interval		0	1	9	40		
HSI		0	0	0.00	0.00		
ACRES		0	0	0	0		
Target Year HU's		0.00	0.00	0.00	0.00		
Interval HU's			0.00	0.00	0.00	0.00	0.00

<u>Upland Woodland</u>						Cumulative Hu's	AAHU's
50 year Project Life	TY	0	1	10	50		
Year Interval		0	1	9	40		
HSI		0.5	0.5	0.48	0.45		
ACRES		41.9	41.9	37.71	33.52		
Target Year HU's		20.95	20.95	17.91	15.08		
Interval HU's			20.95	174.72	659.23	854.90	17.10

Without Project Calculations

<u>Grassland/Savannah</u>							Cumulative	
50 year Project Life	TY	0	1	10	50	Hu's	AAHU's	
Year Interval		0	1	9	40			
HSI		0.35	0.35	0.35	0.35			
ACRES		102.2	102.2	97.09	86.87			
Target Year HU's		35.77	35.77	33.98	30.40			
Interval HU's			35.77	313.88	1287.72	1637.37	32.75	

North Main

<u>Riparian Woodland</u>							Cumulative	
50 year Project Life	TY	0	1	10	50	Hu's	AAHU's	
Year Interval		0	1	9	40			
HSI		0.62	0.62	0.60	0.56			
ACRES		12.4	12.4	12.4	12.4			
Target Year HU's		7.69	7.69	7.50	6.92			
Interval HU's			7.69	68.33	288.30	364.32	7.29	

Emergent Wetland

50 year Project Life	TY	0	1	10	50	Cumulative	AAHU's
						Hu's	
Year Interval		0	1	9	40		
HSI		0.3	0.3	0.15	0.00		
ACRES		2.9	2.9	2.90	0.00		
Target Year HU's		0.87	0.87	0.44	0.00		
Interval HU's			0.87	5.87	5.80	12.54	0.25

Upland Woodland

50 year Project Life	TY	0	1	10	50	Cumulative	AAHU's
						Hu's	
Year Interval		0	1	9	40		
HSI		0.56	0.56	0.53	0.50		
ACRES		143.2	143.2	128.88	114.56		
Target Year HU's		80.19	80.19	68.56	57.74		
Interval HU's			80.19	668.80	2523.37	3272.37	65.45

Grassland/Savannah

50 year Project Life	TY	0	1	10	50	Cumulative	AAHU's
						Hu's	
Year Interval		0	1	9	40		
HSI		0.48	0.48	0.48	0.48		
ACRES		399.1	399.1	379.15	339.24		
Target Year HU's		191.57	191.57	181.99	162.83		
Interval HU's			191.57	1681.01	6896.45	8769.03	175.38

West Fork North

<u>Riparian Woodland</u>							Cumulative	
50 year Project Life	TY	0	1	10	50	Hu's	AAHU's	
Year Interval		0	1	9	40			
HSI		0.66	0.66	0.64	0.59			
ACRES		6.3	6.3	6.3	6.3			
Target Year HU's		4.16	4.16	4.05	3.74			
Interval HU's			4.16	36.95	155.93	197.04	3.94	

Without Project Calculations

<u>Emergent Wetland</u>						Cumulative	
50 year Project Life	TY	0	1	10	50	Hu's	AAHU's
Year Interval		0	1	9	40		
HSI		0	0	0.00	0.00		
ACRES		0	0	0.00	0.00		
Target Year HU's		0.00	0.00	0.00	0.00		
Interval HU's			0.00	0.00	0.00	0.00	0.00

<u>Upland Woodland</u>						Cumulative	
50 year Project Life	TY	0	1	10	50	Hu's	AAHU's
Year Interval		0	1	9	40		
HSI		0.41	0.41	0.39	0.37		
ACRES		73.3	73.3	65.97	58.64		
Target Year HU's		30.05	30.05	25.70	21.64		
Interval HU's			30.05	250.64	945.67	1226.36	24.53

<u>Grassland/Savannah</u>						Cumulative	
50 year Project Life	TY	0	1	10	50	Hu's	AAHU's
Year Interval		0	1	9	40		
HSI		0.35	0.35	0.35	0.35		
ACRES		304.3	304.3	289.09	258.66		
Target Year HU's		106.51	106.51	101.18	90.53		
Interval HU's			106.51	934.58	3834.18	4875.27	97.51

West Fork South

<u>Riparian Woodland</u>						Cumulative	
50 year Project Life	TY	0	1	10	50	Hu's	AAHU's
Year Interval		0	1	9	40		
HSI		0.3	0.3	0.29	0.27		
ACRES		7.4	7.4	7.4	7.4		
Target Year HU's		2.22	2.22	2.16	2.00		
Interval HU's			2.22	19.73	83.25	105.20	2.10

<u>Upland Woodland</u>						Cumulative	
50 year Project Life	TY	0	1	10	50	Hu's	AAHU's
Year Interval		0	1	9	40		
HSI		0.5	0.5	0.48	0.45		
ACRES		126.9	126.9	114.21	101.52		
Target Year HU's		63.45	63.45	54.25	45.68		
Interval HU's			63.45	529.17	1996.56	2589.18	51.78

<u>Emergent Wetland</u>						Cumulative	
50 year Project Life	TY	0	1	10	50	Hu's	AAHU's
Year Interval		0	1	9	40		
HSI		0.19	0.19	0.10	0.00		
ACRES		3.1	3.1	3.10	0.00		
Target Year HU's		0.59	0.59	0.29	0.00		
Interval HU's			0.59	3.98	3.93	8.49	0.17

<u>Grassland/Savannah</u>						Cumulative	
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Without Project Calculations

	TY	0	1	10	50	Cumulative Hu's	AAHU's
50 year Project Life							
Year Interval		0	1	9	40		
HSI		0.35	0.35	0.35	0.35		
ACRES		649.9	649.9	617.41	552.42		
Target Year HU's		227.47	227.47	216.09	193.35		
Interval HU's			227.47	1996.01	8188.74	10412.21	208.24

West Fork Riverbend

<u>Riparian Woodland</u>							
	TY	0	1	10	50	Cumulative Hu's	AAHU's
50 year Project Life							
Year Interval		0	1	9	40		
HSI		0.54	0.54	0.53	0.49		
ACRES		25.4	25.4	25.4	25.4		
Target Year HU's		13.72	13.72	13.37	12.34		
Interval HU's			13.72	121.90	514.35	649.97	13.00

Emergent Wetland

	TY	0	1	10	50	Cumulative Hu's	AAHU's
50 year Project Life							
Year Interval		0	1	9	40		
HSI		0.44	0.44	0.22	0.00		
ACRES		8.8	8.8	8.80	0.00		
Target Year HU's		3.87	3.87	1.94	0.00		
Interval HU's			3.87	26.14	25.81	55.82	1.12

Upland Woodland

	TY	0	1	10	50	Cumulative Hu's	AAHU's
50 year Project Life							
Year Interval		0	1	9	40		
HSI		0.8	0.8	0.76	0.72		
ACRES		63.2	63.2	56.88	50.56		
Target Year HU's		50.56	50.56	43.23	36.40		
Interval HU's			50.56	421.67	1590.95	2063.19	41.26

Grassland/Savannah

	TY	0	1	10	50	Cumulative Hu's	AAHU's
50 year Project Life							
Year Interval		0	1	9	40		
HSI		0.35	0.35	0.35	0.35		
ACRES		178.1	178.1	169.20	151.39		
Target Year HU's		62.34	62.34	59.22	52.98		
Interval HU's			62.34	546.99	2244.06	2853.38	57.07

West Fork Rockwood

<u>Riparian Woodland</u>							
	TY	0	1	10	50	Cumulative Hu's	AAHU's
50 year Project Life							
Year Interval		0	1	9	40		
HSI		0.52	0.52	0.51	0.47		
ACRES		75.7	75.7	75.7	75.7		
Target Year HU's		39.36	39.36	38.38	35.43		
Interval HU's			39.36	349.85	1476.15	1865.36	37.31

Upland Woodland

Without Project Calculations

		TY	0	1	10	50	Cumulative Hu's	AAHU's
50 year Project Life								
	Year Interval		0	1	9	40		
	HSI		0.51	0.51	0.48	0.46		
	ACRES		7.4	7.4	6.66	5.92		
	Target Year HU's		3.77	3.77	3.23	2.72		
	Interval HU's			3.77	31.48	118.76	154.00	3.08

Grassland/Savannah

		TY	0	1	10	50	Cumulative Hu's	AAHU's
50 year Project Life								
	Year Interval		0	1	9	40		
	HSI		0.45	0.45	0.45	0.45		
	ACRES		297.2	297.2	282.34	252.62		
	Target Year HU's		133.74	133.74	127.05	113.68		
	Interval HU's			133.74	1173.57	4814.64	6121.95	122.44

Oxbow North

Riparian Woodland

		TY	0	1	10	50	Cumulative Hu's	AAHU's
50 year Project Life								
	Year Interval		0	1	9	40		
	HSI		0.7	0.7	0.56	0.60		
	ACRES		38.8	38.8	31.04	32.98		
	Target Year HU's		27.16	27.16	17.38	19.62		
	Interval HU's			27.16	198.81	739.66	965.63	19.31

Upland Woodland

		TY	0	1	10	50	Cumulative Hu's	AAHU's
50 year Project Life								
	Year Interval		0	1	9	40		
	HSI		0.56	0.56	0.53	0.50		
	ACRES		5.00	5.00	4.50	4.00		
	Target Year HU's		2.80	2.80	2.39	2.02		
	Interval HU's			2.80	23.35	88.11	114.26	2.29

Grassland/Savannah

		TY	0	1	10	50	Cumulative Hu's	AAHU's
50 year Project Life								
	Year Interval		0	1	9	40		
	HSI		0.76	0.76	0.68	0.34		
	ACRES		46.4	46.4	40.37	13.46		
	Target Year HU's		35.26	35.26	27.61	4.60		
	Interval HU's			35.26	282.25	582.91	900.43	18.01

Oxbow Central

Riparian Woodland

		TY	0	1	10	50	Cumulative Hu's	AAHU's
50 year Project Life								
	Year Interval		0	1	9	40		
	HSI		0.62	0.62	0.50	0.53		
	ACRES		3.1	3.1	2.48	2.64		
	Target Year HU's		1.92	1.92	1.23	1.39		
	Interval HU's			1.92	14.07	52.34	68.33	1.37

Emergent Wetland

		TY	0	1	10	50	Cumulative Hu's	AAHU's
50 year Project Life								

Without Project Calculations

Year Interval	0	1	9	40		
HSI	0.19	0.19	0.18	0.00		
ACRES	1.6	1.6	1.60	0.00		
Target Year HU's	0.30	0.30	0.29	0.00		
Interval HU's		0.30	2.67	3.85	6.82	0.14

<u>Grassland/Savannah</u>							
50 year Project Life	TY	0	1	10	50	Cumulative Hu's	AAHU's
Year Interval		0	1	9	40		
HSI		0.76	0.76	0.68	0.34		
ACRES		107.1	107.1	93.18	31.06		
Target Year HU's		81.40	81.40	63.73	10.62		
Interval HU's			81.40	651.49	1345.48	2078.37	41.57

Oxbow South

<u>Riparian Woodland</u>							
50 year Project Life	TY	0	1	10	50	Cumulative Hu's	AAHU's
Year Interval		0	1	9	40		
HSI		0.62	0.62	0.50	0.53		
ACRES		2.1	2.1	1.68	1.79		
Target Year HU's		1.30	1.30	0.83	0.94		
Interval HU's			1.30	9.53	35.46	46.29	0.93

<u>Grassland/Savannah</u>							
50 year Project Life	TY	0	1	10	50	Cumulative Hu's	AAHU's
Year Interval		0	1	9	40		
HSI		0.1	0.1	0.09	0.05		
ACRES		24.1	24.1	20.97	6.99		
Target Year HU's		2.41	2.41	1.89	0.31		
Interval HU's			2.41	19.29	39.84	61.54	1.23

Gateway Central

<u>Riparian Woodland</u>							
50 year Project Life	TY	0	1	10	50	Cumulative Hu's	AAHU's
Year Interval		0	1	9	40		
HSI		0.72	0.72	0.74	0.76		
ACRES		0.9	0.9	0.93	0.95		
Target Year HU's		0.65	0.65	0.69	0.73		
Interval HU's			0.65	6.01	28.31	34.96	0.70

<u>Grassland/Savannah</u>							
50 year Project Life	TY	0	1	10	50	Cumulative Hu's	AAHU's
Year Interval		0	1	9	40		
HSI		0.1	0.1	0.10	0.09		
ACRES		5.2	5.2	5.20	4.58		
Target Year HU's		0.52	0.52	0.50	0.39		
Interval HU's			0.52	4.59	17.72	22.82	0.46

Gateway South

<u>Riparian Woodland</u>							
50 year Project Life	TY	0	1	10	50	Cumulative Hu's	AAHU's

Without Project Calculations

Year Interval	0	1	9	40		
HSI	0.72	0.72	0.74	0.76		
ACRES	20.9	20.9	21.53	22.15		
Target Year HU's	15.05	15.05	15.96	16.91		
Interval HU's		15.05	139.54	657.36	811.94	16.24

Upland Woodland

50 year Project Life	TY	0	1	10	50	Cumulative Hu's	AAHU's
Year Interval		0	1	9	40		
HSI		0.56	0.56	0.53	0.50		
ACRES		0.20	0.20	0.18	0.16		
Target Year HU's		0.11	0.11	0.10	0.08		
Interval HU's			0.11	0.93	3.52	4.57	0.09

Grassland/Savannah

50 year Project Life	TY	0	1	10	50	Cumulative Hu's	AAHU's
Year Interval		0	1	9	40		
HSI		0.1	0.1	0.10	0.09		
ACRES		20.8	20.8	20.80	18.30		
Target Year HU's		2.08	2.08	2.00	1.56		
Interval HU's			2.08	18.35	70.87	91.30	1.83

Gateway Beach

Riparian Woodland

50 year Project Life	TY	0	1	10	50	Cumulative Hu's	AAHU's
Year Interval		0	1	9	40		
HSI		0.72	0.72	0.74	0.76		
ACRES		27.4	27.4	28.22	29.04		
Target Year HU's		19.73	19.73	20.93	22.17		
Interval HU's			19.73	182.93	861.80	1064.46	21.29

Upland Woodland

50 year Project Life	TY	0	1	10	50	Cumulative Hu's	AAHU's
Year Interval		0	1	9	40		
HSI		0.56	0.56	0.53	0.50		
ACRES		7.30	7.30	6.57	5.84		
Target Year HU's		4.09	4.09	3.50	2.94		
Interval HU's			4.09	34.09	128.64	166.82	3.34

Emergent Wetland

50 year Project Life	TY	0	1	10	50	Cumulative Hu's	AAHU's
Year Interval		0	1	9	40		
HSI		0.33	0.33	0.31	0.28		
ACRES		6.9	6.9	6.90	6.90		
Target Year HU's		2.28	2.28	2.12	2.28		
Interval HU's			2.28	19.78	80.61	102.66	2.05

Grassland/Savannah

50 year Project Life	TY	0	1	10	50	Cumulative Hu's	AAHU's
Year Interval		0	1	9	40		

Without Project Calculations

HSI	0.1	0.1	0.10	0.09		
ACRES	73.5	73.5	73.50	64.68		
Target Year HU's	7.35	7.35	7.06	5.50		
Interval HU's		7.35	64.83	250.43	322.61	6.45

Gateway Park

<u>Riparian Woodland</u>		Not in site 17						
50 year Project Life	TY	0	1	10	50	Cumulative Hu's	AAHU's	
	Year Interval	0	1	9	40			
	HSI	0.72	0.72	0.74	0.76			
	ACRES	54.21	54.21	55.84	57.46			
	Target Year HU's	39.03	39.03	41.41	43.86			
	Interval HU's		39.03	361.92	1705.04	2105.99	42.12	

<u>Riparian Woodland</u>		In Site 17						
50 year Project Life	TY	0	1	10	50	Cumulative Hu's	AAHU's	
	Year Interval	0	1	9	40			
	HSI	0.4	0.4	0.00	0.00			
	ACRES	0.82	0.82	0.00	0.00			
	Target Year HU's	0.33	0.33	0.00	0.00			
	Interval HU's		0.33	0.98	0.00	1.31	0.03	

<u>Emergent Wetland</u>								
50 year Project Life	TY	0	1	10	50	Cumulative Hu's	AAHU's	
	Year Interval	0	1	9	40			
	HSI	0.45	0.45	0.00	0.00			
	ACRES	0.04	0.04	0.04	0.03			
	Target Year HU's	0.02	0.02	0.00	0.02			
	Interval HU's		0.02	0.08	0.00	0.10	0.00	

<u>Upland Woodland</u>								
50 year Project Life	TY	0	1	10	50	Cumulative Hu's	AAHU's	
	Year Interval	0	1	9	40			
	HSI	0.56	0.56	0.53	0.50			
	ACRES	2.70	2.70	2.43	2.16			
	Target Year HU's	1.51	1.51	1.29	1.09			
	Interval HU's		1.51	12.61	47.58	61.70	1.23	

<u>Grassland/Savannah</u>		Not in Site 17						
50 year Project Life	TY	0	1	10	50	Cumulative Hu's	AAHU's	
	Year Interval	0	1	9	40			
	HSI	0.1	0.1	0.10	0.09			
	ACRES	86.7	86.7	86.67	76.27			
	Target Year HU's	8.67	8.67	8.32	6.48			
	Interval HU's		8.67	76.44	295.30	380.41	7.61	

<u>Grassland/Savannah</u>		In Site 17						
50 year Project Life	TY	0	1	10	50	Cumulative Hu's	AAHU's	
	Year Interval	0	1	9	40			
becomes deep water pond	HSI	0.1	0.1	0.00	0.00			
or turf grass	ACRES	16.1	16.1	16.12	14.19			

Without Project Calculations

Target Year HU's	1.61	1.61	0.00	0.00		
Interval HU's		1.61	7.25	0.00	8.87	0.18

<u>Shrubland</u>		Not in Site 17						
50 year Project Life	TY	0	1	10	50	Cumulative Hu's	AAHU's	
	Year Interval	0	1	9	40			
tends toward riparian	HSI	0.77	0.77	0.79	0.82			
	ACRES	0.7	0.7	0.69	0.71			
	Target Year HU's	0.52	0.54	0.55	0.58			
	Interval HU's		0.53	4.89	22.54	27.95	0.56	

Gateway East

<u>Riparian Woodland</u>		Not in Site 17						
50 year Project Life	TY	0	1	10	50	Cumulative Hu's	AAHU's	
	Year Interval	0	1	9	40			
	HSI	0.72	0.72	0.74	0.76			
	ACRES	91.85	91.85	94.61	97.36			
	Target Year HU's	66.13	66.13	70.16	74.31			
	Interval HU's		66.13	613.22	2888.91	3568.26	71.37	

<u>Riparian Woodland</u>		In Site 17						
50 year Project Life	TY	0	1	10	50	Cumulative Hu's	AAHU's	
	Year Interval	0	1	9	40			
becomes turf or deep water	HSI	0.39	0.39	0.00	0.00			
	ACRES	14.95	14.95	0.00	0.00			
	Target Year HU's	5.83	5.83	0.00	0.00			
	Interval HU's		5.83	17.49	0.00	23.32	0.47	

<u>Shrubland</u>		Not in Site 17						
50 year Project Life	TY	0	1	10	50	Cumulative Hu's	AAHU's	
	Year Interval	0	1	9	40			
becomes turf or deep water	HSI	0.77	0.77	0.79	0.82			
	ACRES	1.27	1.27	1.31	1.35			
	Target Year HU's	0.98	0.98	1.04	1.10			
	Interval HU's		0.98	9.07	42.72	52.76	1.06	

<u>Shrubland</u>		In Site 17						
50 year Project Life	TY	0	1	10	50	Cumulative Hu's	AAHU's	
	Year Interval	0	1	9	40			
becomes turf or deep water	HSI	0.77	0.77	0.00	0.00			
	ACRES	2.76	14.95	0.00	0.00			
	Target Year HU's	2.13	11.51	0.00	0.00			
	Interval HU's		6.82	34.53	0.00	41.35	0.83	

<u>Upland Woodland</u>								
50 year Project Life	TY	0	1	10	50	Cumulative Hu's	AAHU's	
	Year Interval	0	1	9	40			
	HSI	0.56	0.56	0.53	0.50			
	ACRES	1.70	1.70	1.53	1.36			
	Target Year HU's	0.95	0.95	0.81	0.69			

Without Project Calculations

Interval HU's		0.95	7.94	29.96	38.85	0.78	
Emergent Wetland		Not in Site 17				Cumulative	
50 year Project Life	TY	0	1	10	50	Hu's	AAHU's
	Year Interval	0	1	9	40		
	HSI	0.45	0.45	0.00	0.00		
adversely affected by	ACRES	4.36	4.36	4.36	3.66		
excavation	Target Year HU's	1.96	1.96	0.00	1.65		
	Interval HU's	1.96	8.83	0.00	10.79	0.22	

Emergent Wetland		In Site 17				Cumulative	
50 year Project Life	TY	0	1	10	50	Hu's	AAHU's
	Year Interval	0	1	9	40		
	HSI	0.45	0.45	0.00	0.00		
becomes deep water	ACRES	5.9	0	0.00	0.00		
	Target Year HU's	2.66	0.00	0.00	0.00		
	Interval HU's	1.33	0.00	0.00	1.33	0.03	

Grassland/Savannah		Not in Site 17				Cumulative	
50 year Project Life	TY	0	1	10	50	Hu's	AAHU's
	Year Interval	0	1	9	40		
	HSI	0.1	0	0.10	0.09		
	ACRES	5.9	5.9	5.93	5.22		
	Target Year HU's	0.59	0.00	0.57	0.44		
	Interval HU's	0.30	2.56	20.20	23.06	0.46	

Grassland/Savannah		In Site 17				Cumulative	
50 year Project Life	TY	0	1	10	50	Hu's	AAHU's
	Year Interval	0	1	9	40		
	HSI	0.1	0	0.10	0.09		
Becomes deep water	ACRES	0.1	0.0	0.00	0.00		
	Target Year HU's	0.01	0.00	0.00	0.00		
	Interval HU's	0.00	0.00	0.00	0.00	0.00	0.00

Forbland		In Site 17				Cumulative	
50 year Project Life	TY	0	1	10	50	Hu's	AAHU's
	Year Interval	0	1	9	40		
	HSI	0.66	0.66	0.00	0.00		
Becomes deep water	ACRES	8.6	8.6	0.00	0.00		
	Target Year HU's	5.68	5.68	0.00	0.00		
	Interval HU's	5.68	17.03	0.00	22.70	0.45	

Site 17

Riparian Woodland						Cumulative	
50 year Project Life	TY	0	1	10	50	Hu's	AAHU's
	Year Interval	0	1	9	40		
	HSI	0.39	0.9	0.00	0.00		
	ACRES	16.7	16.7	0.00	0.00		
	Target Year HU's	6.51	15.03	0.00	0.00		

Without Project Calculations

Interval HU's	10.77	45.09	0.00	55.86	1.12
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Upland Woodland

50 year Project Life	TY	0	1	10	50	Cumulative Hu's	AAHU's
Year Interval		0	1	9	40		
HSI		0.56	0.56	0.53	0.50		
ACRES		1.60	1.60	1.44	1.28		
Target Year HU's		0.90	0.90	0.77	0.65		
Interval HU's		0.90	7.47	28.19	36.56		0.73

Emergent Wetland

50 year Project Life	TY	0	1	10	50	Cumulative Hu's	AAHU's
Year Interval		0	1	9	40		
HSI		0.45	0.45	0.00	0.00		
ACRES		8.8	8.8	0.00	0.00		
Target Year HU's		3.96	3.96	0.00	0.00		
Interval HU's		3.96	11.88	0.00	15.84		0.32

Grassland/Savannah

50 year Project Life	TY	0	1	10	50	Cumulative Hu's	AAHU's
Year Interval		0	1	9	40		
HSI		0.1	0.1	0.10	0.10		
ACRES		17.2	17.2	42.70	42.70		
Target Year HU's		1.72	1.72	4.10	4.27		
Interval HU's		1.72	26.34	167.38	195.44		3.91

**WITH PROJECT HABITAT CONDITIONS
MODIFIED CENTRAL CITY PROJECT**

SITE	<u>Riparian Woodland</u>				<u>Emergent Wetland</u>				<u>Upland Woodland</u>				<u>Grassland/Savannah</u>				<u>Total</u>
	<u>Base</u> <u>HSI</u>	<u>Base</u> <u>Acres</u>	<u>Baseline</u> <u>HU</u>	<u>AAHU</u>	<u>Base</u> <u>HSI</u>	<u>Base</u> <u>Acres</u>	<u>Baseline</u> <u>HU</u>	<u>AAHU</u>	<u>Base</u> <u>HSI</u>	<u>Base</u> <u>Acres</u>	<u>Baseline</u> <u>HU</u>	<u>AAHU</u>	<u>Base</u> <u>HSI</u>	<u>Base</u> <u>Acres</u>	<u>Baseline</u> <u>HU</u>	<u>AAHU</u>	<u>Baseline</u> <u>Acres</u>
West Fork South	0.30	1	0.42	4.14	0.19	3	0.59	0.25	0.19	127	24.11	51.78	0.35	650	227.47	205.87	781
West Fork Rockwood	0.52	75	39.21	44.48	0.00	0	0.00		0.51	7	3.77	3.08	0.45	297	133.74	116.49	380
Oxbow North	0.70	39	27.16	42.31	0.00	0	0.00		0.56	5	2.80	2.29	0.76	46	35.26	21.51	90
Oxbow Central	0.62	3	1.86	17.76	0.19	2	0.30	0.14	0.00	0	0.00		0.76	107	81.62	41.58	112
Oxbow South	0.62	6	4.00	10.42	0.00	0	0.00		0.00	0	0.00		0.10	24	2.41	2.02	31
Gateway Central	0.72	2	1.53	1.74	0.00	0	0.00		0.00	0	0.00		0.10	6	0.60	11.11	8
Gateway South	0.72	24	17.59	25.23	0.00	0	0.00		0.56	0.2	0.11	0.09	0.10	21	2.08	0.40	45
Gateway Beach	0.72	26	18.51	45.81	0.33	7	2.28	18.77	0.56	7	4.09	3.34	0.10	74	7.35	40.05	113
Gateway Park	0.72	55	39.60	48.16	0.00	0	0.00		0.56	3	1.51	1.23	0.10	87	8.70	11.22	145
Gateway East	0.72	107	76.90	93.52	0.38	10	3.91	31.45	0.56	2	0.90	0.73	0.10	6	0.59	0.05	125
		339				22				151				1318			1830

WITH PROJECT ASSUMPTIONS
LOCALLY PREFERRED PLAN
MODIFIED CENTRAL CITY PROJECT

With Project Assumptions for the LPP

Same assumptions were also used for re-assessment of Riverside Oxbow 2005 project reported habitat measures to reflect current planning conditions

Adverse impacts to significant resource categories such as riparian woodlands and emergent wetlands will be avoided and minimized to the maximum extent possible by design and configuration of the potential hydraulic valley storage sites. Every effort will be made to utilize only those lower valued or more renewable resource categories such as grasslands and disturbed areas to achieve the required valley storage and then to restore those excavated sites to the higher resource categories of riparian woodland and emergent wetland.

Any acreages other than Riparian Woodland within a given reach that are not directly affected by the project's valley storage sites or other project features will retain the same acreage and HSI values as they would have for the Without Project condition.

Differing sets of assumptions will be used for the "with project" condition for restoration of riparian woodlands, emergent wetlands, and stream aquatic habitat that would be directly affected depending upon existing value, location of the site, and management intensity. These assumptions will vary by site as follows.

West Fork South : Riparian woodlands that will be created from the excavated valley storage area will achieve an HSI of 0.25 by TY 10 and 0.8 by TY 50. HSI of existing riparian woodlands will be increased to values of 0.5 and 0.85 by TY 10 and TY 50, respectively. Restoration of 3,568 linear feet of channel, including 900 linear feet of riffle, will result in a gain of 1.52 AAHUs of stream aquatic habitat through the project life.

West Fork Rockwood : For those riparian woodlands that will be created from the excavated valley storage area it is assumed that an HSI of 0.25 will be reached by TY 10 and that the HSI will reach 0.8 by TY 50. Existing Riparian Woodland areas that are not impacted by construction will go to 0.975 of their current HSI at TY 10 through the project life. 5.9 acres of riparian woodland will be impacted beginning at TY 1 but will undergo riparian restoration as described above (accounting will be as mitigation). Restoration of aquatic oxbow habitat will encompass 5.1 acres of previously severed stream channel beginning at TY 1 with AAHUs of 4.3 through the project life.

Oxbow North : (Right descending bank) - Developed riparian woodland will achieve an HSI of 0.25 by TY 10 and 0.8 by TY 50. Improved riparian woodland currently valued at an HSI of 0.7 will increase to 0.8 at TY 10 and to 0.95 at TY 50. Native grassland HSIs will go to 0.5 at TY 1 and to 1.0 by TY 10 through the remainder of the project life. Areas developed as "high density riparian forest" with restored topsoil will achieve an HSI of 0.2 by TY 10 and 0.6 by TY 50. (Left descending bank and additions to both banks) - HSIs for all habitat types in this area will be the same as the right descending bank except that improved riparian woodland currently valued at an HSI of 0.7 will increase to 0.8 at TY 10 and to 0.95 at TY 50. Existing grasslands in the Oxbow North Reach of grasslands not directly affected by the project HSIs will go to 0.9 of the baseline by TY 10 and to 0.45 of the baseline by TY 50 and acreages will drop to 0.87 and to 0.29 of baseline during those same intervals.

Oxbow Central : Areas developed as "high density riparian forest" with restored topsoil will achieve an HSI of 0.2 by TY 10 and 0.6 by TY 50. Acreages and HSI's of preserved riparian forest will drop to 0.8 of their baseline values at TY 10 but will rebound to 0.85 of that value by TY 50. Created or developed low density forest (10% or less canopy, i.e., savannah) will achieve a 0.5 grassland HSI by TY 1 and then 1.0 at TY 10 through the project life. Native grassland will achieve those same values. Turf grasses will retain an HSI of 0.1 from TY 1 through

WITH PROJECT ASSUMPTIONS
LOCALLY PREFERRED PLAN
MODIFIED CENTRAL CITY PROJECT

affected by the project will go to 0.9 of the baseline by TY 10 and to 0.45 of the baseline by TY 50 and acreages will drop to 0.87 and to 0.29 of existing values at those target years. Restoration of the Sycamore Creek aquatic and riparian system will result in riparian HSI values of 0.4 at TY 1, 0.85 at TY 10 through TY 50 on the 2.78 acres used for that purpose.

Oxbow South : Areas developed as "high density riparian forest" with restored topsoil will achieve an HSI of 0.2 by TY 10 and 0.6 by TY 50. Improved riparian woodland will achieve an HSI of 0.8 by TY 10 and an HSI of 0.9 by TY 50. Turf grasses will retain an HSI of 0.1 from TY 1 through the project life. Native grasslands created as a buffer within the valley storage site will achieve a 0.5 grassland HSI by TY 1 and then 1.0 at TY 10 through the project life. HSIs of "preserved" native grasslands not directly affected by the project will go to 0.9 of the baseline by TY 10 and to 0.45 of the baseline by TY 50 and acreages will drop to 0.87 and to 0.29 of existing values at those target years.

Gateway Center : Improved existing riparian woodland will achieve an HSI of 0.8 by TY 10 and an HSI of 0.9 by TY 50. Turf grasses will retain an HSI of 0.1 from TY 1 through the project life. Created or developed low density forest (10% or less canopy, i.e., savannah) will achieve a 0.5 grassland HSI by TY 1 and then 1.0 at TY 10 through the project life. Turf grasses will retain an HSI of 0.1 from TY 1 through the project life. Existing grasslands will be maintained but acreages will be reduced by 0.96 at TY 10 and by 0.85 at TY 50, and HSI will remain constant through TY 10 but will be reduced by 0.88 by TY 50.

Gateway Beach : Improved existing riparian woodland will achieve an HSI of 0.85 by TY 10 and an HSI of 0.95 by TY 50 due to association with developed and improved wetlands. Developed woodlands although on excavated sites will achieve 0.85 hsi by TY 50 due to proximity to wetlands and adjacent riparian forest in this site. Created or developed low density forest (10% or less canopy, i.e., savannah) will achieve a 0.5 grassland HSI by TY 1 and then 1.0 at TY 10 through the project life. Developed scattered trees (5% canopy savannah) will achieve a 0.5 grassland HSI by TY 1 and then 1.0 at TY 10 through the project life. Turf grasses will retain an HSI of 0.1 from TY 1 through the project life. Existing grasslands will be maintained but acreages will be reduced by 0.96 at TY 10 and by 0.85 at TY 50, and HSI will remain constant through TY 10 but will be reduced by 0.88 by TY 50.

Gateway South : Areas developed as "high density riparian forest" with restored topsoil will achieve an HSI of 0.2 by TY 10 and 0.6 by TY 50. Improved riparian woodland will achieve an HSI of 0.8 by TY 10 and an HSI of 0.9 by TY 50. Turf grasses will retain an HSI of 0.1 from TY 1 through the project life.

Gateway Park : Existing riparian forest, either inside or outside the project footprint, with no management will result in no additional loss of acreage and will result in increases in HSI by 1.03 at TY 10 and by 1.06 at TY 50. Improved riparian woodland will achieve an HSI of 0.85 by TY 10 and an HSI of 0.95 by TY 50 due to incorporation of extensive emergent wetland complex and adjacent riparian woodland management. Developed scattered trees (5% canopy savannah) will achieve a 0.5 grassland HSI by TY 1 and then 1.0 at TY 10 through the project life. Turf grasses will retain an HSI of 0.1 from TY 1 through the project life. Existing grasslands will be maintained but acreages will be reduced by 0.96 at TY 10 and by 0.85 at TY 50, and HSI will remain constant through TY 10 but will be reduced by 0.88 by TY 50.

Gateway East : Improved riparian woodland will achieve an HSI of 0.85 by TY 10 and an HSI of 0.95 by TY 50 due to connection to wetlands and adjacent managed forests.. Existing riparian forest, either inside or outside the project footprint, with no management will result in no additional loss of acreage and will result in increases in HSI by 1.03 at TY 10 and by 1.06 at TY 50.

Site 17 (a subset of Gateway Park and Gateway East) : All excavated areas within Site 17 will be

WITH MODIFIED PROJECT AAHU CALCULATIONS

Clear Fork West

This site was included in the Authorized Central City plan

<u>Riparian Woodland</u>						Cumulative	
50 year Project Life	TY	0	1	10	50	Hu's	AAHU's
Year Interval		0	1	9	40		
HSI		0.62	0.62	0.60	0.56		
ACRES		187.6	187.6	187.6	187.6		
Target Year HU's		116.31	116.31	113.40	104.68		
Interval HU's			116.31	1033.72	4361.70	5511.73	110.23

Upland Woodland

<u>Upland Woodland</u>						Cumulative	
50 year Project Life	TY	0	1	10	50	Hu's	AAHU's
Year Interval		0	1	9	40		
HSI		0.56	0.56	0.53	0.50		
ACRES		79.1	79.1	71.19	63.28		
Target Year HU's		44.30	44.30	37.87	31.89		
Interval HU's			44.30	369.43	1393.85	1807.57	36.15

Grassland/Savannah

<u>Grassland/Savannah</u>						Cumulative	
50 year Project Life	TY	0	1	10	50	Hu's	AAHU's
Year Interval		0	1	9	40		
HSI		0.48	0.48	0.48	0.48		
ACRES		400.3	400.3	380.29	340.26		
Target Year HU's		192.14	192.14	182.54	163.32		
Interval HU's			192.14	1686.06	6917.18	8795.39	175.91

Clear Fork East

This site was included in the Authorized Central City plan

<u>Riparian Woodland</u>						Cumulative	
50 year Project Life	TY	0	1	10	50	Hu's	AAHU's
Year Interval		0	1	9	40		
HSI		0	0	0.00	0.00		
ACRES		0	0	0	0		
Target Year HU's		0.00	0.00	0.00	0.00		
Interval HU's			0.00	0.00	0.00	0.00	0.00

Upland Woodland

<u>Upland Woodland</u>						Cumulative	
50 year Project Life	TY	0	1	10	50	Hu's	AAHU's
Year Interval		0	1	9	40		
HSI		0.5	0.5	0.48	0.45		
ACRES		41.9	41.9	37.71	33.52		
Target Year HU's		20.95	20.95	17.91	15.08		
Interval HU's			20.95	174.72	659.23	854.90	17.10

With Modified Project Calculations

<u>Grassland/Savannah</u>							Cumulative	
50 year Project Life	TY	0	1	10	50	Hu's	AAHU's	
Year Interval		0	1	9	40			
HSI		0.35	0.35	0.35	0.35			
ACRES		102.2	102.2	97.09	86.87			
Target Year HU's		35.77	35.77	33.98	30.40			
Interval HU's			35.77	313.88	1287.72	1637.37	32.75	

North Main

This site was included in the Authorized Central City plan

<u>Riparian Woodland</u>							Cumulative	
50 year Project Life	TY	0	1	10	50	Hu's	AAHU's	
Year Interval		0	1	9	40			
HSI		0.62	0.62	0.60	0.56			
ACRES		12.4	12.4	12.4	12.4			
Target Year HU's		7.69	7.69	7.50	6.92			
Interval HU's			7.69	68.33	288.30	364.32	7.29	

Emergent Wetland

50 year Project Life	TY	0	1	10	50	Cumulative Hu's	AAHU's
Year Interval		0	1	9	40		
HSI		0.3	0.3	0.15	0.00		
ACRES		2.9	2.9	2.90	0.00		
Target Year HU's		0.87	0.87	0.44	0.00		
Interval HU's			0.87	5.87	5.80	12.54	0.25

Upland Woodland

50 year Project Life	TY	0	1	10	50	Cumulative Hu's	AAHU's
Year Interval		0	1	9	40		
HSI		0.56	0.56	0.53	0.50		
ACRES		143.2	143.2	128.88	114.56		
Target Year HU's		80.19	80.19	68.56	57.74		
Interval HU's			80.19	668.80	2523.37	3272.37	65.45

Grassland/Savannah

50 year Project Life	TY	0	1	10	50	Cumulative Hu's	AAHU's
Year Interval		0	1	9	40		
HSI		0.48	0.48	0.48	0.48		
ACRES		399.1	399.1	379.15	339.24		
Target Year HU's		191.57	191.57	181.99	162.83		
Interval HU's			191.57	1681.01	6896.45	8769.03	175.38

With Modified Project Calculations

West Fork North

This site was included in the Authorized Central City plan

Riparian Woodland

						Cumulative	
50 year Project Life	TY	0	1	10	50	Hu's	AAHU's
	Year Interval	0	1	9	40		
	HSI	0.66	0.66	0.64	0.59		
	ACRES	6.3	6.3	6.3	6.3		
	Target Year HU's	4.16	4.16	4.05	3.74		
	Interval HU's		4.16	36.95	155.93	197.04	3.94

Emergent Wetland

						Cumulative	
50 year Project Life	TY	0	1	10	50	Hu's	AAHU's
	Year Interval	0	1	9	40		
	HSI	0	0	0.00	0.00		
	ACRES	0	0	0.00	0.00		
	Target Year HU's	0.00	0.00	0.00	0.00		
	Interval HU's		0.00	0.00	0.00	0.00	0.00

Upland Woodland

						Cumulative	
50 year Project Life	TY	0	1	10	50	Hu's	AAHU's
	Year Interval	0	1	9	40		
	HSI	0.41	0.41	0.39	0.37		
	ACRES	73.3	73.3	65.97	58.64		
	Target Year HU's	30.05	30.05	25.70	21.64		
	Interval HU's		30.05	250.64	945.67	1226.36	24.53

Grassland/Savannah

						Cumulative	
50 year Project Life	TY	0	1	10	50	Hu's	AAHU's
	Year Interval	0	1	9	40		
	HSI	0.35	0.35	0.35	0.35		
	ACRES	304.3	304.3	289.09	258.66		
	Target Year HU's	106.51	106.51	101.18	90.53		
	Interval HU's		106.51	934.58	3834.18	4875.27	97.51

With Modified Project Calculations

West Fork South (Ham Branch)

This site was included in the Authorized Central City plan

<u>Riparian Woodland</u> (Developed within Ham Branch Valley Storage)							Cumulative	
		TY	0	1	10	50	Hu's	AAHU's
50 year Project Life								
	Year Interval		0	1	9	40		
	HSI		0	0	0.25	0.80		
	ACRES		0	1.4	1.4	1.4		
	Target Year HU's		0.00	0.00	0.35	1.12		
	Interval HU's			0.00	1.58	29.40	30.98	0.62

<u>Riparian Woodland</u> (Existing within reach)							Cumulative	
		TY	0	1	10	50	Hu's	AAHU's
50 year Project Life								
	Year Interval		0	1	9	40		
	HSI		0.3	0.3	0.50	0.85		
	ACRES		7.4	7.4	7.4	7.4		
	Target Year HU's		2.22	2.22	3.70	6.29		
	Interval HU's			2.22	26.64	199.80	228.66	4.57

<u>Upland Woodland</u>							Cumulative	
		TY	0	1	10	50	Hu's	AAHU's
50 year Project Life								
	Year Interval		0	1	9	40		
	HSI		0.5	0.5	0.48	0.45		
	ACRES		126.9	126.9	114.21	101.52		
	Target Year HU's		63.45	63.45	54.25	45.68		
	Interval HU's			63.45	529.17	1996.56	2589.18	51.78

<u>Emergent Wetland</u>							Cumulative	
		TY	0	1	10	50	Hu's	AAHU's
50 year Project Life								
	Year Interval		0	1	9	40		
	HSI		0.3	0.3	0.15	0.00		
	ACRES		2.9	2.9	2.90	0.00		
	Target Year HU's		0.87	0.87	0.44	0.00		
	Interval HU's			0.87	5.87	5.80	12.54	0.25

<u>Grassland/Savannah</u>							Cumulative	
		TY	0	1	10	50	Hu's	AAHU's
50 year Project Life								
	Year Interval		0	1	9	40		
	HSI		0.35	0.35	0.35	0.35		
	ACRES		649.9	642.4	610.28	546.04		
	Target Year HU's		227.47	224.84	213.60	191.11		
	Interval HU's			226.15	1972.97	8094.24	10293.36	205.87

West Fork Riverbend

<u>Riparian Woodland</u>							Cumulative	AAHU's
50 year Project Life	TY	0	1	10	50			
	Year Interval	0	1	9	40			
	HSI	0.54	0.54	0.53	0.49			
	ACRES	25.4	25.4	25.4	25.4			
	Target Year HU's	13.72	13.72	13.37	12.34			
	Interval HU's		13.72	121.90	514.35	649.97	13.00	

<u>Emergent Wetland</u>							Cumulative	AAHU's
50 year Project Life	TY	0	1	10	50			
	Year Interval	0	1	9	40			
	HSI	0.44	0.44	0.22	0.00			
	ACRES	8.8	8.8	8.80	0.00			
	Target Year HU's	3.87	3.87	1.94	0.00			
	Interval HU's		3.87	26.14	25.81	55.82	1.12	

<u>Upland Woodland</u>							Cumulative	AAHU's
50 year Project Life	TY	0	1	10	50			
	Year Interval	0	1	9	40			
	HSI	0.8	0.8	0.76	0.72			
	ACRES	63.2	63.2	56.88	50.56			
	Target Year HU's	50.56	50.56	43.23	36.40			
	Interval HU's		50.56	421.67	1590.95	2063.19	41.26	

<u>Grassland/Savannah</u>							Cumulative	AAHU's
50 year Project Life	TY	0	1	10	50			
	Year Interval	0	1	9	40			
	HSI	0.35	0.35	0.35	0.35			
	ACRES	178.1	178.1	169.20	151.39			
	Target Year HU's	62.34	62.34	59.22	52.98			
	Interval HU's		62.34	546.99	2244.06	2853.38	57.07	

West Fork Rockwood

<u>Riparian Woodland</u>							Cumulative	AAHU's
50 year Project Life	TY	0	1	10	50			
	Year Interval	0	1	9	40			
	HSI	0	0	0.25	0.80			
	ACRES	0	20.51	20.51	20.51			
	Target Year HU's	0.00	0.00	5.13	16.41			
	Interval HU's		0.00	23.07	430.71	453.78	9.08	

With Modified Project Calculations

<u>Riparian Woodland</u> (Lost existing riparian woodland)								
		TY	0	1	10	50	Cumulative Hu's	AAHU's
50 year Project Life								
	Year Interval		0	1	9	40		
	HSI		0.52	0.52	0.51	0.51		
	ACRES		5.9	0.00	0.00	0.00		
	Target Year HU's		3.07	0.00	0.00	0.00		
	Interval HU's			1.53	0.00	0.00	1.53	0.03

<u>Riparian Woodland</u> (Existing within reach)								
		TY	0	1	10	50	Cumulative Hu's	AAHU's
50 year Project Life								
	Year Interval		0	1	9	40		
	HSI		0.52	0.52	0.51	0.51		
	ACRES		75.7	75.7	75.70	75.70		
	Target Year HU's		39.36	39.36	38.38	38.38		
	Interval HU's			39.36	349.85	1535.20	1924.41	38.49

<u>Upland Woodland</u>								
		TY	0	1	10	50	Cumulative Hu's	AAHU's
50 year Project Life								
	Year Interval		0	1	9	40		
	HSI		0.51	0.51	0.48	0.46		
	ACRES		7.4	7.4	6.66	5.92		
	Target Year HU's		3.77	3.77	3.23	2.72		
	Interval HU's			3.77	31.48	118.76	154.00	3.08

<u>Grassland/Savannah</u>								
		TY	0	1	10	50	Cumulative Hu's	AAHU's
50 year Project Life								
	Year Interval		0	1	9	40		
	HSI		0.45	0.45	0.45	0.45		
	ACRES		297.2	282.59	268.46	240.20		
	Target Year HU's		133.74	127.17	120.81	108.09		
	Interval HU's			130.45	1115.88	4577.96	5824.29	116.49

Oxbow North

<u>Riparian Woodland</u> (Right bank looking downstream - developed)								
		TY	0	1	10	50	Cumulative Hu's	AAHU's
50 year Project Life								
	Year Interval		0	1	9	40		
	HSI		0	0	0.25	0.80		
	ACRES		0	6.77	6.77	6.77		
	Target Year HU's		0.00	0.00	1.69	5.42		
	Interval HU's			0.00	7.62	142.17	149.79	3.00

With Modified Project Calculations

<u>Riparian Woodland</u> (Right bank looking downstream - Improved within reach)							Cumulative	
50 year Project Life	TY	0	1	10	50	Hu's	AAHU's	
Year Interval		0	1	9	40			
HSI		0.7	0.7	0.80	0.92			
ACRES		1.11	1.11	1.11	1.11			
Target Year HU's		0.78	0.78	0.89	1.02			
Interval HU's			0.78	7.49	38.18	46.45	0.93	

<u>Riparian Woodland</u> (Right bank - Developed high density on restored deeply disturbed top soils)							Cumulative	
50 year Project Life	TY	0	1	10	50	Hu's	AAHU's	
Year Interval		0	1	9	40			
HSI		0	0	0.20	0.60			
ACRES		0	8.55	8.55	8.55			
Target Year HU's		0.00	0.00	1.71	5.13			
Interval HU's			0.00	7.70	136.80	144.50	2.89	

<u>Riparian Woodland</u> (Left bank - developed)							Cumulative	
50 year Project Life	TY	0	1	10	50	Hu's	AAHU's	
Year Interval		0	1	9	40			
HSI		0	0	0.25	0.80			
ACRES		0	9.62	9.62	9.62			
Target Year HU's		0.00	0.00	2.41	7.70			
Interval HU's			0.00	10.82	202.02	212.84	4.26	

<u>Riparian Woodland</u> (- Improved within reach)							Cumulative	
50 year Project Life	TY	0	1	10	50	Hu's	AAHU's	
Year Interval		0	1	9	40			
HSI		0.7	0.7	0.80	0.95			
ACRES		36.79	36.79	36.79	36.79			
Target Year HU's		25.75	25.75	29.43	34.95			
Interval HU's			25.75	248.33	1287.65	1561.74	31.23	

<u>Upland Woodland</u>							Cumulative	
50 year Project Life	TY	0	1	10	50	Hu's	AAHU's	
Year Interval		0	1	9	40			
HSI		0.56	0.56	0.53	0.50			
ACRES		5.00	5.00	4.50	4.00			
Target Year HU's		2.80	2.80	2.39	2.02			
Interval HU's			2.80	23.35	88.11	114.26	2.29	

With Modified Project Calculations

<u>Grassland/Savannah (Existing native grassland)</u>							
50 year Project Life	TY	0	1	10	50	Cumulative Hu's	AAHU's
	Year Interval	0	1	9	40		
	HSI	0.76	0.5	1.00	1.00		
	ACRES	46.4	21.46	21.46	21.46		
	Target Year HU's	35.26	10.73	21.46	21.46		
	Interval HU's		21.92	144.86	858.40	1025.17	20.50

<u>Grassland/Savannah (Turf grasses)</u>							
50 year Project Life	TY	0	1	10	50	Cumulative Hu's	AAHU's
	Year Interval	0	1	9	40		
	HSI	0	0	0.10	0.10		
	ACRES	0	11.31	11.31	11.31		
	Target Year HU's	0.00	0.00	1.13	1.13		
	Interval HU's		0.00	5.09	45.24	50.33	1.01

Oxbow Central

<u>Riparian Woodland (Developed high density on restored deeply disturbed top soils)</u>							
50 year Project Life	TY	0	1	10	50	Cumulative Hu's	AAHU's
	Year Interval	0	1	9	40		
	HSI	0	0	0.20	0.60		
	ACRES	0	45.2	45.20	45.20		
	Target Year HU's	0.00	0.00	9.04	27.12		
	Interval HU's		0.00	40.68	723.20	763.88	15.28

<u>Riparian Woodland (Preserve Existing)</u>							
50 year Project Life	TY	0	1	10	50	Cumulative Hu's	AAHU's
	Year Interval	0	1	9	40		
	HSI	0.62	0.62	0.50	0.53		
	ACRES	0.61	0.61	0.49	0.52		
	Target Year HU's	0.38	0.38	0.24	0.27		
	Interval HU's		0.38	2.77	10.30	13.45	0.27

<u>Riparian Woodland (Restored Perched Sycamore Creek Channel)</u>							
50 year Project Life	TY	0	1	10	50	Cumulative Hu's	AAHU's
	Year Interval	0	1	9	40		
	HSI	0	0.4	0.85	0.85		
	ACRES	0	2.78	2.78	2.78		
	Target Year HU's	0.00	1.11	2.36	2.36		
	Interval HU's		0.37	15.64	94.52	110.53	2.21

With Modified Project Calculations

<u>Emergent Wetland</u>							Cumulative	AAHU's
50 year Project Life	TY	0	1	10	50			
	Year Interval	0	1	9	40			
	HSI	0.19	0.19	0.18	0.00			
	ACRES	1.6	1.6	1.60	0.00			
	Target Year HU's	0.30	0.30	0.29	0.00			
	Interval HU's		0.30	2.67	3.85	6.82	0.14	

<u>Grassland/Savannah</u> (Developed low density forest (10%) canopy - Savannah)							Cumulative	AAHU's
50 year Project Life	TY	0	1	10	50			
	Year Interval	0	1	9	40			
	HSI	0	0.5	1.00	1.00			
	ACRES	0	21.49	21.49	21.49			
	Target Year HU's	0.00	10.75	21.49	21.49			
	Interval HU's		3.58	145.06	859.60	1008.24	20.16	

<u>Grassland/Savannah</u> (Native Grasslands)							Cumulative	AAHU's
50 year Project Life	TY	0	1	10	50			
	Year Interval	0	1	9	40			
	HSI	0	0.5	1.00	1.00			
	ACRES	0	0.46	0.46	0.46			
	Target Year HU's	0.00	0.23	0.46	0.46			
	Interval HU's		0.08	3.11	18.40	21.58	0.43	

<u>Grassland/Savannah</u> (Turf grasses)							Cumulative	AAHU's
50 year Project Life	TY	0	1	10	50			
	Year Interval	0	1	9	40			
	HSI	0.1	0	0.10	0.10			
	ACRES	37.22	0	37.22	37.22			
	Target Year HU's	3.72	0.00	3.72	3.72			
	Interval HU's		1.24	11.17	148.88	161.29	3.23	

Oxbow South

<u>Riparian Woodland</u> (Developed high density on restored deeply disturbed top soils)							Cumulative	AAHU's
50 year Project Life	TY	0	1	10	50			
	Year Interval	0	1	9	40			
	HSI	0	0	0.20	0.60			
	ACRES	0	15.18	15.18	15.18			
	Target Year HU's	0.00	0.00	3.04	9.11			
	Interval HU's		0.00	13.66	242.88	256.54	5.13	

With Modified Project Calculations

<u>Riparian Woodland</u> (Improved riparian forest)							
50 year Project Life	TY	0	1	10	50	Cumulative Hu's	AAHU's
Year Interval		0	1	9	40		
HSI		0.62	0.62	0.80	0.90		
ACRES		6.45	6.45	6.45	6.45		
Target Year HU's		4.00	4.00	5.16	5.81		
Interval HU's			4.00	41.22	219.30	264.51	5.29

<u>Grassland/Savannah</u> (Native Grasslands)							
50 year Project Life	TY	0	1	10	50	Cumulative Hu's	AAHU's
Year Interval		0	1	9	40		
HSI		0	0.5	1.00	1.00		
ACRES		0	1.54	1.54	1.54		
Target Year HU's		0.00	0.77	1.54	1.54		
Interval HU's			0.26	10.40	61.60	72.25	1.45

<u>Grassland/Savannah</u> (Turf grasses)							
50 year Project Life	TY	0	1	10	50	Cumulative Hu's	AAHU's
Year Interval		0	1	9	40		
HSI		0	0	0.10	0.10		
ACRES		0	3.28	3.28	3.28		
Target Year HU's		0.00	0.00	0.33	0.33		
Interval HU's			0.00	1.48	13.12	14.60	0.29

<u>Grassland/Savannah</u> (Preserve existing grasslands)							
50 year Project Life	TY	0	1	10	50	Cumulative Hu's	AAHU's
Year Interval		0	1	9	40		
HSI		0.1	0.1	0.09	0.05		
ACRES		5.56	5.56	4.84	1.61		
Target Year HU's		0.56	0.56	0.44	0.07		
Interval HU's			0.56	4.45	9.19	14.20	0.28

Gateway Central

<u>Riparian Woodland</u> (Improved riparian forest)							
50 year Project Life	TY	0	1	10	50	Cumulative Hu's	AAHU's
Year Interval		0	1	9	40		
HSI		0.62	0.62	0.80	0.90		
ACRES		2.12	2.12	2.12	2.12		
Target Year HU's		1.31	1.31	1.70	1.91		
Interval HU's			1.31	13.55	72.08	86.94	1.74

With Modified Project Calculations

<u>Grassland/Savannah</u> (Developed low density forest (10%) canopy - Savannah)							
50 year Project Life	TY	0	1	10	50	Cumulative Hu's	AAHU's
Year Interval		0	1	9	40		
HSI		0	0.5	1.00	1.00		
ACRES		0	11.32	11.32	11.32		
Target Year HU's		0.00	5.66	11.32	11.32		
Interval HU's			1.89	76.41	452.80	531.10	10.62

<u>Grassland/Savannah</u> (Preserve existing grasslands)							
50 year Project Life	TY	0	1	10	50	Cumulative Hu's	AAHU's
Year Interval		0	1	9	40		
HSI		0.1	0.1	0.10	0.09		
ACRES		5.5	5.5	5.28	4.68		
Target Year HU's		0.55	0.55	0.53	0.42		
Interval HU's			0.55	4.85	18.93	24.34	0.49

Gateway South

<u>Riparian Woodland</u> (Developed high density on restored deeply disturbed top soils)							
50 year Project Life	TY	0	1	10	50	Cumulative Hu's	AAHU's
Year Interval		0	1	9	40		
HSI		0	0	0.20	0.60		
ACRES		0	14.57	14.57	14.57		
Target Year HU's		0.00	0.00	2.91	8.74		
Interval HU's			0.00	13.11	233.12	246.23	4.92

<u>Riparian Woodland</u> (Improved riparian forest)							
50 year Project Life	TY	0	1	10	50	Cumulative Hu's	AAHU's
Year Interval		0	1	9	40		
HSI		0.72	0.72	0.80	0.90		
ACRES		24.43	24.43	24.43	24.43		
Target Year HU's		17.59	17.59	19.54	21.99		
Interval HU's			17.59	167.10	830.62	1015.31	20.31

<u>Upland Woodland</u>							
50 year Project Life	TY	0	1	10	50	Cumulative Hu's	AAHU's
Year Interval		0	1	9	40		
HSI		0.56	0.56	0.53	0.50		
ACRES		0.20	0.20	0.18	0.16		
Target Year HU's		0.11	0.11	0.10	0.08		
Interval HU's			0.11	0.93	3.52	4.57	0.09

With Modified Project Calculations

<u>Grassland/Savannah</u> (Turf grasses)							
50 year Project Life	TY	0	1	10	50	Cumulative Hu's	AAHU's
Year Interval		0	1	9	40		
HSI		0	0	0.10	0.10		
ACRES		0	4.52	4.52	4.52		
Target Year HU's		0.00	0.00	0.45	0.45		
Interval HU's			0.00	2.03	18.08	20.11	0.40

Gateway Beach

<u>Riparian Woodland</u> (Improved riparian forest)							
50 year Project Life	TY	0	1	10	50	Cumulative Hu's	AAHU's
Year Interval		0	1	9	40		
HSI		0.72	0.72	0.85	0.95		
ACRES		25.71	25.71	25.71	25.71		
Target Year HU's		18.51	18.51	21.85	24.42		
Interval HU's			18.51	181.64	925.56	1125.71	22.51

<u>Riparian Woodland</u> (Improve riparian forests)							
50 year Project Life	TY	0	1	10	50	Cumulative Hu's	AAHU's
Year Interval		0	1	9	40		
HSI		0.72	0.72	0.85	0.95		
ACRES		8.9	8.9	9.17	9.43		
Target Year HU's		6.41	6.41	7.79	8.96		
Interval HU's			6.41	63.85	334.91	405.16	8.10

<u>Riparian Woodland</u> (Developed high density on restored deeply disturbed top soils)							
50 year Project Life	TY	0	1	10	50	Cumulative Hu's	AAHU's
Year Interval		0	1	9	40		
HSI		0	0	0.30	0.85		
ACRES		0	31.2	31.20	31.20		
Target Year HU's		0.00	0.00	9.36	26.52		
Interval HU's			0.00	42.12	717.60	759.72	15.19

<u>Upland Woodland</u>							
50 year Project Life	TY	0	1	10	50	Cumulative Hu's	AAHU's
Year Interval		0	1	9	40		
HSI		0.56	0.56	0.53	0.50		
ACRES		7.30	7.30	6.57	5.84		
Target Year HU's		4.09	4.09	3.50	2.94		
Interval HU's			4.09	34.09	128.64	166.82	3.34

With Modified Project Calculations

<u>Emergent Wetland</u> (Develop wetlands per restoration plan)							
50 year Project Life	TY	0	1	10	50	Cumulative Hu's	AAHU's
	Year Interval	0	1	9	40		
	HSI	0	0	0.95	0.95		
	ACRES	0	15	15.00	15.00		
	Target Year HU's	0.00	0.00	14.25	0.00		
	Interval HU's		0.00	64.13	570.00	634.13	12.68

<u>Emergent Wetland(incorporate and manage with developed wetland)</u>							
50 year Project Life	TY	0	1	10	50	Cumulative Hu's	AAHU's
	Year Interval	0	1	9	40		
	HSI	0.33	0.33	0.95	0.95		
	ACRES	6.9	6.9	6.90	6.90		
	Target Year HU's	2.28	2.28	6.56	2.28		
	Interval HU's		2.28	39.74	262.20	304.22	6.08

<u>Grassland/Savannah</u> (Developed low density forest (10%) canopy - Savannah)							
50 year Project Life	TY	0	1	10	50	Cumulative Hu's	AAHU's
	Year Interval	0	1	9	40		
	HSI	0	0.5	1.00	1.00		
	ACRES	0	27.44	27.44	27.44		
	Target Year HU's	0.00	13.72	27.44	27.44		
	Interval HU's		4.57	185.22	1097.60	1287.39	25.75

<u>Grassland/Savannah</u> (Developed scattered trees (5%) canopy - Savannah)							
50 year Project Life	TY	0	1	10	50	Cumulative Hu's	AAHU's
	Year Interval	0	1	9	40		
	HSI	0	0.5	1.00	1.00		
	ACRES	0	8.45	8.45	8.45		
	Target Year HU's	0.00	4.23	8.45	8.45		
	Interval HU's		1.41	57.04	338.00	396.45	7.93

<u>Grassland/Savannah</u> (Turf grasses)							
50 year Project Life	TY	0	1	10	50	Cumulative Hu's	AAHU's
	Year Interval	0	1	9	40		
	HSI	0	0	0.10	0.10		
	ACRES	0	41.02	41.02	41.02		
	Target Year HU's	0.00	0.00	4.10	4.10		
	Interval HU's		0.00	18.46	164.08	182.54	3.65

With Modified Project Calculations

<u>Grassland/Savannah</u> (Maintain existing grasslands)							
50 year Project Life	TY	0	1	10	50	Cumulative Hu's	AAHU's
	Year Interval	0	1	9	40		
	HSI	0.1	0.1	0.10	0.09		
	ACRES	8.09	8.09	7.77	6.88		
	Target Year HU's	0.81	0.81	0.78	0.62		
	Interval HU's		0.81	7.14	27.85	35.80	0.72

Gateway Park

<u>Riparian Woodland</u> (Improved riparian forest)							
50 year Project Life	TY	0	1	10	50	Cumulative Hu's	AAHU's
	Year Interval	0	1	9	40		
	HSI	0.72	0.72	0.85	0.95		
	ACRES	55	55	55.00	55.00		
	Target Year HU's	39.60	39.60	46.75	52.25		
	Interval HU's		39.60	388.58	1980.00	2408.18	48.16

<u>Upland Woodland</u>							
50 year Project Life	TY	0	1	10	50	Cumulative Hu's	AAHU's
	Year Interval	0	1	9	40		
	HSI	0.56	0.56	0.53	0.50		
	ACRES	2.70	2.70	2.43	2.16		
	Target Year HU's	1.51	1.51	1.29	1.09		
	Interval HU's		1.51	12.61	47.58	61.70	1.23

<u>Grassland/Savannah</u> (Developed scattered trees (5%) canopy - Savannah)							
50 year Project Life	TY	0	1	10	50	Cumulative Hu's	AAHU's
	Year Interval	0	1	9	40		
	HSI	0	0.5	1.00	1.00		
	ACRES	0	2.71	2.71	2.71		
	Target Year HU's	0.00	1.36	2.71	2.71		
	Interval HU's		0.45	18.29	108.40	127.14	2.54

<u>Grassland/Savannah</u> (Turf grasses)							
50 year Project Life	TY	0	1	10	50	Cumulative Hu's	AAHU's
	Year Interval	0	1	9	40		
	HSI	0	0	0.10	0.10		
	ACRES	0	27.27	27.27	27.27		
	Target Year HU's	0.00	0.00	2.73	2.73		
	Interval HU's		0.00	12.27	109.08	121.35	2.43

With Modified Project Calculations

<u>Grassland/Savannah</u> (Maintain existing grasslands)							Cumulative	
50 year Project Life	TY	0	1	10	50		Hu's	AAHU's
Year Interval		0	1	9	40			
HSI		0.1	0.1	0.10	0.09			
ACRES		70.67	70.67	67.84	60.07			
Target Year HU's		7.07	7.07	6.78	5.41			
Interval HU's			7.07	62.33	243.29		312.69	6.25

Gateway East

*Some acres and/or HU's by TY are calculated based on WO Project Assumptions

<u>Riparian Woodland</u> (Improved riparian forest)							Cumulative	
50 year Project Life	TY	0	1	10	50		Hu's	AAHU's
Year Interval		0	1	9	40			
HSI		0.72	0.72	0.85	0.95			
ACRES		106.8	106.8	106.80	106.80			
Target Year HU's		76.90	76.90	90.78	101.46			
Interval HU's			76.90	754.54	3844.80		4676.24	93.52

Upland Woodland

50 year Project Life	TY	0	1	10	50		Cumulative	AAHU's
							Hu's	
Year Interval		0	1	9	40			
HSI		0.56	0.56	0.53	0.50			
ACRES		1.60	1.60	1.44	1.28			
Target Year HU's		0.90	0.90	0.77	0.65			
Interval HU's			0.90	7.47	28.19		36.56	0.73

Emergent Wetland

Develop wetland complex

50 year Project Life	TY	0	1	10	50		Cumulative	AAHU's
							Hu's	
Year Interval		0	1	9	40			
HSI		0	0	0.95	0.95			
ACRES		37.2	37.2	37.20	37.20			
Target Year HU's		0.00	0.00	35.34	0.00			
Interval HU's			0.00	159.03	1413.60		1572.63	31.45

Grassland/Savannah (Turf grasses)

50 year Project Life	TY	0	1	10	50		Cumulative	AAHU's
							Hu's	
Year Interval		0	1	9	40			
HSI		0.1	0	0.10	0.10			
ACRES		0.11	0.11	0.11	0.11			
Target Year HU's		0.01	0.00	0.01	0.01			
Interval HU's			0.01	0.05	0.44		0.50	0.01

With Modified Project Calculations

<u>Grassland/Savannah</u> Maintain existing grasslands)							
50 year Project Life	TY	0	1	10	50	Cumulative	
						Hu's	AAHU's
	Year Interval	0	1	9	40		
	HSI	0.1	0.1	0.10	0.09		
	ACRES	0.49	0.49	0.47	0.42		
	Target Year HU's	0.05	0.05	0.05	0.04		
	Interval HU's		0.05	0.43	1.69	2.17	0.04

**RIVERSIDE OXBOW as part of the "NO ACTION" CONDITION
RE-ASSESSED FOR 2007 CONDITIONS**

Values are Average Annual Habitat Units (AAHUs)												
<u>10/23/2007</u>	<u>Riparian Woodland</u>			<u>Emergent Wetland</u>			<u>Upland Wooded</u>			<u>Grassland/Savannah</u>		
<u>Study Reach</u>	<u>Without Project</u>	<u>With Updated RO</u>	<u>Updated RO Outputs</u>	<u>Without Project</u>	<u>With Updated RO</u>	<u>Updated RO Outputs</u>	<u>Without Project</u>	<u>With Updated RO</u>	<u>Updated RO Outputs</u>	<u>Without Project</u>	<u>With Updated RO</u>	<u>Updated RO Outputs</u>
Clear Fork West ⁽¹⁾	110.23	110.23	0.00	0	0	0.00	36.15	36.15	0	175.91	175.91	0
Clear Fork East ⁽¹⁾	0.00	0	0.00	0	0	0.00	17.1	17.1	0	32.75	32.75	0
North Main ⁽¹⁾	7.29	7.29	0.00	0.25	0.25	0.00	65.45	65.45	0	175.38	175.38	0
West Fork North ⁽¹⁾	3.94	3.94	0.00	0	0	0.00	24.53	24.53	0	97.51	97.51	0
West Fork South	2.10	4.14	2.04	0.25	0.25	0.00	51.78	51.78	0	208.24	205.87	-2.37
West Fork Riverbend ⁽²⁾	13.00	13	0.00	1.12	1.12	0.00	41.26	41.26	0	57.07	57.07	0
West Fork Rockwood	37.31	44.48	7.17	0	0	0.00	3.08	3.08	0	122.44	116.49	-5.95
Oxbow North	19.31	39.56	20.25	0	2.68	2.68	2.29	2.29	0	18.01	45.50	27.49
Oxbow Central	1.37	0.00	-1.37	0.14	10.40	10.26	0	0	0	41.57	67.30	25.74
Oxbow South	0.93	2.61	1.68	0	0.00	0.00	0	0	0	1.23	14.85	13.62
Gateway Central	0.70	8.62	7.92	0	0	0.00	0	0	0	0.46	13.63	13.17
Gateway South	16.24	23.67	7.44	0	0.96	0.96	0.09	0.09	0	1.83	1.22	-0.60
Gateway Beach	21.29	33.55	12.26	2.05	8.46	6.40	3.34	3.34	0	6.45	0.00	-6.45
Gateway Park	42.71	42.71	0.00	0	0	0.00	1.23	1.23	0	7.79	0.00	-7.79
Gateway East	73.71	88.86	15.15	0.24	22.66	22.42	0.78	0.73	0	0.92	0.00	-0.92
TOTALS	228.66	422.66	72.54	4.05	46.77	42.72	103.84	103.80	0.00	465.99	521.93	55.94

⁽¹⁾ These sites are included in the Authorized Central City Project and no change is proposed with their inclusion in the Modified Project Alternative.

⁽²⁾ West Fork Riverbend is included in the Authorized Central City Project but is not proposed as a primary valley storage site with the Modified Project Alternative

No Action Alternative
Updated Riverside Oxbow
Grassland and Savannah

Reevaluation of Addendum report based Riverside Oxbow Grassland and Grassland Savannah using 2007 data

Oxbow North

<u>Grassland/Savannah</u> Native Grass Buffer						Cumulative	
50 year Project Life	TY	0	1	10	50	Hu's	AAHU's
	Year Interval	0	1	9	40		
	HSI	0	0.5	1.00	1.00		
	ACRES	36.4	36.4	36.40	36.40		
	Target Year H	0.00	18.20	36.40	36.40		
	Interval HU's		9.10	245.70	1456.00	1710.80	34.22

<u>Grassland/Savannah</u> (low density forest (10%) canopy- Savannah)						Cumulative	
50 year Project Life	TY	0	1	10	50	Hu's	AAHU's
	Year Interval	0	1	9	40		
	HSI	0	0.5	1.00	1.00		
	ACRES	12	12	12.00	12.00		
	Target Year H	0.00	6.00	12.00	12.00		
	Interval HU's		3.00	81.00	480.00	564.00	11.28

Oxbow Central

<u>Grassland/Savannah</u> (Developed low density forest (10%) canopy - Savannah)						Cumulative	
50 year Project Life	TY	0	1	10	50	Hu's	AAHU's
	Year Interval	0	1	9	40		
	HSI	0	0.5	1.00	1.00		
	ACRES	71.6	71.6	71.60	71.60		
	Target Year H	0.00	35.80	71.60	71.60		
	Interval HU's		17.90	483.30	2864.00	3365.20	67.30

Oxbow South

<u>Grassland/Savannah</u> (Native Grasslands)						Cumulative	
50 year Project Life	TY	0	1	10	50	Hu's	AAHU's
	Year Interval	0	1	9	40		
	HSI	0	0.5	1.00	1.00		
	ACRES	0.9	0.9	0.90	0.90		
	Target Year H	0.00	0.45	0.90	0.90		
	Interval HU's		0.23	6.08	36.00	42.30	0.85

No Action Alternative
Updated Riverside Oxbow
Grassland and Savannah

<u>Grassland/Savannah</u> (low density forest (10%) canopy- Savannah)						Cumulative	
50 year Project Life	TY	0	1	10	50	Hu's	AAHU's
	Year Interval	0	1	9	40		
	HSI	0	0.5	1.00	1.00		
	ACRES	14.9	14.9	14.90	14.90		
	Target Year H	0.00	7.45	14.90	14.90		
	Interval HU's		3.73	100.58	596.00	700.30	14.01

Gateway Central

<u>Grassland/Savannah</u> (Native grass buffer)						Cumulative	
50 year Project Life	TY	0	1	10	50	Hu's	AAHU's
	Year Interval	0	1	9	40		
	HSI	0	0.5	1.00	1.00		
	ACRES	3.2	3.2	3.20	3.20		
	Target Year H	0.00	1.60	3.20	3.20		
	Interval HU's		0.80	21.60	128.00	150.40	3.01

<u>Grassland/Savannah</u> (Developed low density forest (10%) canopy - Savannah)						Cumulative	
50 year Project Life	TY	0	1	10	50	Hu's	AAHU's
	Year Interval	0	1	9	40		
	HSI	0	0.5	1.00	1.00		
	ACRES	0	11.32	11.32	11.32		
	Target Year H	0.00	5.66	11.32	11.32		
	Interval HU's		1.89	76.41	452.80	531.10	10.62

Gateway South

<u>Grassland/Savannah</u> (Native Grass Buffer)						Cumulative	
50 year Project Life	TY	0	1	10	50	Hu's	AAHU's
	Year Interval	0	1	9	40		
	HSI	0	0.5	1.00	1.00		
	ACRES	1.3	1.3	1.30	1.30		
	Target Year H	0.00	0.65	1.30	1.30		
	Interval HU's		0.33	8.78	52.00	61.10	1.22

Gateway Beach No grassland development in SEC Army approved plan for this reach

Gateway Park No grasslands in approved plan for RO 2005 version

Gateway East No grasslands in approved RO within this reach

No Action Alternative
Updated Riverside Oxbow
Emergent Wetlands

Reevaluation of Addendum report based Riverside Emergent Wetlands using 2007 data

Oxbow North

<u>Emergent Wetland</u> (This is actually a pond habitat not wetland)						Cumulative	
50 year Project Life	TY	0	1	10	50	Hu's	AAHU's
Year Interval		0	1	9	40		
HSI		0	0	0.45	0.45		
ACRES		0	6.7	6.70	6.70		
Target Year H	0.00	0.00	0.00	3.02	0.00		
Interval HU's		0.00	0.00	13.57	120.60	134.17	2.68

Oxbow Central

<u>Emergent Wetland</u> (Develop wetlands per restoration plan)						Cumulative	
50 year Project Life	TY	0	1	10	50	Hu's	AAHU's
Year Interval		0	1	9	40		
HSI		0	0	0.95	0.95		
ACRES		0	12.3	12.30	12.30		
Target Year H	0.00	0.00	0.00	11.69	0.00		
Interval HU's		0.00	0.00	52.58	467.40	519.98	10.40

Oxbow South

<u>Emergent Wetland</u> (Develop wetlands per restoration plan)						Cumulative	
50 year Project Life	TY	0	1	10	50	Hu's	AAHU's
Year Interval		0	1	9	40		
HSI		0	0	0.95	0.95		
ACRES		0	0	0.00	0.00		
Target Year H	0.00	0.00	0.00	0.00	0.00		
Interval HU's		0.00	0.00	0.00	0.00	0.00	0.00

Gateway South

<u>Emergent Wetland</u> (Develop wetlands per restoration plan)						Cumulative	
50 year Project Life	TY	0	1	10	50	Hu's	AAHU's
Year Interval		0	1	9	40		
HSI		0	0	0.95	0.95		
ACRES		0	1.13	1.13	1.13		
Target Year H	0.00	0.00	0.00	1.07	0.00		
Interval HU's		0.00	0.00	4.83	42.94	47.77	0.96

No Action Alternative
Updated Riverside Oxbow
Emergent Wetlands

Gateway Beach

<u>Emergent Wetland</u> (Develop wetlands per restoration plan)						Cumulative Hu's	AAHU's
50 year Project Life	TY	0	1	10	50		
	Year Interval	0	1	9	40		
	HSI	0	0	0.95	0.95		
	ACRES	0	10	10.00	10.00		
	Target Year H	0.00	0.00	9.50	0.00		
	Interval HU's		0.00	42.75	380.00	422.75	8.46

Gateway East

<u>Emergent Wetland</u> (Develop wetlands per restoration plan)						Cumulative Hu's	AAHU's
50 year Project Life	TY	0	1	10	50		
	Year Interval	0	1	9	40		
	HSI	0	0	0.95	0.95		
	ACRES	0	26.8	26.80	26.80		
	Target Year H	0.00	0.00	25.46	0.00		
	Interval HU's		0.00	114.57	1018.40	1132.97	22.66

No Action Alternative
Updated Riverside Oxbow
Riparian Woodlands

Reevaluation of Addendum report based Riverside Oxbow riparian forest using 2007 data With Project

Total Acres
at TY 50

Oxbow North

<u>Riparian Woodland</u> (developed)						Cumulative	AAHU's
50 year Project Life	TY	0	1	10	50	Hu's	
	Year Interval	0	1	9	40		
	HSI	0	0	0.25	0.80		
	ACRES	0	20	20	20		
	Target Year HU's	0.00	0.00	5.00	16.00		
	Interval HU's		0.00	22.50	420.00	442.50	8.85

39.56

<u>Riparian Woodland</u> (Improved within reach)						Cumulative	AAHU's
50 year Project Life	TY	0	1	10	50	Hu's	
	Year Interval	0	1	9	40		
	HSI	0.7	0.7	0.80	0.95		
	ACRES	20.33	20.33	20.33	20.33		
	Target Year HU's	14.23	14.23	16.26	19.31		
	Interval HU's		14.23	137.23	711.55	863.01	17.26

<u>Riparian Woodland</u> (preserved)						Cumulative	AAHU's
50 year Project Life	TY	0	1	10	50	Hu's	
	Year Interval	0	1	9	40		
	HSI	0.7	0.7	0.72	0.74		
	ACRES	18.5	18.5	18.50	18.50		
	Target Year HU's	12.95	12.95	13.34	13.73		
	Interval HU's		12.95	118.30	541.31	672.56	13.45

Oxbow Central

<u>Riparian Woodland</u> (Developed)						Cumulative	AAHU's
50 year Project Life	TY	0	1	10	50	Hu's	
	Year Interval	0	1	9	40		
	HSI	0	0	0.00	0.00		
	ACRES	0	0	0.00	0.00		
	Target Year HU's	0.00	0.00	0.00	0.00		
	Interval HU's		0.00	0.00	0.00	0.00	0.00

0.00

Oxbow South

<u>Riparian Woodland</u> (Developed)						Cumulative	AAHU's
50 year Project Life	TY	0	1	10	50	Hu's	
	Year Interval	0	1	9	40		
	HSI	0	0	0.25	0.80		
	ACRES	0	2	2.00	2.00		
	Target Year HU's	0.00	0.00	0.50	1.60		
	Interval HU's		0.00	2.25	42.00	44.25	0.89

2.61

No Action Alternative
Updated Riverside Oxbow
Riparian Woodlands

<u>Riparian Woodland</u> (Improved riparian forest)							
50 year Project Life	TY	0	1	10	50	Cumulative Hu's	AAHU's
Year Interval		0	1	9	40		
HSI		0.62	0.62	0.80	0.90		
ACRES		2.1	2.1	2.10	2.10		
Target Year HU's		1.30	1.30	1.68	1.89		
Interval HU's			1.30	13.42	71.40	86.12	1.72

Gateway Central

<u>Riparian Woodland</u> (Improved riparian forest)							
50 year Project Life	TY	0	1	10	50	Cumulative Hu's	AAHU's
Year Interval		0	1	9	40		
HSI		0.62	0.62	0.80	0.90		
ACRES		9.7	9.7	9.70	9.70		
Target Year HU's		6.01	6.01	7.76	8.73		
Interval HU's			6.01	61.98	329.80	397.80	7.96

8.62

<u>Riparian Woodland</u> (developed riparian forest)							
50 year Project Life	TY	0	1	10	50	Cumulative Hu's	AAHU's
Year Interval		0	1	9	40		
HSI		0	0	0.25	0.80		
ACRES		0	1.5	1.50	1.50		
Target Year HU's		0.00	0.00	0.38	1.20		
Interval HU's			0.00	1.69	31.50	33.19	0.66

Gateway South

<u>Riparian Woodland</u> (developed)							
50 year Project Life	TY	0	1	10	50	Cumulative Hu's	AAHU's
Year Interval		0	1	9	40		
HSI		0	0	0.25	0.80		
ACRES		0	13.3	13.30	13.30		
Target Year HU's		0.00	0.00	3.33	10.64		
Interval HU's			0.00	14.96	279.30	294.26	5.89

23.67

<u>Riparian Woodland</u> (Improved riparian forest)							
50 year Project Life	TY	0	1	10	50	Cumulative Hu's	AAHU's
Year Interval		0	1	9	40		
HSI		0.72	0.72	0.85	0.95		
ACRES		15.7	15.7	15.70	15.70		
Target Year HU's		11.30	11.30	13.35	14.92		
Interval HU's			11.30	110.92	565.20	687.42	13.75

No Action Alternative
Updated Riverside Oxbow
Riparian Woodlands

<u>Riparian Woodland</u> (Preserved riparian forest)							
50 year Project Life	TY	0	1	10	50	Cumulative Hu's	AAHU's
Year Interval		0	1	9	40		
HSI		0.72	0.72	0.74	0.76		
ACRES		5.2	5.2	5.36	5.51		
Target Year HU's		3.74	3.74	3.97	4.21		
Interval HU's			3.74	34.72	163.55	202.01	4.04

Gateway Beach

<u>Riparian Woodland</u> (Improved riparian forest)							
50 year Project Life	TY	0	1	10	50	Cumulative Hu's	AAHU's
Year Interval		0	1	9	40		
HSI		0.72	0.72	0.85	0.95		
ACRES		27.4	27.4	27.40	27.40		
Target Year HU's		19.73	19.73	23.29	26.03		
Interval HU's			19.73	193.58	986.40	1199.71	23.99

33.55

<u>Riparian Woodland</u> Forest Development							
50 year Project Life	TY	0	1	10	50	Cumulative Hu's	AAHU's
Year Interval		0	1	9	40		
HSI		0	0	0.25	0.80		
ACRES		0	21.6	21.6	21.6		
Target Year HU's		0.00	0.00	5.40	17.28		
Interval HU's			0.00	24.30	453.60	477.90	9.56

Gateway Park

<u>Riparian Woodland</u> (Improved riparian forest)							
50 year Project Life	TY	0	1	10	50	Cumulative Hu's	AAHU's
Year Interval		0	1	9	40		
HSI		0	0	0.00	0.00		
ACRES		0	0	0.00	0.00		
Target Year HU's		0.00	0.00	0.00	0.00		
Interval HU's			0.00	0.00	0.00	0.00	0.00

0.00

Gateway East

*Some acres and/or HU's by TY are calculated based on WO Project Assumptions

<u>Riparian Woodland</u> (Improved riparian forest)							
50 year Project Life	TY	0	1	10	50	Cumulative Hu's	AAHU's
Year Interval		0	1	9	40		
HSI		0.72	0.72	0.85	0.95		
ACRES		97.1	106.8	97.10	97.10		
Target Year HU's		69.91	76.90	82.54	92.25		
Interval HU's			73.40	719.33	3495.60	4288.34	85.77

88.86

No Action Alternative
Updated Riverside Oxbow
Riparian Woodlands

<u>Riparian Woodland</u> (develop riparian forest)							
50 year Project Life	TY	0	1	10	50	Cumulative Hu's	AAHU's
Year Interval		0	1	9	40		
HSI		0	0	0.25	0.80		
ACRES		7	7	7.00	7.00		
Target Year HU's		0.00	0.00	1.75	5.60		
Interval HU's			0.00	7.88	147.00	154.88	3.10

HABITAT CONDITIONS FOR HYDRAULIC STORAGE SITE 17 MODIFIED CENTRAL CITY PROJECT

WITHOUT PROJECT CONDITIONS																		
Lagoon Number	<u>Riparian Woodland</u>				<u>Shrubland</u>				<u>Forbland</u>				<u>Emergent Wetland</u>				<u>Total Baseline Acres</u>	<u>Total AAHU's</u>
	<u>Base HSI</u>	<u>Base Acres</u>	<u>Baseline HU</u>	<u>AAHU</u>	<u>Base HSI</u>	<u>Base Acres</u>	<u>Baseline HU</u>	<u>AAHU</u>	<u>Base HSI</u>	<u>Base Acres</u>	<u>Baseline HU</u>	<u>AAHU</u>	<u>Base HSI</u>	<u>Base Acres</u>	<u>Baseline HU</u>	<u>AAHU</u>		
L1		0	0.00			0	0.00		0.66	2	1.17	0.61		0	0.00		2	0.61
L2	0.22	1	0.12	0.01		0	0.00		0.66	1	0.93	0.65		0	0.00		2	0.66
L3		0	0.00		0.77	3	2.12	0.17		0	0.00	0.75		0	0.00		3	0.92
L4	0.31	2	0.68	0.05		0	0.00			0	0.00	0.59		0	0.00		2	0.64
L5	0.40	1	0.50	0.04		0	0.00			0	0.00	0.34		0	0.00		1	0.38
L6	0.47	2	0.77	0.06		0	0.00			0	0.00	0.44		0	0.00		2	0.50
L7	0.33	2	0.73	0.06		0	0.00			0	0.00	0.60		0	0.00		2	0.66
L8	0.35	3	1.12	0.09		0	0.00		0.65	5	3.50	5.37	0.45	9	4.00	0.32	17	5.78
Levee/Other	0.40	6	2.28	0.78		0	0.00			0	0.00	1.54		0	0.00		6	2.32
Totals	0.38	17	6.19	1.09	0.77	3	2.12	0.17	0.66	9	5.61	10.89	0.45	9	4.00	0.32	37	12.47
<p>Note for "Without Project" Condition: Total Baseline HSIs for the "Without Project" conditions are proportioned averages by habitat type. It is assumed that due to the City's clean-up of the Lagoons, all acreages will convert to forbland beginning at TY 10. There are currently about 2 acres of disturbed lands within the baseline study area</p>																		
WITH MODIFIED CENTRAL CITY PROJECT CONDITIONS																		
	<u>Riparian Woodland</u>				<u>Shrubland</u>				<u>Forbland</u>				<u>Emergent Wetland</u>				<u>Total Baseline Acres</u>	<u>Total AAHU's</u>
	<u>Base HSI</u>	<u>Base Acres</u>	<u>Baseline HU</u>	<u>AAHU</u>	<u>Base HSI</u>	<u>Base Acres</u>	<u>Baseline HU</u>	<u>AAHU</u>	<u>Base HSI</u>	<u>Base Acres</u>	<u>Baseline HU</u>	<u>AAHU</u>	<u>Base HSI</u>	<u>Base Acres</u>	<u>Baseline HU</u>	<u>AAHU</u>		
Excavated	0.00	0	0.00		0.00	0.00	0.00		0.05	33	1.66	0.00	0.45	33.22	14.95	24.74	66	24.74
Levee/Other	0.40	6	2.28	0.18		0.00	0.00			0	0.00	1.54	0.00	0.00	0.00	0.00	6	1.72
Totals	0.40	6	2.28	0.18		0.00	0.00	0.00	0.05	33	1.66	1.54		33.22	14.95	24.74	72	26.46
<p>Note for "With LPP" Condition: The City of Fort Worth's soil remediation is anticipated to be completed by TY 10. the "Without Project" TY 10 conditions are therefore considered to be the baseline values for the "With LPP" condition. See Site 17 AAHU Calculation sheets for details by Target Year.</p>																		

ASSUMPTIONS FOR SITE 17
MODIFIED CENTRAL CITY PROJECT

A 50 year period of analysis will be used to calculate AAHU's for the "Without Project" condition (and any subsequent "With Project" conditions).

Without Project Condition Assumptions:

Lagoons 1 through 8 within Site 17 will undergo soil clean-up or remediation by the City of Fort Worth for PCBs and/or metals during the next 10 years. Revegetation by the City will consist primarily of establishment of grasses and forbs to stabilize new soils within the remediated areas.

Beginning at Target Year 10 It is assumed that the HSI for all habitat types in the lagoons within Site 17 will begin moving toward the Forbland habitat values with an HSI of 0.05 at TY 10, HSI of 0.5 at TY20, and the full HSI value for forbland of 0.66 by TY 50.

Acreages of all other habitat types (Riparian Woodland, Shrubland, and Emergent Wetland) will be accounted as Forbland habitat beginning at TY 10 and will remain as Forbland acreage through the 50 year period of analysis.

With Project Condition (LLP) Assumptions:

All area excavated for valley storage as part of the LPP within Site 17 will be established as emergent wetlands. Acreage of established wetlands will remain constant through the period of analysis. HSI values of established wetlands will go to 0.75 at TY 10 and will achieve a value of 1.0 at TY 50.

Site 17 - AAHU Calculations

WITHOUT PROJECT

Lagoon 1

<u>Forbland</u>							Cumulative Hu's	AAHU's
50 year Project Life	TY	0	1	10	20	50		
Year Interval		0	1	9	10	30		
HSI		0.66	0.66	0.05	0.50	0.66		
ACRES		1.78	1.78	1.78	1.78	1.78		
Target Year HU's		1.17	1.17	0.09	0.89	1.17		
Interval HU's			1.17	5.69	4.90	18.96	30.71	0.61

Lagoon 2

<u>Riparian Woodland</u>							Cumulative Hu's	AAHU's
50 year Project Life	TY	0	1	10	20	50		
Year Interval		0	1	9	10	30		
HSI		0.22	0.22	0.00	0.00	0.00		
ACRES		0.55	0.55	0.00	0.00	0.00		
Target Year HU's		0.12	0.12	0.00	0.00	0.00		
Interval HU's			0.12	0.36	0.00	0.00	0.48	0.01

<u>Forbland</u>							Cumulative Hu's	AAHU's
50 year Project Life	TY	0	1	10	20	50		
Year Interval		0	1	9	10	30		
HSI		0.66	0.66	0.05	0.50	0.66		
ACRES		1.41	1.41	1.96	1.96	1.96		
Target Year HU's		0.93	0.93	0.10	0.98	1.29		
Interval HU's			0.93	5.13	5.39	20.87	32.33	0.65

Lagoon 3

<u>Shrubland</u>							Cumulative Hu's	AAHU's
50 year Project Life	TY	0	1	10	20	50		
Year Interval		0	1	9	10	30		
HSI		0.77	0.77	0.00	0.00	0.00		
ACRES		2.75	2.75	0.00	0.00	0.00		
Target Year HU's		2.12	2.12	0.00	0.00	0.00		
Interval HU's			2.12	6.35	0.00	0.00	8.47	0.17

<u>Forbland</u>							Cumulative Hu's	AAHU's
50 year Project Life	TY	0	1	10	20	50		
Year Interval		0	1	9	10	30		
HSI		0.00	0.00	0.05	0.50	0.66		
ACRES		0.00	0.00	2.75	2.75	2.75		
Target Year HU's		0.00	0.00	0.14	1.38	1.82		
Interval HU's			0.00	0.41	7.56	29.29	37.26	0.75

Site 17 Calculations

Lagoon 4

<u>Riparian Woodland</u>							Cumulative	AAHU's
50 year Project Life	TY	0	1	10	20	50	Hu's	
	Year Interval	0	1	9	10	30		
	HSI	0.31	0.31	0.00	0.00	0.00		
	ACRES	2.18	2.18	0.00	0.00	0.00		
	Target Year HU's	0.68	0.68	0.00	0.00	0.00		
	Interval HU's		0.68	2.03	0.00	0.00	2.70	0.05

<u>Forbland</u>							Cumulative	AAHU's
50 year Project Life	TY	0	1	10	20	50	Hu's	
	Year Interval	0	1	9	10	30		
	HSI	0	0	0.05	0.50	0.66		
	ACRES	0	0	2.18	2.18	2.18		
	Target Year HU's	0.00	0.00	0.11	1.09	1.44		
	Interval HU's		0.00	0.33	6.00	23.22	29.54	0.59

Lagoon 5

<u>Riparian Woodland</u>							Cumulative	AAHU's
50 year Project Life	TY	0	1	10	20	50	Hu's	
	Year Interval	0	1	9	10	30		
	HSI	0.4	0.4	0.00	0.00	0.00		
	ACRES	1.25	1.25	0.00	0.00	0.00		
	Target Year HU's	0.50	0.50	0.00	0.00	0.00		
	Interval HU's		0.50	1.50	0.00	0.00	2.00	0.04

<u>Forbland</u>							Cumulative	AAHU's
50 year Project Life	TY	0	1	10	20	50	Hu's	
	Year Interval	0	1	9	10	30		
	HSI	0	0	0.05	0.50	0.66		
	ACRES	0	0	1.25	1.25	1.25		
	Target Year HU's	0.00	0.00	0.06	0.63	0.83		
	Interval HU's		0.00	0.19	3.44	13.31	16.94	0.34

Lagoon 6

<u>Riparian Woodland</u>							Cumulative	AAHU's
50 year Project Life	TY	0	1	10	20	50	Hu's	
	Year Interval	0	1	9	10	30		
	HSI	0.47	0.47	0.00	0.00	0.00		
	ACRES	1.63	1.63	0.00	0.00	0.00		
	Target Year HU's	0.77	0.77	0.00	0.00	0.00		
	Interval HU's		0.77	2.30	0.00	0.00	3.06	0.06

Site 17 Calculations

<u>Forbland</u>							Cumulative	AAHU's
50 year Project Life	TY	0	1	10	20	50	Hu's	
Year Interval		0	1	9	10	30		
HSI		0	0	0.05	0.50	0.66		
ACRES		0	0	1.63	1.63	1.63		
Target Year HU's		0.00	0.00	0.08	0.82	1.08		
Interval HU's			0.00	0.24	4.48	17.36	22.09	0.44

Lagoon 7

<u>Riparian Woodland</u>							Cumulative	AAHU's
50 year Project Life	TY	0	1	10	20	50	Hu's	
Year Interval		0	1	9	10	30		
HSI		0.33	0.33	0.00	0.00	0.00		
ACRES		2.22	2.22	0.00	0.00	0.00		
Target Year HU's		0.73	0.73	0.00	0.00	0.00		
Interval HU's			0.73	2.20	0.00	0.00	2.93	0.06

<u>Forbland</u>							Cumulative	AAHU's
50 year Project Life	TY	0	1	10	20	50	Hu's	
Year Interval		0	1	9	10	30		
HSI		0.00	0.00	0.05	0.50	0.66		
ACRES		0.00	0.00	2.22	2.22	2.22		
Target Year HU's		0.00	0.00	0.11	1.11	1.47		
Interval HU's			0.00	0.33	6.11	23.64	30.08	0.60

Lagoon 8

<u>Riparian Woodland</u>							Cumulative	AAHU's
50 year Project Life	TY	0	1	10	20	50	Hu's	
Year Interval		0	1	9	10	30		
HSI		0.35	0.35	0.00	0.00	0.00		
ACRES		3.2	3.2	0.00	0.00	0.00		
Target Year HU's		1.12	1.12	0.00	0.00	0.00		
Interval HU's			1.12	3.36	0.00	0.00	4.48	0.09

<u>Forbland</u>							Cumulative	AAHU's
50 year Project Life	TY	0	1	10	20	50	Hu's	
Year Interval		0	1	9	10	30		
HSI		0.65	0.65	0.05	0.50	0.66		
ACRES		5.39	5.39	17.48	17.48	17.48		
Target Year HU's		3.50	3.50	0.87	8.74	11.54		
Interval HU's			3.50	30.58	48.07	186.16	268.32	5.37

Site 17 Calculations

Emergent Wetland

50 year Project Life	TY	0	1	10	20	50	Cumulative Hu's	AAHU's
Year Interval		0	1	9	10	30		
HSI		0.45	0.45	0.00	0.00	0.00		
ACRES		8.89	8.89	0.00	0.00	0.00		
Target Year HU's		4.00	4.00	0.00	0.00	0.00		
Interval HU's			4.00	12.00	0.00	0.00	16.00	0.32

Levees & Other

Riparian Woodland

50 year Project Life	TY	0	1	10	20	50	Cumulative Hu's	AAHU's
Year Interval		0	1	9	10	30		
HSI		0.40	0.40	0.00	0.00	0.24		
ACRES		5.69	5.69	0.00	0.00	12.50		
Target Year HU's		2.28	2.28	0.00	0.00	3.00		
Interval HU's			2.28	6.83	0.00	30.00	39.10	0.78

Forbland

50 year Project Life	TY	0	1	10	20	50	Cumulative Hu's	AAHU's
Year Interval		0	1	9	10	30		
HSI		0.00	0.00	0.05	0.50	0.66		
ACRES		0.00	0.00	5.69	5.69	5.69		
Target Year HU's		0.00	0.00	0.28	2.85	3.76		
Interval HU's			0.00	0.85	15.65	60.60	77.10	1.54

WITH LOCALLY PREFERRED PROJECT

<u>Emergent Wetland</u>							Cumulative	
50 year Project Life	TY	0	1	10	20	50	Hu's	AAHU's
Year Interval		0	1	9	10	30		
HSI		0.45	0.00	0.75	0.75	1.00		
ACRES		8.89	33.22	33.22	33.22	33.22		
Target Year HU's		4.00	0.00	24.92	24.92	33.22		
Interval HU's			3.83	112.12	249.15	872.03	1237.12	24.74

<u>Levees & Other (Riparian Woodland)</u>							Cumulative	
50 year Project Life	TY	0	1	10	20	50	Hu's	AAHU's
Year Interval		0	1	9	10	30		
HSI		0.40	0.40	0.00	0.00	0.00		
ACRES		5.69	5.69	0.00	0.00	0.00		
Target Year HU's		2.28	2.28	0.00	0.00	0.00		
Interval HU's			2.28	6.83	0.00	0.00	9.10	0.18

<u>Levees & Other (Forbland)</u>							Cumulative	
50 year Project Life	TY	0	1	10	20	50	Hu's	AAHU's
Year Interval		0	1	9	10	30		
HSI		0.00	0.00	0.05	0.50	0.66		
ACRES		0.00	0.00	5.69	5.69	5.69		
Target Year HU's		0.00	0.00	0.28	2.85	3.76		
Interval HU's			0.00	0.85	15.65	60.60	77.10	1.54