

## How to Read the Tables

### The Four Scenarios:

Development Period	WAM 3 "Full Use Condition"	WAM 8 "Current Condition"	WAM 9 "Future Condition"
<ul style="list-style-type: none"> <li>Historical Record of gaged flows</li> <li>Time period is different at each location depending on when the gage was installed</li> <li>Basis for development of the recommendations in the HEFR tables</li> </ul>	<ul style="list-style-type: none"> <li>Basis for TCEQ Permits</li> <li>Full utilization of all permitted diversions and no return flows</li> <li>1940-1996</li> </ul>	<ul style="list-style-type: none"> <li>Current diversion (based on the past 10-year maximum diversion) and current return flows (based on the past 5-year maximum return flow)</li> <li>1940-1996</li> </ul>	<ul style="list-style-type: none"> <li>Water management strategies developed in the 2007 State Water Plan, including anticipated future demand and reservoir capacity for 2060</li> <li>1940-1996</li> </ul>

### BASE FLOWS

Base Flow Percentages = Percent of time the flow was equalled or exceeded daily for the given period of record.

**Example:** At the Rosser gage under the WAM 8 scenario, the recommended subsistence flow of 106 cfs is equalled or exceeded 100% of the time from 1940-1996. Thus, WAM 8 flows exceed the recommended frequency for subsistence flows in winter at the Rosser gage. Likewise, the recommended dry base flow of 248 cfs in winter is equalled or exceeded 99% of the time from 1940-1996 and the recommended frequency of 77% is exceeded.

Rosser	Season	Condition	Recommended Flow (cfs)	Recommended Frequency	Current WAM 8 1940-1996
	Winter	Subsistence		106	95%
Dry			248	77%	99%
Average			466	64%	90%
		Wet	821	50%	52%

**PULSE FLOWS**

Pulse Flow Percentages = Total number of years the pulse event occurred divided by the total number of years in the period of record.

**Example:** At the Rosser gage under the WAM 8 scenario, the winter high pulse occurred in 23 years out of 57 years when all 3 criteria are used to identify pulses (peak, volume, and duration). In other words, overbank flow occurred 40 percent of the years in that time period.

Rosser	Development Data				WAM 3: Full				WAM 8: Current			
	1939-1953				1940-1996				1940-1996			
	Peak, Volume and Duration		Peak Only		Peak, Volume and Duration		Peak Only		Peak, Volume and Duration		Peak Only	
Winter High	Total	%	Total	%	Total	%	Total	%	Total	%	Total	%
Number of Years for this Condition	8	53%	8	53%	21	37%	28	49%	23	40%	37	65%
	15				57				57			

Peak, Volume, and Duration = All three criteria were used to identify pulses.

Peak Only = Only the peak flow was used to identify pulses.

**Table 1-1: Pulse Flow Analysis at Trinity River at Dallas for the Development period, WAM 3 and 8.**

Dallas	Development Data				WAM 3: Full				WAM 8: Current			
	1904-1954				1940-1996				1940-1996			
	Peak, Volume and Duration		Peak Only		Peak, Volume and Duration		Peak Only		Peak, Volume and Duration		Peak Only	
	Total	%	Total	%	Total	%	Total	%	Total	%	Total	%
Overbank	33	65%	35	69%	23	40%	28	49%	32	56%	40	70%
Annual High 1	36	71%	41	80%	29	51%	34	60%	35	61%	46	81%
Annual High 2	25	49%	32	63%	5	9%	9	16%	13	23%	25	44%
Winter High	27	53%	30	59%	14	25%	21	37%	19	33%	35	61%
Winter Low 1	38	75%	39	76%	38	67%	39	68%	44	77%	53	93%
Winter Low 2	28	55%	28	55%	25	44%	28	49%	30	53%	42	74%
Spring High	27	53%	34	67%	21	37%	23	40%	25	44%	35	61%
Spring Low 1	41	80%	44	86%	31	54%	39	68%	36	63%	52	91%
Spring Low 2	22	43%	30	59%	5	9%	12	21%	15	26%	31	54%
Summer High	22	43%	31	61%	9	16%	22	39%	14	25%	39	68%
Summer Low 1	36	71%	36	71%	27	47%	34	60%	31	54%	53	93%
Summer Low 2	25	49%	27	53%	15	26%	21	37%	14	25%	39	68%
Fall High	23	45%	31	61%	20	35%	29	51%	19	33%	50	88%
Fall Low 1	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Fall Low 2	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Total Number of Pulses	383		438		262		339		327		540	
Number of Years for this Condition	51				57				57			

**Table 1-2: Attainment Frequencies of Subsistence and Base Flow Recommendations for Trinity River at Dallas for the Development period, WAM 3 and 8.**

Season	Condition	Recommended Flow (cfs)	Recommended Frequency	Development 1904-1953	Full WAM 3 1940-1996	Current WAM 8 1940-1996
Winter	Subsistence	24	91%	91%	89%	100%
	Dry	51	81%	81%	70%	100%
	Average	132	65%	65%	51%	98%
	Wet	272	50%	50%	31%	83%
Spring	Subsistence	28	92%	92%	90%	100%
	Dry	71	84%	84%	76%	99%
	Average	152	74%	74%	62%	94%
	Wet	304	63%	63%	48%	76%
Summer	Subsistence	15	91%	91%	72%	100%
	Dry	44	76%	76%	57%	100%
	Average	104	60%	60%	38%	98%
	Wet	225	44%	44%	20%	85%
Fall	Subsistence	16	91%	91%	80%	100%
	Dry	50	76%	76%	60%	100%
	Average	112	61%	61%	43%	98%
	Wet	198	45%	45%	32%	89%

**Table 2-1: Pulse Flow Analysis at West Fork Trinity River at Grand Prairie for the Development period, WAM 3 and 8.**

Grand Prairie	Development Data				WAM 3: Full				WAM 8: Current			
	1926-1957				1940-1996				1940-1996			
	Peak, Volume and Duration		Peak Only		Peak, Volume and Duration		Peak Only		Peak, Volume and Duration		Peak Only	
	Total	%	Total	%	Total	%	Total	%	Total	%	Total	%
Overbank	5	16%	9	28%	14	25%	15	26%	15	26%	19	33%
Annual High 1	23	72%	26	81%	33	58%	39	68%	34	60%	48	84%
Annual High 2	15	47%	21	66%	7	12%	14	25%	10	18%	32	56%
Winter High	14	44%	16	50%	20	35%	24	42%	23	40%	37	65%
Winter Low 1	22	69%	26	81%	29	51%	41	72%	31	54%	54	95%
Winter Low 2	17	53%	20	63%	15	26%	25	44%	19	33%	45	79%
Spring High	19	59%	23	72%	22	39%	29	51%	26	46%	40	70%
Spring Low 1	28	88%	30	94%	32	56%	42	74%	36	63%	56	98%
Spring Low 2	14	44%	19	59%	13	23%	20	35%	17	30%	39	68%
Summer High	15	47%	19	59%	10	18%	29	51%	14	25%	47	82%
Summer Low 1	24	75%	26	81%	25	44%	37	65%	35	61%	53	93%
Summer Low 2	15	47%	17	53%	9	16%	24	42%	11	19%	46	81%
Fall High	18	56%	21	66%	25	44%	33	58%	28	49%	53	93%
Fall Low 1	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Fall Low 2	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Total Number of Pulses	229		273		254		372		299		569	
Number of Years for this Condition	32				57				57			

**Table 2-2: Attainment Frequencies of Subsistence and Base Flow Recommendations for the West Fork Trinity River at Grand Prairie for the Development period, WAM 3 and 8.**

Season	Condition	Recommended Flow (cfs)	Recommended Frequency	Development 1926-1956	Full WAM 3 1940-1996	Current WAM 8 1940-1996
Winter	Subsistence	24	96%	96%	80%	100%
	Dry	52	82%	82%	59%	99%
	Average	84	66%	66%	44%	97%
	Wet	118	50%	50%	34%	90%
	Subsistence	28	95%	95%	85%	100%
	Dry	53	87%	87%	72%	100%
Spring	Average	84	76%	76%	61%	96%
	Wet	138	63%	63%	50%	82%
	Subsistence	15	96%	96%	61%	100%
Summer	Dry	40	74%	74%	42%	98%
	Average	55	60%	60%	34%	96%
	Wet	82	46%	46%	25%	87%
	Subsistence	16	95%	95%	77%	100%
	Dry	39	76%	76%	51%	99%
	Average	54	61%	61%	42%	98%
Fall	Wet	79	46%	46%	32%	96%

**Table 3-1: Pulse Flow Analysis at Trinity River near Oakwood for the Development period, WAM 3 and 8.**

Oakwood	Development Data				WAM 3: Full				WAM 8: Current			
	1924-1965		1940-1996		1940-1996		1940-1996		1940-1996		1940-1996	
	Peak, Volume and Duration	Peak Only	Peak Only									
	Total	%	Total	%								
Overbank	20	48%	25	60%	26	46%	29	51%	29	51%	34	60%
Annual High 1	32	76%	36	86%	35	61%	38	67%	40	70%	46	81%
Annual High 2	20	48%	24	57%	13	23%	17	30%	18	32%	30	53%
Winter High	21	50%	27	64%	22	39%	24	42%	26	46%	29	51%
Winter Low 1	38	90%	38	90%	37	65%	42	74%	39	68%	47	82%
Winter Low 2	27	64%	27	64%	25	44%	34	60%	28	49%	37	65%
Spring High	28	67%	31	74%	23	40%	27	47%	25	44%	30	53%
Spring Low 1	38	90%	39	93%	36	63%	39	68%	40	70%	44	77%
Spring Low 2	21	50%	25	60%	15	26%	22	39%	15	26%	31	54%
Summer High	20	48%	23	55%	10	18%	23	40%	12	21%	23	40%
Summer Low 1	33	79%	34	81%	21	37%	23	40%	20	35%	23	40%
Summer Low 2	25	60%	26	62%	5	9%	6	11%	4	7%	5	9%
Fall High	23	55%	27	64%	26	46%	31	54%	27	47%	41	72%
Fall Low 1	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Fall Low 2	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Total Number of Pulses	346		382		294		355		323		420	
Number of Years for this Condition	42				57				57			

**Table 3-2: Attainment Frequencies of Subsistence and Base Flow Recommendations for the Trinity River near Oakwood for the Development period, WAM 3 and 8.**

Season	Condition	Recommended Flow (cfs)	Recommended Frequency	Development 1924-1964	Full WAM 3 1940-1996	Current WAM 8 1940-1996
Winter	Subsistence	196	95%	95%	85%	99%
	Dry	340	85%	85%	72%	98%
	Average	623	72%	72%	58%	86%
	Wet	1110	58%	58%	45%	59%
Spring	Subsistence	280	95%	95%	89%	98%
	Dry	458	89%	89%	80%	94%
	Average	820	79%	79%	68%	82%
	Wet	1398	66%	66%	57%	67%
Summer	Subsistence	70	95%	95%	81%	100%
	Dry	257	69%	69%	54%	98%
	Average	411	53%	53%	40%	90%
	Wet	682	36%	36%	26%	50%
Fall	Subsistence	101	95%	95%	81%	100%
	Dry	265	73%	73%	61%	96%
	Average	439	57%	57%	48%	90%
	Wet	819	41%	41%	36%	52%

**Table 4-1: Pulse Flow Analysis at Trinity River at Romayor for the Development period, WAM 3 and 8.**

Romayor	Development Data				WAM 3: Full				WAM 8: Current			
	1925-1968				1940-1996				1940-1996			
	Peak, Volume and Duration		Peak Only		Peak, Volume and Duration		Peak Only		Peak, Volume and Duration		Peak Only	
	Total	%	Total	%	Total	%	Total	%	Total	%	Total	%
Overbank	16	36%	21	48%	13	23%	19	33%	15	26%	28	49%
Annual High 1	33	75%	35	80%	31	54%	37	65%	31	54%	45	79%
Annual High 2	22	50%	27	61%	15	26%	19	33%	15	26%	33	58%
Winter High	23	52%	29	66%	22	39%	23	40%	19	33%	33	58%
Winter Low 1	36	82%	37	84%	30	53%	30	53%	35	61%	43	75%
Winter Low 2	29	66%	30	68%	19	33%	21	37%	20	35%	37	65%
Spring High	27	61%	30	68%	26	46%	29	51%	26	46%	36	63%
Spring Low 1	42	95%	42	95%	38	67%	40	70%	37	65%	46	81%
Spring Low 2	28	64%	33	75%	16	28%	18	32%	21	37%	31	54%
Summer High	21	48%	27	61%	13	23%	36	63%	10	18%	21	37%
Summer Low 1	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Summer Low 2	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Fall High	20	45%	24	55%	11	19%	19	33%	13	23%	19	33%
Fall Low 1	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Fall Low 2	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Total Number of Pulses	297		335		234		291		242		372	
Number of Years for this Condition	44				57				57			

**Table 4-2: Attainment Frequencies of Subsistence and Base Flow Recommendations for the Trinity River at Romayor for the Development period, WAM 3 and 8.**

Season	Condition	Recommended Flow (cfs)	Recommended Frequency	Development 1925-1968	Full WAM 3 1940-1996	Current WAM 8 1940-1996
Winter	Subsistence	542	95%	95%	87%	96%
	Dry	875	86%	86%	77%	87%
	Average	1500	74%	74%	52%	72%
	Wet	2590	61%	61%	39%	57%
	Subsistence	720	95%	95%	91%	96%
	Dry	1160	89%	89%	81%	89%
Spring	Average	1860	78%	78%	66%	73%
	Wet	3033	65%	65%	54%	62%
	Subsistence	210	95%	95%	98%	100%
	Dry	580	68%	68%	95%	96%
Summer	Average	915	52%	52%	88%	88%
	Wet	1550	34%	34%	69%	53%
	Subsistence	250	95%	95%	93%	98%
	Dry	630	71%	71%	82%	89%
Fall	Average	1000	55%	55%	65%	69%
	Wet	1720	39%	39%	28%	35%

**Table 5-1: Pulse Flow Analysis at Trinity River near Rosser for the Development period, WAM 3 and 8.**

Rosser	Development Data				WAM 3: Full				WAM 8: Current			
	1939-1953				1940-1996				1940-1996			
	Peak, Volume and Duration		Peak Only		Peak, Volume and Duration		Peak Only		Peak, Volume and Duration		Peak Only	
	Total	%	Total	%	Total	%	Total	%	Total	%	Total	%
Overbank	5	33%	9	60%	16	28%	18	32%	22	39%	26	46%
Annual High 1	12	80%	12	80%	32	56%	36	63%	34	60%	42	74%
Annual High 2	8	53%	9	60%	8	14%	13	23%	12	21%	21	37%
Winter High	8	53%	8	53%	21	37%	28	49%	23	40%	37	65%
Winter Low 1	10	67%	12	80%	32	56%	37	65%	29	51%	46	81%
Winter Low 2	7	47%	10	67%	16	28%	24	42%	16	28%	32	56%
Spring High	10	67%	10	67%	20	35%	21	37%	24	42%	29	51%
Spring Low 1	14	93%	14	93%	35	61%	36	63%	39	68%	49	86%
Spring Low 2	9	60%	9	60%	6	11%	12	21%	11	19%	19	33%
Summer High	8	53%	9	60%	12	21%	15	26%	16	28%	39	68%
Summer Low 1	9	60%	12	80%	20	35%	33	58%	32	56%	48	84%
Summer Low 2	5	33%	7	47%	5	9%	19	33%	11	19%	29	51%
Fall High	7	47%	9	60%	21	37%	30	53%	25	44%	45	79%
Fall Low 1	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Fall Low 2	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Total Number of Pulses	112		130		244		322		294		462	
Number of Years for this Condition	15				57				57			

**Table 5-2: Attainment Frequencies of Subsistence and Base Flow Recommendations for the Trinity River near Rosser for the Development period, WAM 3 and 8.**

Season	Condition	Recommended Flow (cfs)	Recommended Frequency	Development 1939-1952	Full WAM 3 1940-1996	Current WAM 8 1940-1996
Winter	Subsistence	106	95%	95%	76%	100%
	Dry	248	77%	77%	61%	99%
	Average	466	64%	64%	47%	90%
Spring	Wet	821	50%	50%	32%	52%
	Subsistence	212	95%	95%	80%	99%
	Dry	398	88%	88%	67%	93%
Summer	Average	625	79%	79%	56%	79%
	Wet	1078	67%	67%	45%	58%
	Subsistence	142	95%	96%	55%	100%
Fall	Dry	266	77%	77%	36%	98%
	Average	401	59%	59%	25%	90%
	Wet	574	41%	41%	18%	60%
Development	Subsistence	125	95%	95%	63%	100%
	Dry	208	72%	72%	51%	98%
	Average	320	57%	57%	42%	95%
Current	Wet	626	41%	41%	27%	60%

**Table 6-1: Pulse Flow Analysis at the East Fork San Jacinto River near Cleveland for the Development period, WAM 3, 8 and 9.**

Cleveland	Development Data				WAM 3: Full 1940-1996				WAM 8: Current 1940-1996				WAM 9: Future 1940-1996			
	Peak, Volume and Duration		Peak Only		Peak, Volume and Duration		Peak Only		Peak, Volume and Duration		Peak Only		Peak, Volume and Duration		Peak Only	
	Total	%	Total	%												
Overbank	22	31%	44	63%	18	32%	23	40%	18	32%	23	40%	11	19%	35	61%
Annual High 1	49	70%	56	80%	34	60%	42	74%	34	60%	42	74%	34	60%	45	79%
Annual High 2	29	41%	42	60%	14	25%	28	49%	14	25%	28	49%	14	25%	33	58%
Winter High	41	59%	48	69%	25	44%	35	61%	25	44%	35	61%	29	51%	38	67%
Winter Low 1	55	79%	61	87%	38	67%	47	82%	38	67%	47	82%	41	72%	50	88%
Winter Low 2	38	54%	47	67%	17	30%	32	56%	17	30%	32	56%	26	46%	38	67%
Spring High	29	41%	39	56%	26	46%	32	56%	26	46%	32	56%	22	39%	34	60%
Spring Low 1	55	79%	59	84%	35	61%	44	77%	35	61%	44	77%	37	65%	49	86%
Spring Low 2	35	50%	42	60%	20	35%	31	54%	20	35%	31	54%	27	47%	36	63%
Summer High	35	50%	39	56%	16	28%	38	67%	16	28%	38	67%	23	40%	28	49%
Summer Low 1	48	69%	49	70%	32	56%	38	67%	32	56%	38	67%	31	54%	34	60%
Summer Low 2	31	44%	31	44%	18	32%	23	40%	18	32%	23	40%	17	30%	23	40%
Fall High	41	59%	42	60%	16	28%	31	54%	16	28%	31	54%	23	40%	32	56%
Fall Low 1	53	76%	57	81%	27	47%	31	54%	27	47%	31	54%	32	56%	37	65%
Fall Low 2	41	59%	45	64%	13	23%	19	33%	13	23%	19	33%	20	35%	26	46%
Total Number of Pulses	602		701		349		494		349		494		387		538	
Number of Years for this Condition	70				57				57				57			

**Table 6-2: Attainment Frequencies of Subsistence and Base Flow Recommendations for the East Fork San Jacinto River near Cleveland for the Development period, WAM 3, 8 and 9.**

Season	Condition	Recommended Flow (cfs)	Recommended Frequency	Development 1940-2008	Full WAM 3 1940-1996	Current WAM 8 1940-1996	Future WAM 9 1940-1996
Winter	Subsistence	22	95%	95%	91%	91%	94%
	Dry	30	88%	88%	85%	85%	86%
	Average	43	77%	77%	76%	76%	75%
Spring	Wet	80	62%	62%	61%	61%	60%
	Subsistence	18	96%	96%	89%	89%	95%
	Dry	28	86%	86%	80%	80%	85%
Summer	Average	42	72%	72%	72%	72%	71%
	Wet	64	56%	56%	62%	61%	56%
	Subsistence	8	95%	95%	74%	74%	94%
Fall	Dry	18	68%	68%	50%	50%	63%
	Average	24	52%	52%	42%	42%	47%
	Wet	34	33%	33%	34%	34%	31%
Winter	Subsistence	10	95%	94%	87%	87%	93%
	Dry	19	75%	75%	65%	65%	71%
	Average	27	57%	57%	53%	53%	52%
Spring	Wet	38	41%	41%	44%	44%	38%

**Table 7-1: Pulse Flow Analysis at the West Fork San Jacinto River near Conroe for the Development period, WAM 3, 8 and 9.**

Conroe	Development Data				WAM 3: Full				WAM 8: Current				WAM 9: Current			
	1941-1973		1940-1996		1940-1996		1940-1996		1940-1996		1940-1996		1940-1996			
	Peak, Volume and Duration	Peak Only														
Overbank	Total 2	% 6%	Total 8	% 24%	Total 2	% 4%	Total 9	% 16%	Total 1	% 2%	Total 12	% 21%	Total 2	% 4%	Total 9	% 16%
Annual High 1	20	61%	23	70%	24	42%	41	72%	29	51%	45	79%	24	42%	42	74%
Annual High 2	16	48%	19	58%	13	23%	26	46%	17	30%	31	54%	14	25%	26	46%
Winter High	19	58%	23	70%	22	39%	32	56%	29	51%	37	65%	23	40%	33	58%
Winter Low 1	28	85%	28	85%	47	82%	50	88%	45	79%	51	89%	48	84%	53	93%
Winter Low 2	24	73%	24	73%	35	61%	43	75%	32	56%	45	79%	34	60%	45	79%
Spring High	18	55%	20	61%	17	30%	33	58%	19	33%	36	63%	16	28%	34	60%
Spring Low 1	30	91%	31	94%	36	63%	47	82%	38	67%	48	84%	36	63%	48	84%
Spring Low 2	15	45%	18	55%	24	42%	31	54%	24	42%	35	61%	23	40%	32	56%
Summer High	17	52%	19	58%	25	44%	32	56%	25	44%	34	60%	23	40%	31	54%
Summer Low 1	23	70%	27	82%	28	49%	33	58%	28	49%	34	60%	27	47%	31	54%
Summer Low 2	14	42%	15	45%	14	25%	17	30%	14	25%	15	26%	14	25%	16	28%
Fall High	17	52%	18	55%	26	46%	30	53%	26	46%	31	54%	27	47%	32	56%
Fall Low 1	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Fall Low 2	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Total Number of Pulses	243		273		313		424		327		454		311		432	
Number of Years for this Condition	33		57		57		57		57		57		57		57	

**Table 7-2: Attainment Frequencies of Subsistence and Base Flow Recommendations for the West Fork San Jacinto River near Conroe for the Development period, WAM 3, 8 and 9.**

Season	Condition	Recommended Flow (cfs)	Recommended Frequency	Development 1941-1973	Full WAM 3 1940-1996	Current WAM 8 1940-1996	Future WAM 9 1940-1996
Winter	Subsistence	23	95%	95%	96%	98%	98%
	Dry	36	89%	88%	88%	92%	92%
	Average	58	77%	77%	72%	75%	77%
	Wet	111	61%	61%	51%	55%	53%
Spring	Subsistence	24	96%	95%	91%	95%	94%
	Dry	37	87%	87%	78%	82%	82%
	Average	56	74%	74%	61%	67%	66%
	Wet	88	59%	59%	46%	50%	49%
Summer	Subsistence	9	95%	94%	83%	92%	90%
	Dry	18	67%	67%	62%	78%	69%
	Average	26	49%	49%	46%	56%	43%
	Wet	38	32%	32%	28%	34%	27%
Fall	Subsistence	9	95%	97%	84%	90%	91%
	Dry	22	71%	72%	64%	70%	70%
	Average	29	57%	58%	52%	59%	60%
	Wet	47	42%	42%	36%	38%	39%

**Table 8-1: Pulse Flow Analysis at Brays Bayou at Houston for the Development period, WAM 3, 8 and 9.**

Houston	Development Data				WAM 3: Full				WAM 8: Current				WAM 9: Future			
	1937-1961				1940-1996				1940-1996				1940-1996			
	Peak, Volume and Duration		Peak Only		Peak, Volume and Duration		Peak Only		Peak, Volume and Duration		Peak Only		Peak, Volume and Duration		Peak Only	
	Total	%	Total	%	Total	%	Total	%	Total	%	Total	%	Total	%	Total	%
Overbank	2	8%	9	36%	11	19%	26	46%	0	0%	36	63%	0	0%	41	72%
Annual High 1	13	52%	17	68%	22	39%	49	86%	8	14%	57	100%	3	5%	58	102%
Annual High 2	9	36%	13	52%	8	14%	36	63%	1	2%	54	95%	0	0%	57	100%
Winter High	12	48%	16	64%	17	30%	45	79%	7	12%	57	100%	2	4%	58	102%
Winter Low 1	22	88%	23	92%	34	60%	56	98%	28	49%	58	102%	17	30%	58	102%
Winter Low 2	16	64%	18	72%	18	32%	46	81%	15	26%	58	102%	6	11%	58	102%
Spring High	13	52%	17	68%	18	32%	46	81%	12	21%	57	100%	9	16%	57	100%
Spring Low 1	22	88%	22	88%	35	61%	55	96%	37	65%	57	100%	32	56%	57	100%
Spring Low 2	9	36%	15	60%	19	33%	45	79%	19	33%	57	100%	15	26%	57	100%
Summer High	16	64%	17	68%	29	51%	51	89%	30	53%	57	100%	24	42%	57	100%
Summer Low 1	21	84%	22	88%	45	79%	54	95%	55	96%	57	100%	56	98%	57	100%
Summer Low 2	13	52%	14	56%	33	58%	51	89%	48	84%	57	100%	51	89%	57	100%
Fall High	13	52%	17	68%	20	35%	48	84%	18	32%	56	98%	15	26%	57	100%
Fall Low 1	21	84%	21	84%	48	84%	53	93%	56	98%	57	100%	57	100%	57	100%
Fall Low 2	15	60%	16	64%	40	70%	48	84%	52	91%	57	100%	57	100%	57	100%
Total Number of Pulses	217		257		397		709		386		832		344		843	
Number of Years for this Condition	25				57				57				57			

**Table 8-2: Attainment Frequencies of Subsistence and Base Flow Recommendations for Brays Bayou at Houston for the Development period, WAM 3, 8 and 9.**

Season	Condition	Recommended Flow (cfs)	Recommended Frequency	Development 1937-1960	Full WAM 3 1940-1996	Current WAM 8 1940-1996	Future WAM 9 1940-1996
Winter	Subsistence	3	95%	95%	99%	100%	100%
	Dry	6	84%	84%	94%	100%	98%
	Average	9	72%	72%	89%	99%	96%
Spring	Wet	10	67%	67%	87%	99%	96%
	Subsistence	1	97%	98%	99%	100%	100%
	Dry	5	79%	79%	94%	100%	98%
Summer	Average	8	60%	60%	86%	98%	96%
	Wet	10	50%	50%	82%	98%	94%
	Subsistence	1	97%	92%	99%	100%	100%
Fall	Dry	5	72%	72%	92%	99%	98%
	Average	8	57%	57%	85%	99%	96%
	Wet	10	47%	47%	81%	98%	96%
Future	Subsistence	0	95%	100%	100%	100%	100%
	Dry	5	71%	71%	91%	99%	98%
	Average	7	58%	58%	85%	98%	97%
WAM 3	Wet	9	48%	48%	81%	98%	96%

Table 9-1: Pulse Flow Analysis at Buffalo Bayou at Piney Point for the Development period, WAM 3 and 8.

Piney Point	Development Data				WAM 3: Full				WAM 8: Current			
	1964-1976		1964-1976 and 1984-1997		1964-1976 and 1984-1997		1964-1976 and 1984-1997					
	Peak, Volume and Duration		Peak Only		Peak, Volume and Duration		Peak Only		Peak, Volume and Duration		Peak Only	
	Total	%	Total	%	Total	%	Total	%	Total	%	Total	%
Overbank	6	46%	8	62%	9	33%	12	44%	9	33%	12	44%
Annual High 1	10	77%	11	85%	22	81%	22	81%	22	81%	23	85%
Annual High 2	5	38%	7	54%	8	30%	12	44%	9	33%	13	48%
Winter High	8	62%	9	69%	19	70%	22	81%	21	78%	22	81%
Winter Low 1	10	77%	12	92%	22	81%	22	81%	23	85%	25	93%
Winter Low 2	7	54%	8	62%	6	22%	7	26%	7	26%	10	37%
Spring High	6	46%	7	54%	12	44%	12	44%	13	48%	13	48%
Spring Low 1	9	69%	10	77%	17	63%	20	74%	18	67%	22	81%
Spring Low 2	5	38%	9	69%	5	19%	7	26%	6	22%	10	37%
Summer High	6	46%	8	62%	10	37%	11	41%	10	37%	11	41%
Summer Low 1	8	62%	11	85%	15	56%	16	59%	18	67%	18	67%
Summer Low 2	5	38%	6	46%	3	11%	5	19%	5	19%	9	33%
Fall High	7	54%	8	62%	11	41%	13	48%	12	44%	14	52%
Fall Low 1	10	77%	10	77%	19	70%	19	70%	19	70%	19	70%
Fall Low 2	6	46%	6	46%	6	22%	6	22%	10	37%	11	41%
Total Number of Pulses	108		130		184		206		202		232	
Number of Years for this Condition	13		13		27		27		27		27	

**Table 9-2: Attainment Frequencies of Subsistence and Base Flow Recommendations for Buffalo Bayou at Piney Point for the Development period, WAM 3 and 8.**

Season	Condition	Recommended Flow (cfs)	Recommended Frequency	Development 1964-1975	Full WAM 3 1940-1996	Current WAM 8 1940-1996
Winter	Subsistence	11	96%	96%	40%	43%
	Dry	25	80%	80%	35%	40%
	Average	38	68%	68%	30%	34%
	Wet	58	55%	55%	25%	27%
Spring	Subsistence	13	95%	95%	40%	43%
	Dry	26	81%	81%	33%	38%
	Average	37	67%	67%	27%	33%
	Wet	51	54%	54%	24%	26%
Summer	Subsistence	26	95%	95%	38%	41%
	Dry	45	87%	87%	30%	35%
	Average	66	74%	74%	24%	27%
	Wet	96	60%	60%	18%	21%
Fall	Subsistence	13	96%	96%	41%	44%
	Dry	33	81%	81%	31%	38%
	Average	49	69%	69%	26%	29%
	Wet	75	56%	56%	20%	22%

**Table 10-1: Pulse Flow Analysis at Spring Creek near Spring for the Development period, WAM 3, 8 and 9.**

Spring	Development Data		WAM 3: Full		WAM 8: Current		WAM 9: Future	
	1940-2009		1940-1996		1940-1996		1940-1996	
	Peak, Volume and Duration	Peak Only						
Overbank	Total 17	% 24%	Total 12	% 21%	Total 12	% 21%	Total 12	% 21%
Annual High 1	40	57%	27	47%	26	46%	26	46%
Annual High 2	21	30%	11	19%	11	19%	11	19%
Winter High	40	57%	28	49%	28	49%	28	49%
Winter Low 1	59	84%	40	70%	40	70%	40	70%
Winter Low 2	42	60%	29	51%	30	53%	30	53%
Spring High	31	44%	21	37%	23	40%	23	40%
Spring Low 1	53	76%	37	65%	38	67%	38	67%
Spring Low 2	34	49%	23	40%	25	44%	25	44%
Summer High	30	43%	19	33%	20	35%	20	35%
Summer Low 1	45	64%	28	49%	31	54%	31	54%
Summer Low 2	32	46%	18	32%	18	32%	18	32%
Fall High	42	60%	28	49%	28	49%	29	51%
Fall Low 1	54	77%	40	70%	42	74%	42	74%
Fall Low 2	40	57%	25	44%	28	49%	28	49%
Total Number of Pulses	580		386		400		401	
Number of Years for this Condition	70		57		57		57	

**Table 10-2: Attainment Frequencies of Subsistence and Base Flow Recommendations for Spring Creek near Spring for the Development period, WAM 3, 8 and 9.**

Season	Condition	Recommended Flow (cfs)	Recommended Frequency	Development 1940-2008	Full WAM 3 1940-1996	Current WAM 8 1940-1996	Future WAM 9 1940-1996
Winter	Subsistence	14	96%	96%	94%	98%	98%
	Dry	22	86%	86%	83%	92%	92%
	Average	36	74%	74%	70%	74%	75%
	Wet	59	60%	60%	56%	58%	59%
	Subsistence	14	96%	96%	94%	98%	98%
	Dry	24	86%	86%	81%	89%	89%
Spring	Average	36	72%	72%	67%	74%	74%
	Wet	52	57%	57%	53%	58%	58%
	Subsistence	6	95%	94%	93%	100%	99%
	Dry	17	71%	71%	62%	83%	83%
	Average	24	56%	56%	47%	65%	64%
	Wet	35	39%	39%	31%	42%	41%
Summer	Subsistence	6	95%	95%	93%	100%	100%
	Dry	17	75%	75%	66%	84%	84%
	Average	24	61%	61%	52%	68%	68%
	Wet	37	45%	45%	38%	45%	45%
	Subsistence	6	95%	95%	93%	100%	100%
	Dry	17	75%	75%	66%	84%	84%
Fall	Average	24	61%	61%	52%	68%	68%
	Wet	37	45%	45%	38%	45%	45%
	Subsistence	6	95%	95%	93%	100%	100%