COLORADO BBEST/BBASC UNAPPROPRIATED FLOW INFO FROM TCEQ WAM RUN3

C:\KRC\Active\COL BBASC\[05052011-TCEQ RUN3 UNAP AT BBEST SITES.XLS]SUMMARY 5/6/2011 1:20 PM

				FLOW STATISTICS (ACRE-FEET)						FREQUENCY STATISTICS				PERCENT OF TIME WATER AVAILABLE	
				ANNUAL DRT AVG AF/Y	ANNUAL POR AVG AF/Y	ANNUAL MAX AMT AF/Y	ANNUAL MIN AMT AF/Y	MONTH MIN AMT AF	MONTH MAX AMT AF	YEARS WITH ZERO		MONTHS WITH ZERO			
SITE#	PAGE #	WAM ID	COLORADO BBEST SITES							NUMBER YEARS	CONSC YEARS	NUMBER MONTHS	CONSC MONTHS	YEARS %	MONTHS %
1	1	B20000	COLORADO ABOVE SILVER	0	2,989	176,356	0	0	69,005	58	57	705	686	1.7%	0.4%
2	2	D40000	COLORADO NEAR BALINGER	0	4,290	211,232	0	0	87,683	57	41	704	494	3.4%	0.6%
3	3	D30000	ELM CREEK NEAR BALINGER	0	1,917	71,801	0	0	41,318	57	41	704	494	3.4%	0.6%
4	4	C30000	SOUTH CONCHO AT CHRISTOVAL	0	526	6,305	0	0	2,133	45	24	662	298	23.7%	6.5%
5	5	C10000	CONCHO AT PAINT ROCK	0	519	23,358	0	0	11,490	57	41	704	494	3.4%	0.6%
6	6	F20000	PECAN BAYOU NEAR MULLIN	757	49,222	521,798	0	0	254,860	31	9	614	122	47.5%	13.3%
7	7	E10000	SAN SABA AT SAN SABA	2,328	39,182	266,255	0	0	128,276	31	9	613	122	47.5%	13.4%
8	8	F10000	COLORADO NEAR SAN SABA	7,722	118,431	1,189,907	0	0	603,485	31	9	613	122	47.5%	13.4%
9	9	G10000	LLANO AT LLANO	8,463	82,876	505,209	0	0	274,118	30	9	611	122	49.2%	13.7%
10	10	H10000	PEDERNALES NEAR JOHNSON CITY	4,721	54,173	370,035	0	0	192,213	30	9	611	122	49.2%	13.7%
11	11	J50000	ONION NEAR DRIFTWOOD	8,011	16,990	103,705	0	0	47,173	12	3	486	53	79.7%	31.4%
12	12	J30000	COLORADO AT BASTROP	29,701	363,099	3,485,790	0	0	1,526,149	28	9	592	122	52.5%	16.4%
13	13	J10000	COLORADO AT COLUMBUS	42,313	482,682	4,504,329	0	0	1,789,100	28	9	586	122	52.5%	17.2%
14	14	K20000	COLORADO NEAR WHARTON	43,425	501,804	4,752,955	0	0	1,882,364	26	9	576	122	55.9%	18.6%
15	15	GS300	LAVACA RIVER NEAR EDNA	60,964	201,454	848,439	0	0	428,297	6	1	386	26	89.5%	43.6%
16	16	WGS800	WEST MUSTANG CREEK NEAR GANADO	20,950	58,757	192,780	0	0	105,382	9	4	479	51	84.2%	30.0%
17	17	GS1000	SANDY CREEK NEAR GANADO	27,968	84,218	384,196	0	0	145,100	9	4	480	51	84.2%	29.8%
18	18	EDV712	EAST MUSTANG CREEK NEAR LOUISE (APPROX)	4,963	15,701	62,252	0	0	28,561	9	4	479	51	84.2%	30.0%
19	19	DV501	NAVIDAD RIVER NEAR EDNA (STRANE PARK) (APPROX	48,876	163,232	601,777	0	0	265,411	9	4	479	51	84.2%	30.0%
20	20	GS1300	TRES PALACIOS NEAR MIDFIELD	29,770	65,813	229,902	0	0	83,510	0	0	213	7	100.0%	68.9%
21	21	GS1200	GACITAS CREEK NEAR INEZ	15,150	32,107	93,428	0	0	46,926	0	0	32	3	100.0%	95.3%
15A	22	GS300-ALT	LAVACA RIVER NEAR EDNA (STAGE 2 REMOVED)	107,634	243,983	884,440	0	0	437,495	0	0	62	8	100.0%	90.9%

COLORADO BASIN WAM (1940-1998)
LAVACA BASIN WAM (1940-1996)
COLORADO/LAVACA COASTAL WAM (1940-1996)
LAVACA/GUADALUPE COASTAL WAM (1940-1996)

NOTE 1: HIGH CONSCECUTIVE MONTHS OF NO UNAPPRORIATED WATER INDICATES LITTLE OR NO POSSIBILITY OF RELIABLE WATER SUPPLY, EVEN WITH LARGE RESERVOIR.
NOTE 2: LARGE ANNUAL AVERAGE AMOUNT OF UNAPPROPRIATED WATER AND LOWER NUMBER OF CONSECUTIVE MONTHS WITH NO UNAPPROPRIATED WATER INDICATES POSSIBLE RELIABLE WATER SUPPLY WITH LARGE RESERVOIR.
NOTE: 3 UNRELIABLE WATER SUPPLY CAN BE CONSIDERED FOR WATER RIGHTS PERMIT IF ALTERNATIVE WATER SUPPLY IS AVAILABLE; OR, PROPOSED USE IS NOT MUNICIPAL.

SUMMARY OF COMPLIANCE RESULTS WITH CL BBEST EFLOW RECOMENDATIONS

LAVACA RIVER NEAR EDNA SITE FOR VARIOUS BBASC ANALYSES

LAVACA RIVER OCR PROJECT - Q95 SUBSISTUTED FOR BBEST THRESHOLD USED FOR COMPLIANCE COMPARISON

7/20/2011

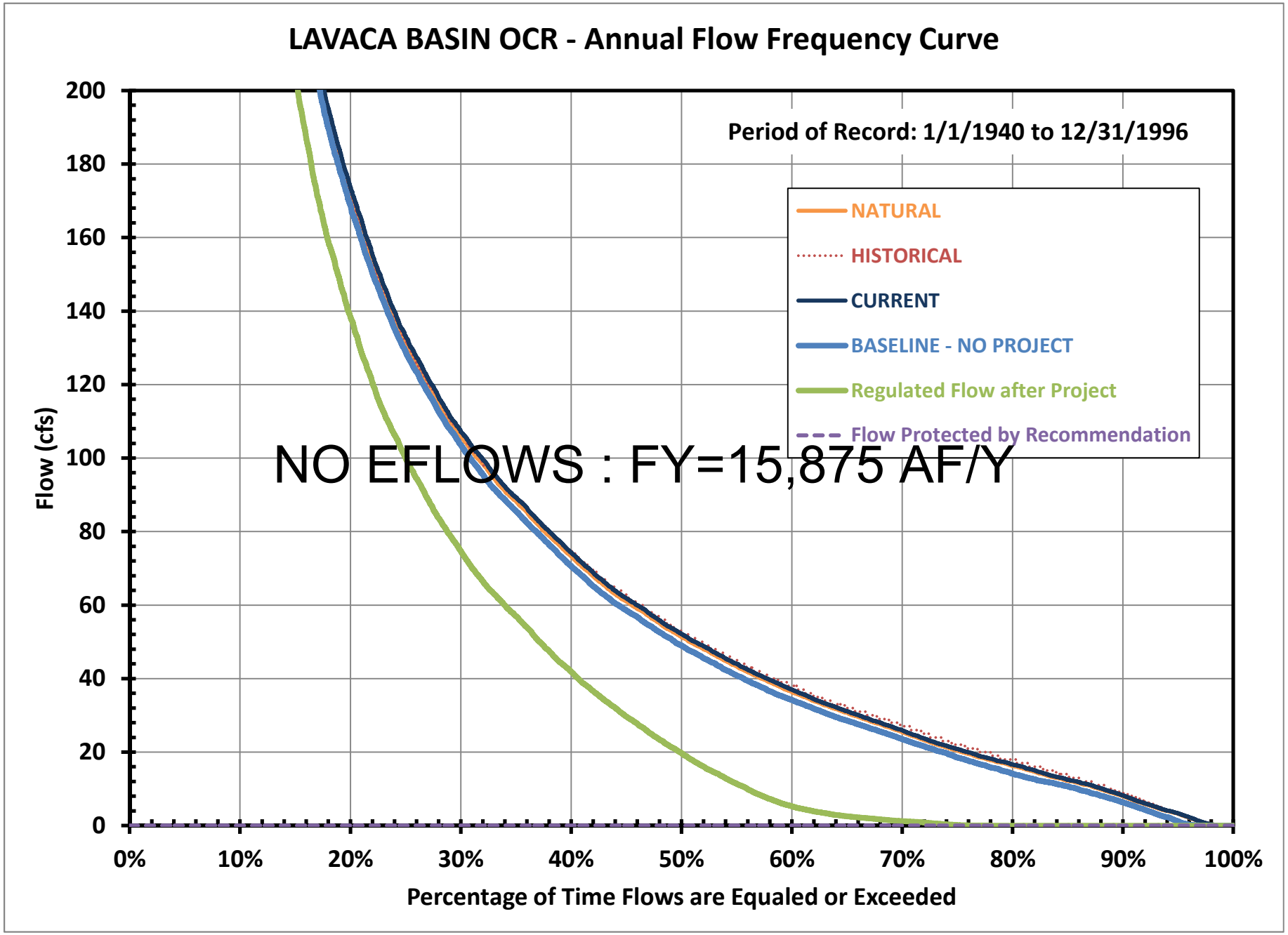
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1)	FIRM YIELD (AF/Y)	NA	NA	NA	15,875	10,240	9,900	10,075	10,125	10,725
(2)	PROJECT IN / OUT	NO PROJECT			WITH PROJECT IN PLACE (RUN NUMBER - SEE BELOW)					
(3)	EFLOW COMPONENT	HISTORICAL	WAM RUN3 USED FOR BBEST REPORT	WAM RUN3 USED FOR PROJECT	1	2	3	4	4A	4B
(4)	NON-PULSE FLOWS (PERCENT OF TIME FLOW EQUALS OF EXCEEDS BBEST RECOMMENDATIONS.									
(5)	SUBSISTENCE	94%	na *	91%	66%	91%	91%	91%	91%	91%
(6)	BASE LOW	73%	70%	67%	44%	57%	57%	67%	67%	67%
(7)	BASE MEDIUM	55%	53%	51%	36%	38%	41%	48%	48%	48%
(8)	BASE HIGH	39%	37%	36%	28%	28%	28%	30%	30%	30%
(9)	PULSE FLOWS (NUMBER OF QUALIFYING PULSE EVENTS PASSED.									
(10)	2PER SEASON (HFP1)	66	63	63	58	58	57	62	62	56
(11)	1PER SEASON (HFP2)	38	36	37	35	35	35	37	37	35
(12)	1 PER YEAR (HFP3)	44	43	44	44	44	43	44	44	43
(13)	1 PER 2 YEARS (HFP4)	22	21	22	22	22	22	22	22	22
(14)	1 PER 5 YEARS (HFP5)	7	6	7	7	7	7	7	7	7

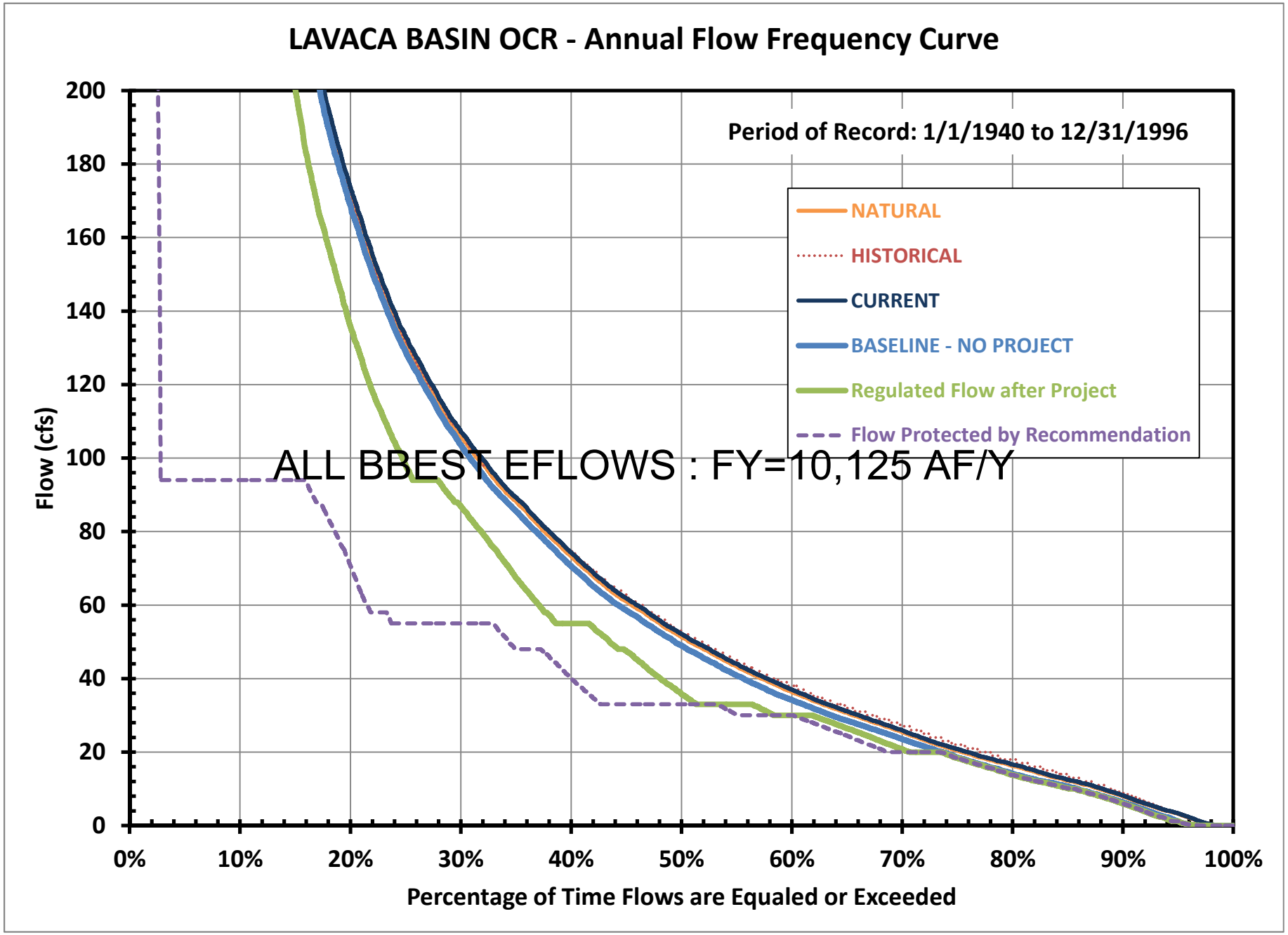
RUN NUMBER	DESCRIPTION OF EFLOW REQUIREMENTS PROJECT SUBJESTED TO.
1	NO EFLOW REQUIREMENTS.
2	TCEQ LYONS EFLOW REQUIREMENTS.
3	TWDB CONSENSUS PLANNING EFLOW REQUIREMENTS.
4	FULL CL BBEST RECOMMENDATIONS
4A	CL BBEST RECOMMENDATIONS EXCEPT Q95 SUBSISTUTUED FOR RECOMMENDED SUBSISTENCE FLOW REQUIRMENTS.
4B	CL BBEST RECOMMENDATIONS EXCEPT NO HIGH FLOW PULSE RECOMMENDATIONS IMPOSED.

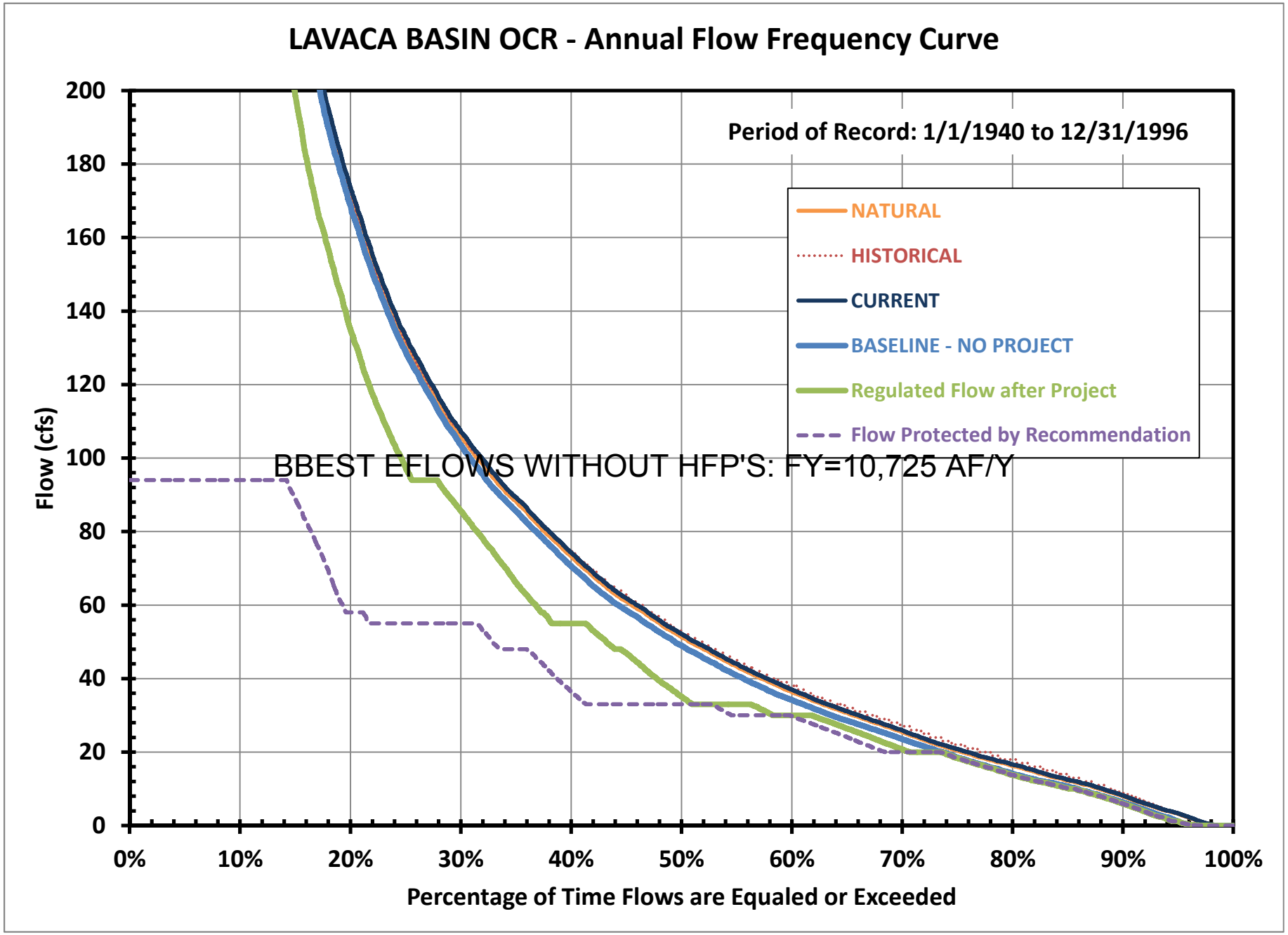
NOTE 1: ATTAINMENT FREQUENCIES FOR SEASONAL RECOMENDATIONS (ALL NON-PULSE RECOMMENDATIONS AND FIRST 2 PULSE RECONMENDATIONS) SUMMARIZED BY AVERAGING RESULTS FOR ALL FOUR SEASONS INTO SINGLE VALUE FOR ALL COMPARISONS.

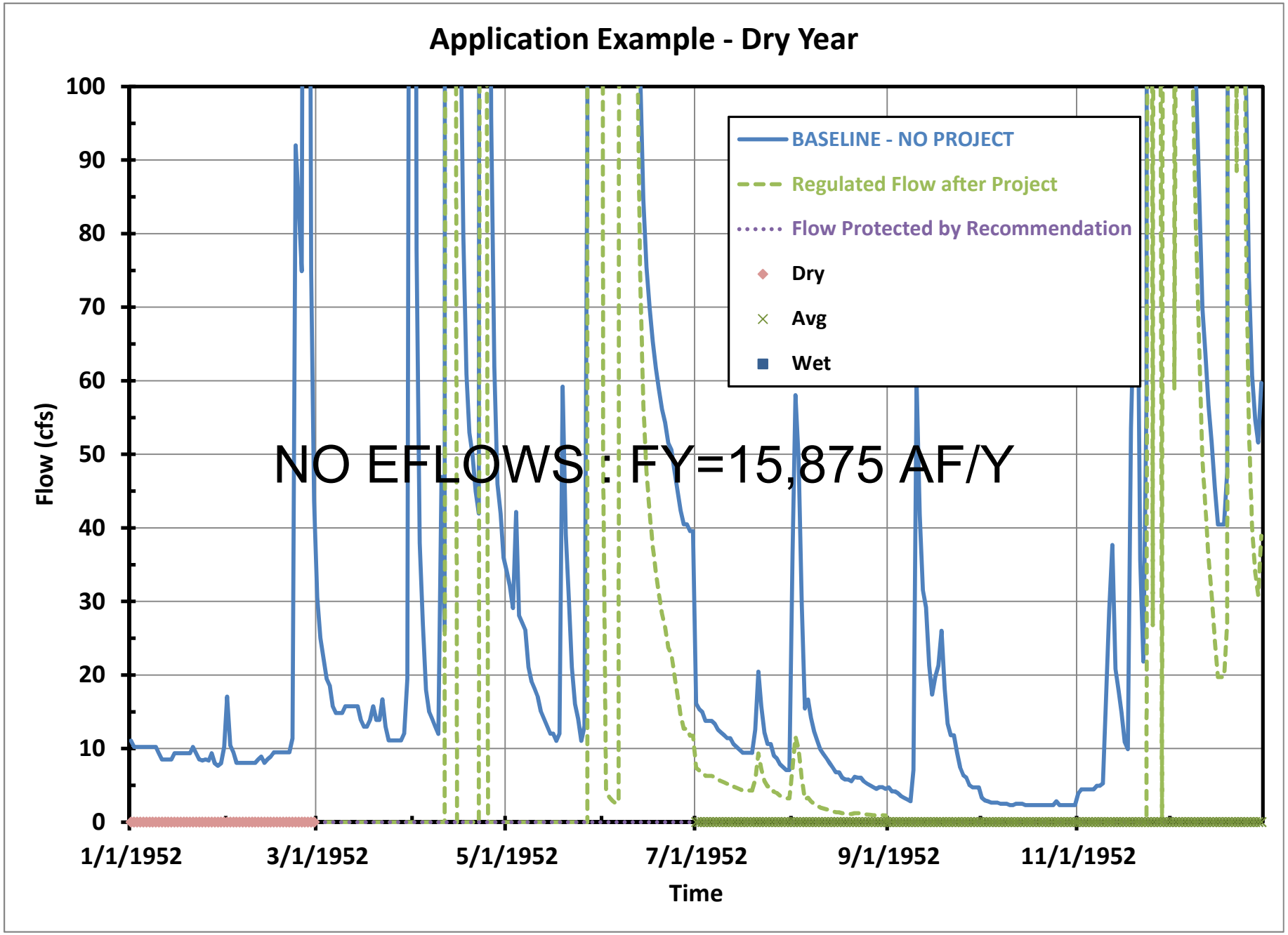
NOTE 2: INFORMATION IN COLUMNS 1 AND 2 ARE REPORTED IN BBEST REPORT, PAGES 5-6 AND 5-10. INFORMATION IN COLUMN 3 WAS DETERMINED USING A MORE RECENT VERSION OF THE TCEQ RUN3 WAM MODEL AND WITH THE STAGE 2 TEXANA WATER RIGHT REMOVED.

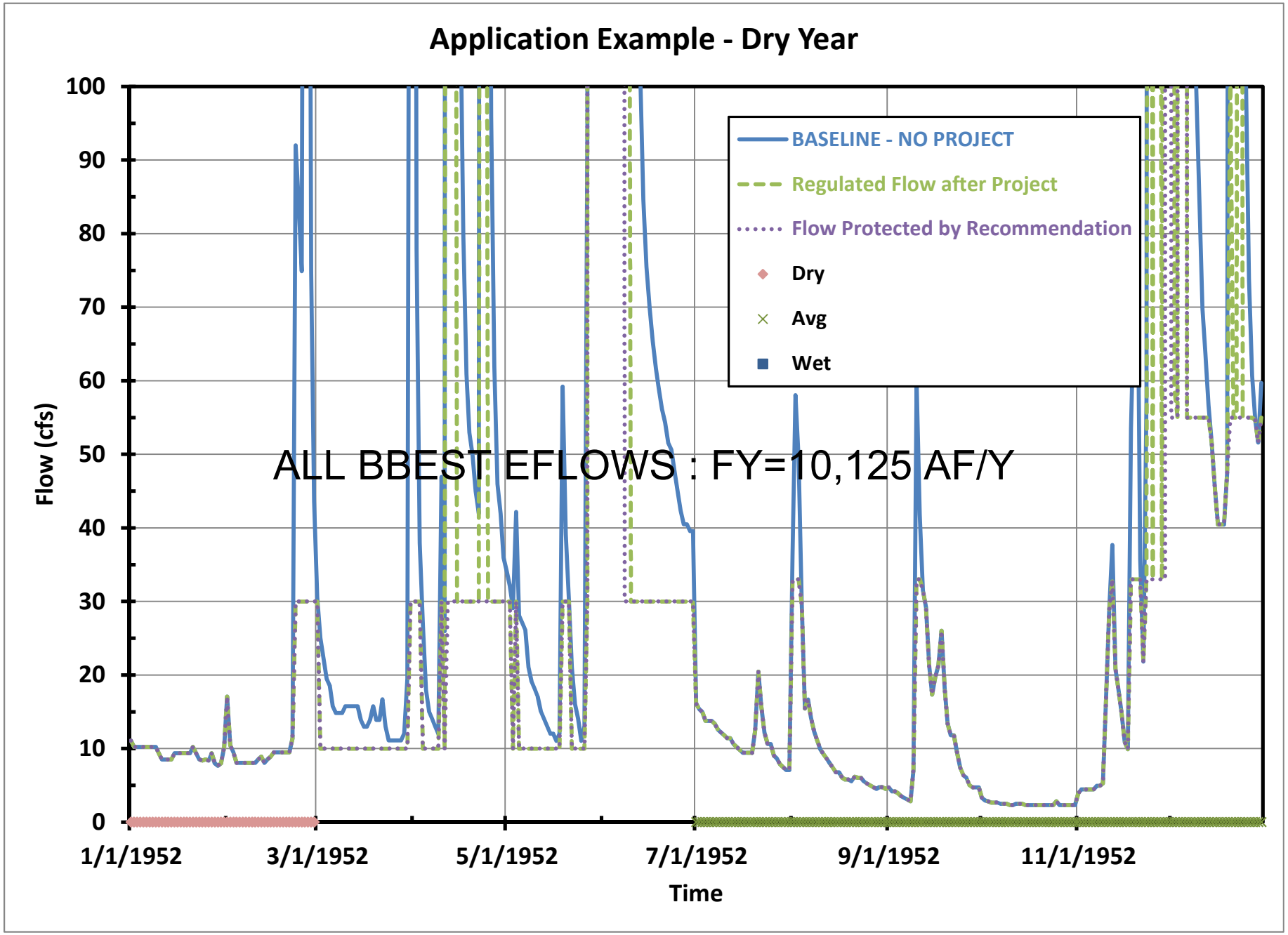
NOTE 3: ALL BBEST SCENARIOS (COLUMNS 8,9,10) USE LAKE TEXANA STORAGE AS SIGNAL TO DESIGNATE WHICH NON-PULSE LEVEL OF FLOW IS REQUIRED TO BE PASSING PROJECT LOCATION BEFORE DIVERSION CAN OCCUR. PULSE RECOMMENDATIONS ARE APPLIED AT FOR ALL CONDITIONS.

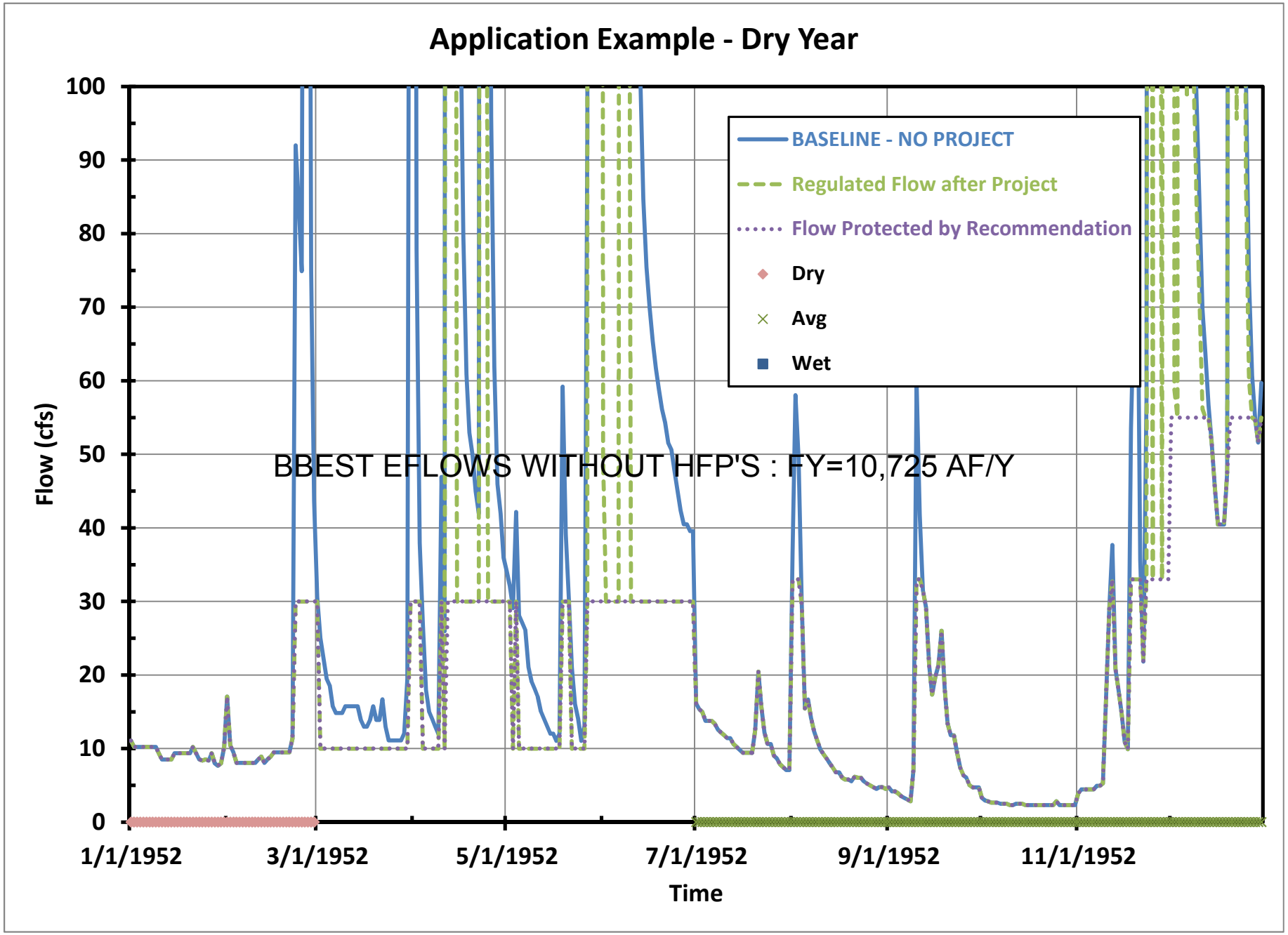

LAVACA BASIN OCR - Annual Flow Frequency Curve
Period of Record: 1/1/1940 to 12/31/1996
NATURAL
HISTORICAL
CURRENT
BASELINE - NO PROJECT
Regulated Flow after Project
Flow Protected by Recommendation
NO EFLOWS : FY=15,875 AF/Y
Flow (cfs)
200
180
160
140
120
100
80
60
40
20
0
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Percentage of Time Flows are Equaled or Exceeded


LAVACA BASIN OCR - Annual Flow Frequency Curve
Period of Record: 1/1/1940 to 12/31/1996
NATURAL
HISTORICAL
CURRENT
BASELINE - NO PROJECT
Regulated Flow after Project
Flow Protected by Recommendation
ALL BBEST EFLOWS : FY=10,125 AF/Y
Flow (cfs)
200
180
160
140
120
100
80
60
40
20
0
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Percentage of Time Flows are Equaled or Exceeded


LAVACA BASIN OCR - Annual Flow Frequency Curve
Period of Record: 1/1/1940 to 12/31/1996
NATURAL
HISTORICAL
CURRENT
BASELINE - NO PROJECT
Regulated Flow after Project
Flow Protected by Recommendation
BBEST EFLOWS WITHOUT HFP'S: FY=10,725 AF/Y
Flow (cfs)
200
180
160
140
120
100
80
60
40
20
0
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Percentage of Time Flows are Equaled or Exceeded


Application Example - Dry Year
BASELINE - NO PROJECT
Regulated Flow after Project
Flow Protected by Recommendation
Dry
Avg
Wet
NO EFLOWS : FY=15,875 AF/Y
Flow (cfs)
100
90
80
70
60
50
40
30
20
10
0
1/1/1952
3/1/1952
5/1/1952
7/1/1952
9/1/1952
11/1/1952
Time


Application Example - Dry Year
BASELINE - NO PROJECT
Regulated Flow after Project
Flow Protected by Recommendation
Dry
Avg
Wet
ALL BBEST EFLOWS : FY=10,125 AF/Y
Flow (cfs)
100
90
80
70
60
50
40
30
20
10
0
1/1/1952
3/1/1952
5/1/1952
7/1/1952
9/1/1952
11/1/1952
Time


Application Example - Dry Year
BASELINE - NO PROJECT
Regulated Flow after Project
Flow Protected by Recommendation
Dry
Avg
Wet
BBEST EFLOWS WITHOUT HFP'S : FY=10,725 AF/Y
Flow (cfs)
100
90
80
70
60
50
40
30
20
10
0
1/1/1952
3/1/1952
5/1/1952
7/1/1952
9/1/1952
11/1/1952
Time