DWR Water Quality Assessment Branch
Data Assessment Project

Purpose: Look at historic water quality conditions in the Delta.

Scope:

15 Stations including American River, California Aqueduct at H.O. Banks, North Bay Aqueduct at Barker Slough, Contra Costa Pumping Plant 1, Delta Menta Canal near the intake, Sacramento River at Greenes Landing and/or Hood, Mallard Island, Natomas East Main Drain, Rock Slough, Sacramento River at West Sacramento City Intake, Station 09 (Old River), and San Joaquin River at Vernalis and/or Mossdale.

5 'Constituents' including Br, EC, DOC, TOC, and SUVA.

Data Analysis:

Time Series Graphs

Seasonal Variation (Summer vs. Winter)
Hydrologic Variation (Wet vs. Dry)

Cumulative Probability Graphs
Monthly Summary Bar Graphs
Monthly Summary Scatter Plots

Summary Stastics
Statistics Showing Significance of Differences

American River

	Br	EC	DOC	TOC	SUVA
Cumu Probs	X	X	X	only 1 data point	X
Wet vs. Dry Cumu Probs	X	X	X	only 1 data point	X
Map					
Monthly Comparison-Bar Chart	X	X	X	only 1 data point	X
Stats-Summer vs. Winter	X	X	X	only 1 data point	X
Stats-Wet vs. Dry	X	X	X	only 1 data point	X
Stats-Summary Table					
Time Series	X	X	X	only 1 data point	X
Write-up					

Banks

	Br	EC	DOC	TOC	SUVA
Cumu Probs	X	X	X	X	X
Wet vs. Dry Cumu Probs	X	X	X	only wet data collected	X
Map	X	X	X	X	X
Monthly Comparison-Bar Chart	X	X	X	only wet data collected	X
Stats-Summer vs. Winter	X	X	X	X	X
Stats-Wet vs. Dry	X	X	X	only wet data collected	X
Stats-Summary Table	X	X	X	X	X
Time Series	X	X	X	X	X
Write-up			X	X	

Barker

	Br	EC	DOC	TOC	SUVA
Cumu Probs	X	X	X	No data collected	X
Wet vs. Dry Cumu Probs	X	X	X	No data collected	X
Map					
Monthly Comparison-Bar Chart	X	X	X	No data collected	X
Stats-Summer vs. Winter	X	X	X	No data collected	X
Stats-Wet vs. Dry	X	X	X	No data collected	X
Stats-Summary Table					
Time Series	X	X	X	No data collected	X
Write-up					

CCP1

	Br	EC	DOC	TOC	SUVA
Cumu Probs	X	X	X	only 1 data point	X
Wet vs. Dry Cumu Probs	X	X	X	only 1 data point	X
Map					
Monthly Comparison-Bar Chart	X	X	X	only 1 data point	X
Stats-Summer vs. Winter	X	X	X	only 1 data point	X
Stats-Wet vs. Dry	X	X	X	only 1 data point	X
Stats-Summary Table					
Time Series	X	X	X	only 1 data point	X
Write-up					

DMC

	Br	EC	DOC	TOC	SUVA
Cumu Probs	X	X	X	X	X
Wet vs. Dry Cumu Probs	X	X	X	only wet data collected	X

Map					
Monthly Comparison-Bar Chart	X	X	X	only wet data collected	X
Stats-Summer vs. Winter	X	X	X	X	X
Stats-Wet vs. Dry	X	X	X	only wet data collected	X
Stats-Summary Table					
Time Series	X	X	X	X	X
Write-up					

Greene's Landing/Hood

	Br	EC	DOC	TOC	SUVA
Cumu Probs	X	X	X	X	X
Wet vs. Dry Cumu Probs	X	X	X	1 pt in dry year, rest are wet	X
Map					
Monthly Comparison-Bar Chart	X	X	X	1 pt in dry year, rest are wet	X
Stats-Summer vs. Winter	X	X	X	X	X
Stats-Wet vs. Dry	X	X	X	1 pt in dry year, rest are wet	X
Stats-Summary Table	X	X	X	1 pt in dry year, rest are wet	X
Time Series	X	X	X	X	X
Write-up			X	X	

Mallard

	Br	EC	DOC	TOC	SUVA
Cumu Probs	X	X	X	no data collected	X
Wet vs. Dry Cumu Probs	X	X	X	no data collected	X
Map				no data collected	
Monthly Comparison-Bar Chart	X	X	X	no data collected	X
Stats-Summer vs. Winter	X	X	X	no data collected	X
Stats-Wet vs. Dry	X	X	X	no data collected	X
Stats-Summary Table				no data collected	
Time Series	X	X	X	no data collected	X
Write-up				no data collected	

Natomas (all data only collected in the wet years)

	Br	EC	DOC	TOC	SUVA
Cumu Probs	X	X	X	only 1 data point	X
Wet vs. Dry Cumu Probs	X	X	X	only 1 data point	X
Map					
Monthly Comparison-Bar Chart	no graphs-wet data only			only 1 data point	
Stats-Summer vs. Winter	X	X	X	only 1 data point	X
Stats-Wet vs. Dry	wet data only			only 1 data point	
Stats-Summary Table					
Time Series	X	X	X	only 1 data point	X
Write-up					

Rock Slough

	Br	EC	DOC	TOC	SUVA
Cumu Probs	X	X	X	No data collected	X
Wet vs. Dry Cumu Probs	X	X	X	No data collected	X
Map					
Monthly Comparison-Bar Chart	X	X	X	No data collected	X
Stats-Summer vs. Winter	X	X	X	No data collected	X
Stats-Wet vs. Dry	X	X	X	No data collected	X

Stats-Summary Table					
Time Series	X	X	X	No data collected	X
Write-up					

SacWSac

	Br	EC	DOC	TOC	SUVA
Cumu Probs	X	X	X	only 1 data point	X
Wet vs. Dry Cumu Probs	X	X	X	only 1 data point	X
Map					
Monthly Comparison-Bar Chart	X	X	X	only 1 data point	X
Stats-Summer vs. Winter	X	X	X	only 1 data point	X
Stats-Wet vs. Dry	X	X	X	only 1 data point	X
Stats-Summary Table	X	X	X	only 1 data point	X
Time Series	X	X	X	only 1 data point	X
Write-up			X	X	

Station 9

	Br	EC	DOC	TOC	SUVA
Cumu Probs	X	X	X	X	X
Wet vs. Dry Cumu Probs	X	X	X	only wet data collected	X
Map					
Monthly Comparison-Bar Chart	X	X	X	only wet data collected	X
Stats-Summer vs. Winter	X	X	X	X	X
Stats-Wet vs. Dry	X	X	X	only wet data collected	X
Stats-Summary Table					
Time Series	X	X	X	X	X
Write-up					

Vernalis/Mossdale

	Br	EC	DOC	TOC	SUVA
Cumu Probs	X	X	X	X	X
Wet vs. Dry Cumu Probs	X	X	X	No dry or winter data collected	X
Map					
Monthly Comparison-Bar Chart	X	X	X	No dry or winter data collected	X
Stats-Summer vs. Winter	X	X	X	No dry or winter data collected	X
Stats-Wet vs. Dry	X	X	X	No dry or winter data collected	X
Stats-Summary Table	X	X	X	No dry or winter data collected	X
Time Series	X	X	X	X	X
Write-up			X	X	

American River at Fairbairn WTP-Summary Table (9/22/99)
Summer vs. Winter

	Season Type									
	Summer					Winter				
Parameter	Min	Max	Avg	StdDev	N	Min	Max	Avg	StdDev	N
Bromide (Total)	*< DL	0.016	0.016	0.000	37	*< DL	*< DL	*< DL	na	40
Conductance (EC)	35.00	85.00	56.20	12.80	72	40.00	102.00	64.60	11.00	96
Organic Carbon (DOC)	1.10	2.70	1.63	0.37	55	1.00	4.30	1.89	0.55	84
Organic Carbon (TOC)	1.40	1.40	1.40	0.00	1	ns	ns	ns	ns	ns
SUVA	0.44	3.40	2.37	0.53	38	0.63	7.60	2.83	1.00	63

* <DL = Less than the detection limit

Summer = May-Oct

Winter = Nov-Apr

ns= not sampled

na = not analyzed

American River at Fairbairn WTP-Summary Table (9/22/99)
Wet vs. Dry

	Year Type									
	Dry					Wet				
Parameter	Min	Max	Avg	StdDev	N	Min	Max	Avg	StdDev	N
Bromide (Total)	*< DL	0.016	0.016	0.000	24	*< DL	*< DL	*< DL	na	53
Conductance (EC)	42.00	102.00	67.90	10.90	71	35.00	82.00	56.00	11.20	97
Organic Carbon (DOC)	1.00	4.30	1.86	0.57	62	1.10	2.90	1.73	0.43	77
Organic Carbon (TOC)	ns	ns	ns	ns	ns	1.40	1.40	1.40	0.00	1
SUVA	0.44	4.36	2.04	0.78	26	1.58	7.57	2.88	0.81	75

* <DL = Less than the detection limit

Wet = Combination of data from above normal and wet year types

Dry = Combination of data from dry and critical year types

ns= not sampled

na = not analyzed

Banks-Summary Table (8/20/99)

Summer vs. Winter

	Season Type									
	Summer					Winter				
Parameter	Min	Max	Avg	StdDev	N	Min	Max	Avg	StdDev	N
Bromide (Total)	0.035	0.570	0.247	0.160	84	0.040	0.640	0.258	0.180	78
Conductance (EC)	143.00	814.00	426.00	175.40	135	186.00	877.00	504.00	180.80	143
Organic Carbon (DOC)	1.70	4.90	3.31	0.69	87	1.60	10.50	4.65	1.73	80
Organic Carbon (TOC)	2.70	3.91	3.22	0.38	11	3.00	5.20	4.38	0.70	14
SUVA	2.07	4.72	3.24	0.40	71	2.77	4.74	3.39	0.36	59

Summer = May-Oct

Winter = Nov-Apr

Banks-Summary Table (8/20/99)

Wet vs. Dry

	Year Type									
	Dry					Wet				
Parameter	Min	Max	Avg	StdDev	N	Min	Max	Avg	StdDev	N
Bromide (Total)	0.080	0.640	0.348	0.150	83	0.035	0.530	0.152	0.121	79
Conductance (EC)	221.00	877.00	543.00	164.30	165	143.00	767.00	354.00	145.70	113
Organic Carbon (DOC)	1.60	8.40	3.84	1.15	115	1.70	10.50	4.19	1.97	52
Organic Carbon (TOC)			not sampled			2.70	5.20	3.87	0.82	25
SUVA	2.07	4.00	3.21	0.32	78	2.41	4.74	3.46	0.43	52

Wet = Combination of data from above normal and wet year types

Dry = Combination of data from dry and critical year types

Barker SI/NBA-Summary Table (9/22/99)
Summer vs. Winter

	Season Type									
	Summer					Winter				
Parameter	Min	Max	Avg	StdDev	N	Min	Max	Avg	StdDev	N
Bromide (Total)	0.020	0.110	0.050	0.020	59	*< DL	0.110	0.048	0.023	45
Conductance (EC)	210.00	506.00	318.80	71.10	55	122.00	609.00	344.00	102.70	54
Organic Carbon (DOC)	2.80	17.00	4.38	1.66	74	2.90	23.50	7.09	4.44	54
Organic Carbon (TOC)	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
SUVA	0.91	6.53	3.39	0.74	64	2.22	6.10	3.58	0.80	45

* <DL= Less than the detection limit

Summer = May-Oct

Winter = Nov-Apr

ns= not sampled

Barker SI/NBA-Summary Table (9/22/99)
Wet vs. Dry

	Year Type									
	Dry					Wet				
Parameter	Min	Max	Avg	StdDev	N	Min	Max	Avg	StdDev	N
Bromide (Total)	0.010	0.110	0.053	0.021	45	*< DL	0.100	0.050	0.020	58
Conductance (EC)	223.00	609.00	344.30	87.00	64	122.00	499.00	312.70	88.60	45
Organic Carbon (DOC)	2.90	18.00	4.91	2.84	61	2.80	23.50	6.07	3.80	67
Organic Carbon (TOC)	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
SUVA	0.91	6.53	3.32	0.94	43	2.63	6.10	3.56	0.62	66

* <DL= Less than the detection limit

Wet = Combination of data from above normal and wet year types

Dry = Combination of data from dry and critical year types

ns= not sampled

Contra Costa Pumping Plant No. 1-Summary Table (9/22/99)
Summer vs. Winter

	Season Type									
	Summer					Winter				
Parameter	Min	Max	Avg	StdDev	N	Min	Max	Avg	StdDev	N
Bromide (Total)	0.030	0.740	0.240	0.230	47	0.040	0.800	0.310	0.230	41
Conductance (EC)	146.00	935.00	435.00	253.00	47	200.00	1100.00	608.00	267.00	41
Organic Carbon (DOC)	2.30	4.70	3.02	0.58	47	2.50	9.10	4.67	1.81	41
Organic Carbon (TOC)	2.70	2.70	2.70	0.00	1	ns	ns	ns	ns	ns
SUVA	1.74	3.96	3.11	0.36	47	2.57	4.10	3.42	0.34	41

* <DL= Less than the detection limit

Summer = May-Oct

Winter = Nov-Apr

ns= not sampled

Contra Costa Pumping Plant No. 1-Summary Table (9/22/99)
Wet vs. Dry

	Year Type									
	Dry					Wet				
Parameter	Min	Max	Avg	StdDev	N	Min	Max	Avg	StdDev	N
Bromide (Total)	0.08	0.77	0.400	0.220	30	0.030	0.800	0.210	0.210	58
Conductance (EC)	362	988	631.00	201.00	30	146.00	1100.00	456.00	287.00	58
Organic Carbon (DOC)	2.3	6.7	3.62	1.06	30	2.30	9.10	3.88	1.74	58
Organic Carbon (TOC)	ns	ns	ns	ns	ns	2.70	2.70	2.70	0.00	1
SUVA	1.74	3.81	3.06	0.43	30	2.88	4.10	3.36	0.30	58

* <DL= Less than the detection limit

Wet = Combination of data from above normal and wet year types

Dry = Combination of data from dry and critical year types

ns= not sampled

Delta Mendota Canal-Summary Table (9/22/99)
Summer vs. Winter

	Season Type									
	Summer					Winter				
Parameter	Min	Max	Avg	StdDev	N	Min	Max	Avg	StdDev	N
Bromide (Total)	0.047	0.590	0.270	0.150	80	0.030	0.620	0.240	0.170	74
Conductance (EC)	151.00	1000.00	493.00	200.00	127	152.00	1200.00	544.00	225.00	137
Organic Carbon (DOC)	2.10	5.40	3.32	0.64	87	1.90	11.00	4.54	1.75	80
Organic Carbon (TOC)	2.80	3.20	3.03	0.16	6	3.80	6.50	4.73	0.96	11
SUVA	1.62	3.93	3.06	0.38	70	2.33	4.63	3.24	0.46	58

Summer = May-Oct

Winter = Nov-Apr

Delta Mendota Canal-Summary Table (9/22/99)
Wet vs. Dry

	Year Type									
	Dry					Wet				
Parameter	Min	Max	Avg	StdDev	N	Min	Max	Avg	StdDev	N
Bromide (Total)	0.07	0.62	0.350	0.140	82	0.03	0.5	0.150	0.110	72
Conductance (EC)	209	1200	602.00	202.00	174	151.00	1070.00	396.00	168.00	100
Organic Carbon (DOC)	1.9	9.4	3.84	1.16	114	2.30	11.00	4.04	1.89	53
Organic Carbon (TOC)	ns	ns	ns	ns	ns	2.80	6.50	4.13	1.13	17
SUVA	1.62	3.90	3.06	0.42	77	2.44	4.63	3.30	0.38	51

Wet = Combination of data from above normal and wet year types

Dry = Combination of data from dry and critical year types

ns= not sampled

Greene's/Hood-Summary Table (8/18/99)
Summer vs. Winter

	Season Type									
	Summer					Winter				
Parameter	Min	Max	Avg	StdDev	N	Min	Max	Avg	StdDev	N
Bromide (Total)	*< DL	0.060	0.014	0.011	93	*<DL	0.090	0.017	0.016	75
Conductance (EC)	90.00	237.00	153.00	29.00	136	70.00	253.00	164.00	39.30	116
Organic Carbon (DOC)	1.19	4.90	1.80	0.38	138	1.35	5.70	2.58	0.97	167
Organic Carbon (TOC)	1.30	4.06	1.83	0.57	22	1.46	4.18	2.44	0.78	34
SUVA	0.80	4.00	2.59	0.50	104	1.02	8.13	2.92	0.86	98

<DL= Less than the detection limit

Summer = May-Oct

Winter = Nov-Apr

*For bromide, all non-detects were counted as 0.001 in the average calculations.

Greene's/Hood-Summary Statistics (8/18/99)
Wet vs. Dry

	Year Type									
	Dry					Wet				
Parameter	Min	Max	Avg	StdDev	N	Min	Max	Avg	StdDev	N
Bromide (Total)	*<DL	0.060	0.021	0.011	61	*<DL	0.090	0.012	0.014	107
Conductance (EC)	110.00	253.00	177.00	29.50	110	70.00	227.00	144.00	31.30	142
Organic Carbon (DOC)	1.40	5.70	2.28	0.93	104	1.19	5.60	2.21	0.81	201
Organic Carbon (TOC)	not sampled	not sampled	not sampled	not sampled	not sampled	1.30	4.18	2.20	0.76	56
SUVA	0.80	3.79	2.36	0.52	67	1.02	8.13	2.94	0.72	135

Wet = Combination of data from above normal and wet year types

Dry = Combination of data from dry and critical year types

*For bromide, all non-detects were counted as 0.001 in the average calculations.

Mallard Island-Summary Table (9/22/99)
Summer vs. Winter

	Season Type									
	Summer					Winter				
Parameter	Min	Max	Avg	StdDev	N	Min	Max	Avg	StdDev	N
Bromide (Total)	0.020	20.400	8.240	5.910	75	0.030	22.600	6.810	7.110	62
Conductance (EC)	120.00	15400.00	7192.00	4447.00	102	159.00	18500.00	6946.00	5836.00	87
Organic Carbon (DOC)	0.80	4.50	2.40	0.58	91	1.40	11.00	3.03	1.40	82
Organic Carbon (TOC)	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
SUVA	1.65	8.20	3.25	0.83	74	1.28	4.35	3.29	0.53	60

Summer = May-Oct

Winter = Nov-Apr

ns= not sampled

Mallard Island-Summary Table (9/22/99)
Wet vs. Dry

	Year Type									
	Dry					Wet				
Parameter	Min	Max	Avg	StdDev	N	Min	Max	Avg	StdDev	N
Bromide (Total)	0.22	22.6	10.730	5.480	79	0.02	18.2	3.310	5.210	58
Conductance (EC)	448	18500	9033.00	4277.00	119	120.00	16600.00	3758.00	4730.00	70
Organic Carbon (DOC)	0.8	11	2.69	1.12	115	1.50	5.70	2.70	1.06	58
Organic Carbon (TOC)	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
SUVA	1.28	8.20	3.19	0.85	76	2.41	4.54	3.37	0.47	58

Wet = Combination of data from above normal and wet year types

Dry = Combination of data from dry and critical year types

ns= not sampled

Natomas-Summary Table (9/23/99)
Summer vs. Winter

	Season Type									
	Summer					Winter				
Parameter	Min	Max	Avg	StdDev	N	Min	Max	Avg	StdDev	N
Bromide (Total)	0.029	0.100	0.060	0.030	5	0.028	0.100	0.060	0.030	6
Conductance (EC)	166.00	428.00	330.00	103.00	5	81.00	410.00	292.00	112.00	6
Organic Carbon (DOC)	4.90	8.50	5.32	0.70	5	5.20	8.50	6.30	1.16	6
Organic Carbon (TOC)	5.30	5.30	5.30	0.00	1	ns	ns	ns	ns	ns
SUVA	2.61	3.63	2.93	0.41	5	2.80	3.92	3.25	0.40	6

Summer = May-Oct

Winter = Nov-Apr

ns= not sampled

Natomas-Summary Table (9/23/99)
Wet vs. Dry

	Year Type									
	Dry					Wet				
Parameter	Min	Max	Avg	StdDev	N	Min	Max	Avg	StdDev	N
Bromide (Total)	ns	ns	ns	ns	ns	0.028	0.1	0.060	0.030	11
Conductance (EC)	ns	ns	ns	ns	ns	81.00	428.00	309.00	105.00	11
Organic Carbon (DOC)	ns	ns	ns	ns	ns	4.90	8.50	5.86	1.06	11
Organic Carbon (TOC)	ns	ns	ns	ns	ns	5.30	5.30	5.30	0.00	1
SUVA	ns	ns	ns	ns	ns	2.61	3.92	3.10	0.42	11

Wet = Combination of data from above normal and wet year types

Dry = Combination of data from dry and critical year types

ns= not sampled

Rock SI-Summary Table (9/23/99)
Summer vs. Winter

	Season Type									
	Summer					Winter				
Parameter	Min	Max	Avg	StdDev	N	Min	Max	Avg	StdDev	N
Bromide (Total)	0.040	0.800	0.460	0.190	49	0.040	0.910	0.430	0.320	31
Conductance (EC)	156.00	988.00	538.00	248.00	87	180.00	1250.00	546.00	320.00	67
Organic Carbon (DOC)	2.10	4.00	2.73	0.41	62	1.10	9.20	3.93	1.36	49
Organic Carbon (TOC)	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
SUVA	2.35	3.59	3.01	0.30	46	2.57	4.78	3.60	0.49	27

Summer = May-Oct

Winter = Nov-Apr

ns= not sampled

Rock SI-Summary Table (9/23/99)
Wet vs. Dry

	Year Type									
	Dry					Wet				
Parameter	Min	Max	Avg	StdDev	N	Min	Max	Avg	StdDev	N
Bromide (Total)	0.08	0.91	0.480	0.230	70	0.04	0.7	0.210	0.260	10
Conductance (EC)	180	1250	607.00	263.00	117	156.00	988.00	337.00	234.00	37
Organic Carbon (DOC)	1.1	6.7	3.20	0.92	101	2.30	9.20	3.86	2.36	10
Organic Carbon (TOC)	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
SUVA	2.35	4.26	3.15	0.40	63	2.88	4.78	3.76	0.59	10

Wet = Combination of data from above normal and wet year types

Dry = Combination of data from dry and critical year types

ns= not sampled

SacWSac Intake (8/18/99)
Summer vs. Winter

	Season Type									
	Summer					Winter				
Parameter	Min	Max	Avg	StdDev	N	Min	Max	Avg	StdDev	N
Bromide (Total)	*<DL	0.060	0.013	0.020	27	*<DL	0.070	0.016	0.020	24
Conductance (EC)	97.00	211.00	144.00	25.90	28	77.00	226.00	142.00	39.70	23
Organic Carbon (DOC)	1.10	2.10	1.50	0.20	29	1.20	16.30	2.87	2.34	39
**Organic Carbon (TOC)										
SUVA	2.46	4.00	2.95	0.35	28	0.90	4.58	3.11	0.69	39

*For bromide, all non-detects were counted as 0.001 in the average calculations.

Summer = May-Oct

Winter = Nov-Apr

**Only one data point for TOC

SacWSac Intake (8/18/99)
Wet vs. Dry

	Year Type									
	Dry					Wet				
Parameter	Min	Max	Avg	StdDev	N	Min	Max	Avg	StdDev	N
Bromide (Total)	0.010	0.060	0.034	0.020	7	*<DL	0.070	0.011	0.010	44
Conductance (EC)	135.00	194.00	166.00	21.20	7	77.00	226.00	140.00	32.70	44
Organic Carbon (DOC)	1.30	1.80	1.50	0.16	7	1.11	16.30	2.38	1.98	61
Organic Carbon (TOC)			not sampled					see below		
SUVA	2.46	3.00	2.55	0.19	7	0.90	4.58	3.10	0.58	60

Wet = Combination of data from above normal and wet year types

Dry = Combination of data from dry and critical year types

*For bromide, all non-detects were counted as 0.001 in the average calculations.

**Only one data point for TOC

Station 9-Summary Table (9/23/99)
Summer vs. Winter

	Season Type									
	Summer					Winter				
Parameter	Min	Max	Avg	StdDev	N	Min	Max	Avg	StdDev	N
Bromide (Total)	0.040	0.610	0.300	0.190	62	0.020	0.770	0.290	0.250	45
Conductance (EC)	165.00	810.00	465.00	201.00	65	133.00	947.00	504.00	239.00	46
Organic Carbon (DOC)	2.30	4.20	3.03	0.46	67	2.60	11.00	4.83	1.82	49
Organic Carbon (TOC)	2.40	3.54	2.95	0.39	9	2.90	9.84	5.17	2.70	5
SUVA	2.08	4.00	3.31	0.33	63	2.50	4.43	3.52	0.36	44

Summer = May-Oct

Winter = Nov-Apr

Station 9-Summary Table (9/23/99)
Wet vs. Dry

	Year Type									
	Dry					Wet				
Parameter	Min	Max	Avg	StdDev	N	Min	Max	Avg	StdDev	N
Bromide (Total)	0.07	0.77	0.420	0.180	60	0.02	0.55	0.140	0.140	47
Conductance (EC)	300	947	600.00	177.00	63	133.00	771.00	326.00	161.00	48
Organic Carbon (DOC)	2.4	7.1	3.66	1.06	61	2.3	11	3.93	1.90	55
Organic Carbon (TOC)	ns	ns	ns	ns	ns	2.40	9.84	3.74	1.88	14
SUVA	2.08	3.94	3.28	0.35	59	3.06	4.43	3.55	0.30	48

Wet = Combination of data from above normal and wet year types

Dry = Combination of data from dry and critical year types

Vernalis/Mossdale-Summary Table (8/18/99)
Summer vs. Winter

	Season Type									
	Summer					Winter				
Parameter	Min	Max	Avg	StdDev	N	Min	Max	Avg	StdDev	N
Bromide (Total)	0.029	0.650	0.250	0.180	92	0.020	0.600	0.260	0.160	90
Conductance (EC)	117.00	1090.00	586.00	271.00	145	127.00	1550.00	753.00	348.00	161
Organic Carbon (DOC)	2.10	8.60	3.22	0.85	117	1.40	11.40	4.10	1.73	117
Organic Carbon (TOC)	2.40	3.60	2.66	0.53	5	not sampled	not sampled	not sampled	not sampled	not sampled
SUVA	1.60	3.79	2.78	0.36	91	1.26	4.31	2.88	0.51	85

Summer = May-Oct

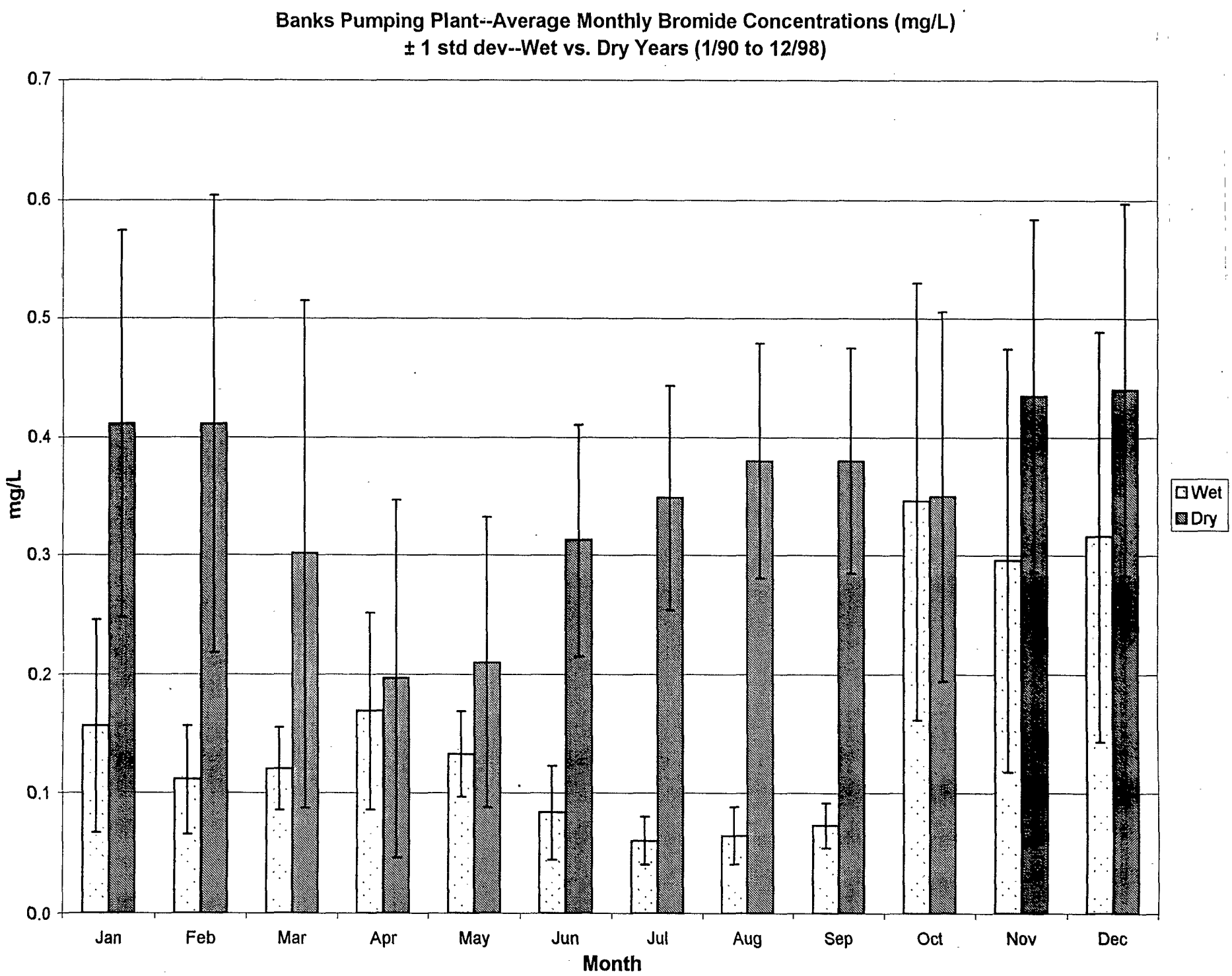
Winter = Nov-Apr

Vernalis/Mossdale-Summary Table (8/18/99)
Wet vs. Dry

	Year Type									
	Dry					Wet				
Parameter	Min	Max	Avg	StdDev	N	Min	Max	Avg	StdDev	N
Bromide (Total)	0.060	0.650	0.410	0.120	67	0.020	0.560	0.170	0.130	115
Conductance (EC)	195.00	1550.00	876.00	246.00	157	117.00	1180.00	460.00	251.00	149
Organic Carbon (DOC)	2.00	4.20	3.63	1.16	120	2.80	3.40	3.69	1.68	114
Organic Carbon (TOC)	not sampled	not sampled	not sampled	not sampled	not sampled	2.40	3.60	2.66	0.53	5
SUVA	1.26	3.35	2.52	0.37	63	2.42	2.95	3.00	0.38	113

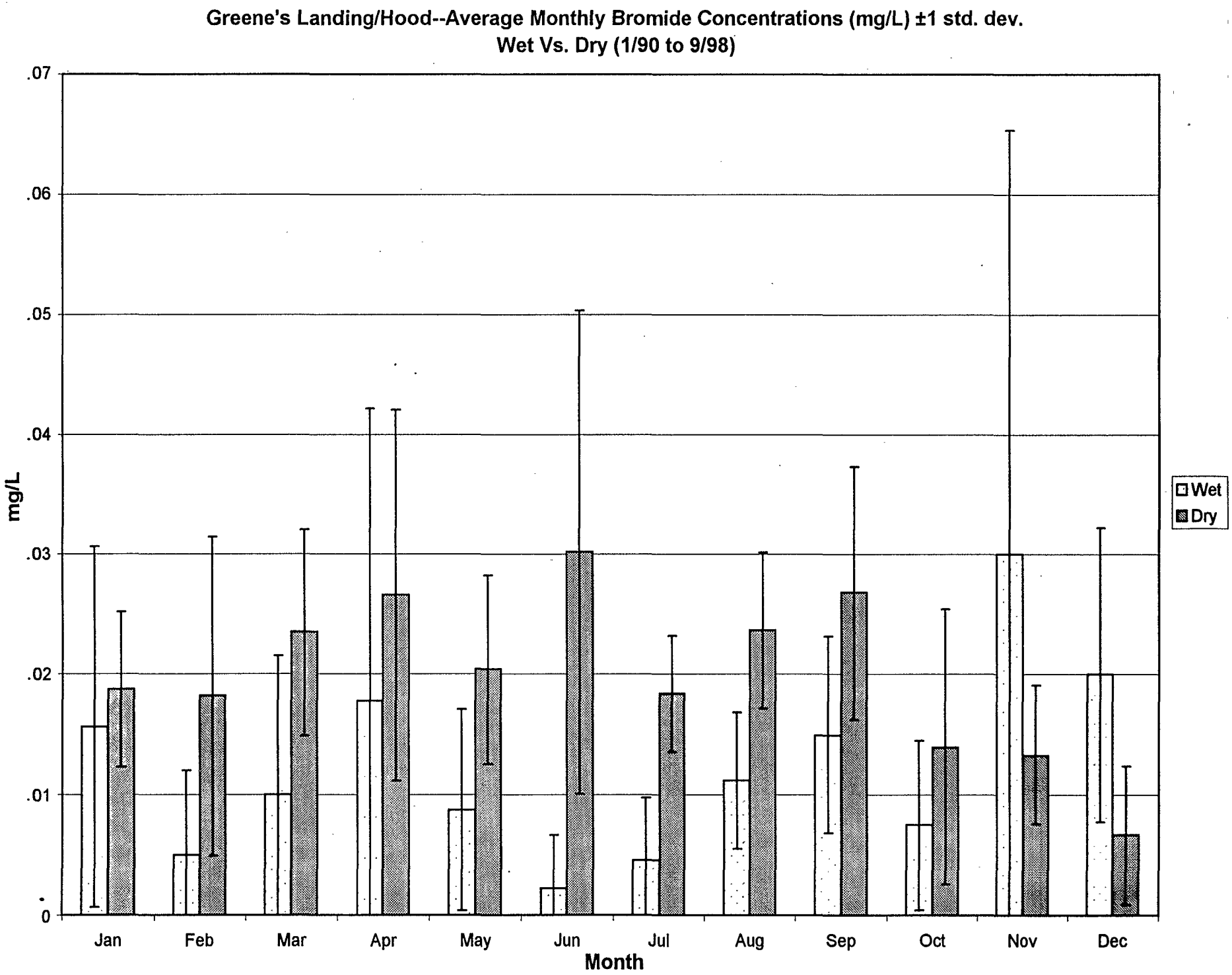
Wet = Combination of data from above normal and wet year types

Dry = Combination of data from dry and critical year types



E-026664

E-026664



E-026665

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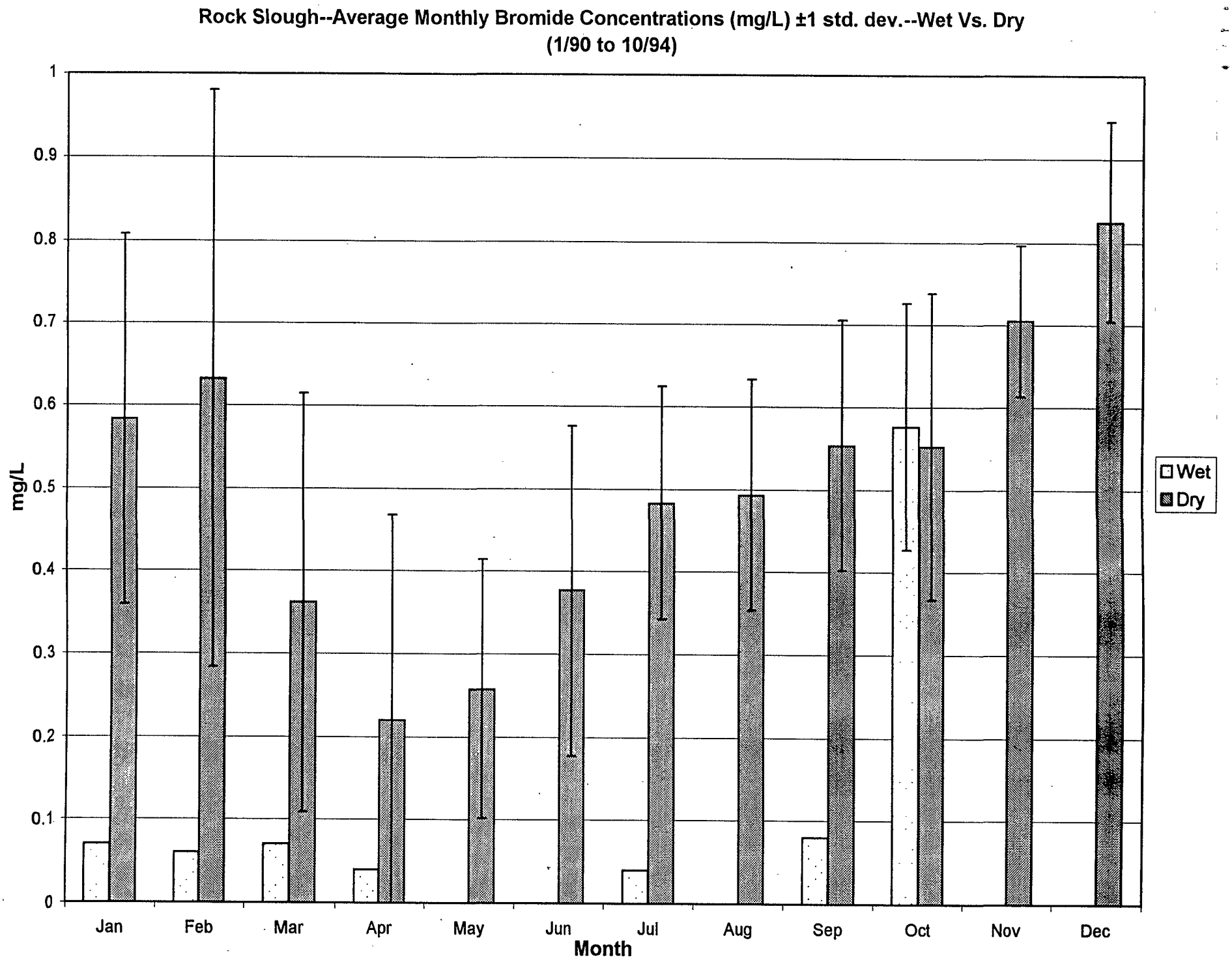

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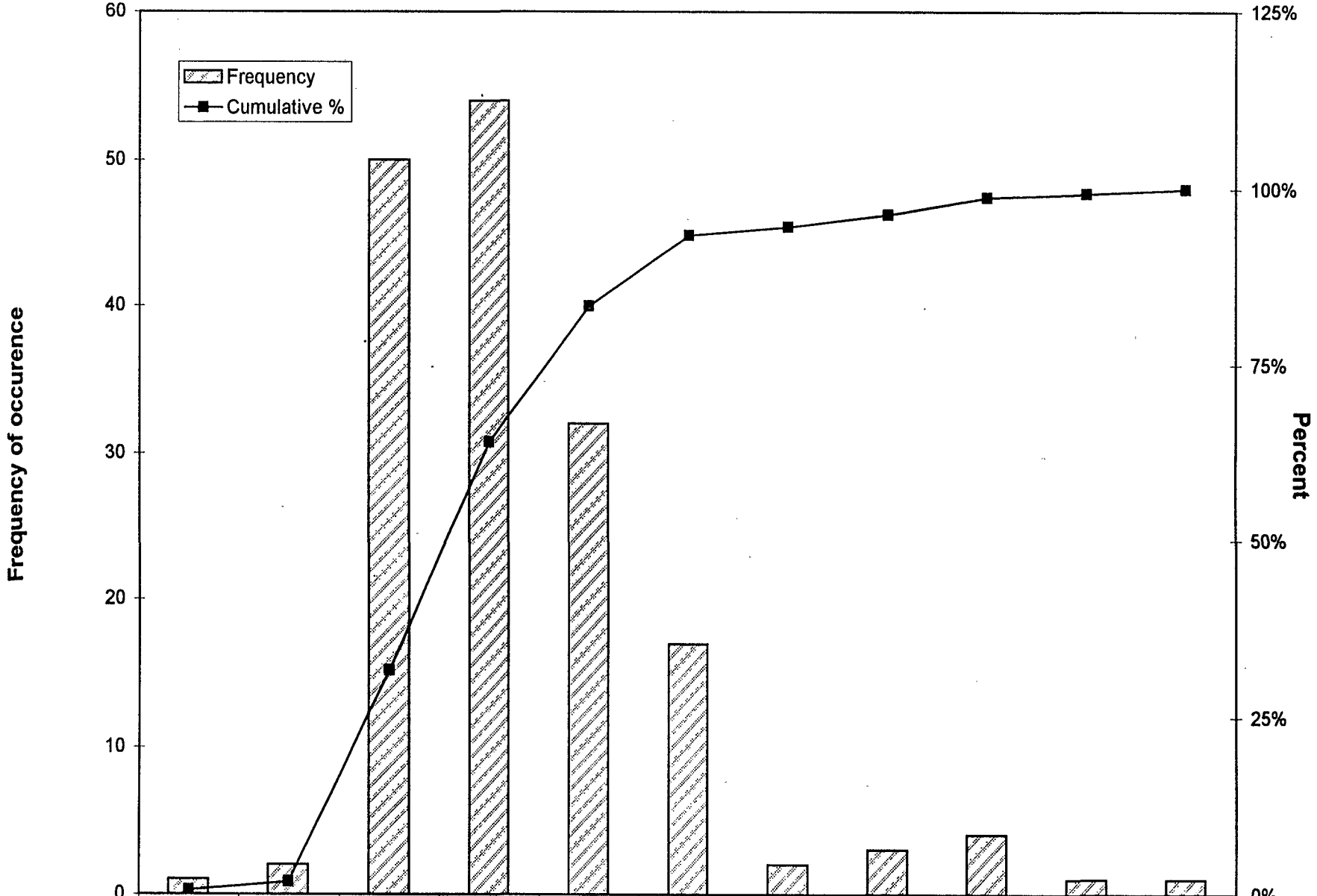
Figure ___. Cumulative Probability Distribution of DOC (mg/L) at Banks Pumping Plant (11/85 to 7/97)



	1.6	2	3	4	5	6	7	8	9	10	10.5
Frequency	1	2	50	54	32	17	2	3	4	1	1
Cumulative %	0.6%	1.8%	31.7%	64.1%	83.2%	93.4%	94.6%	96.4%	98.8%	99.4%	100.0%

E-026667

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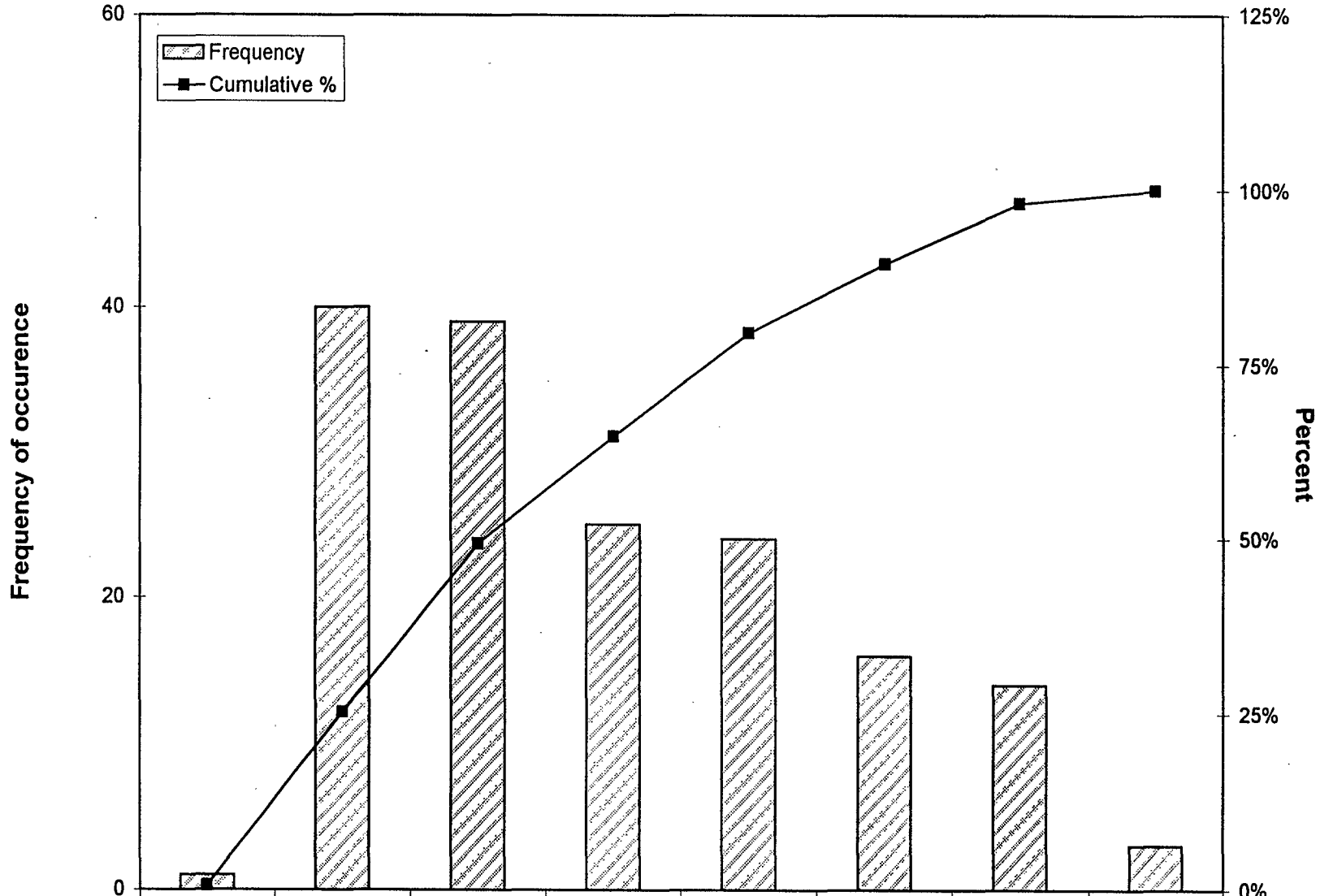
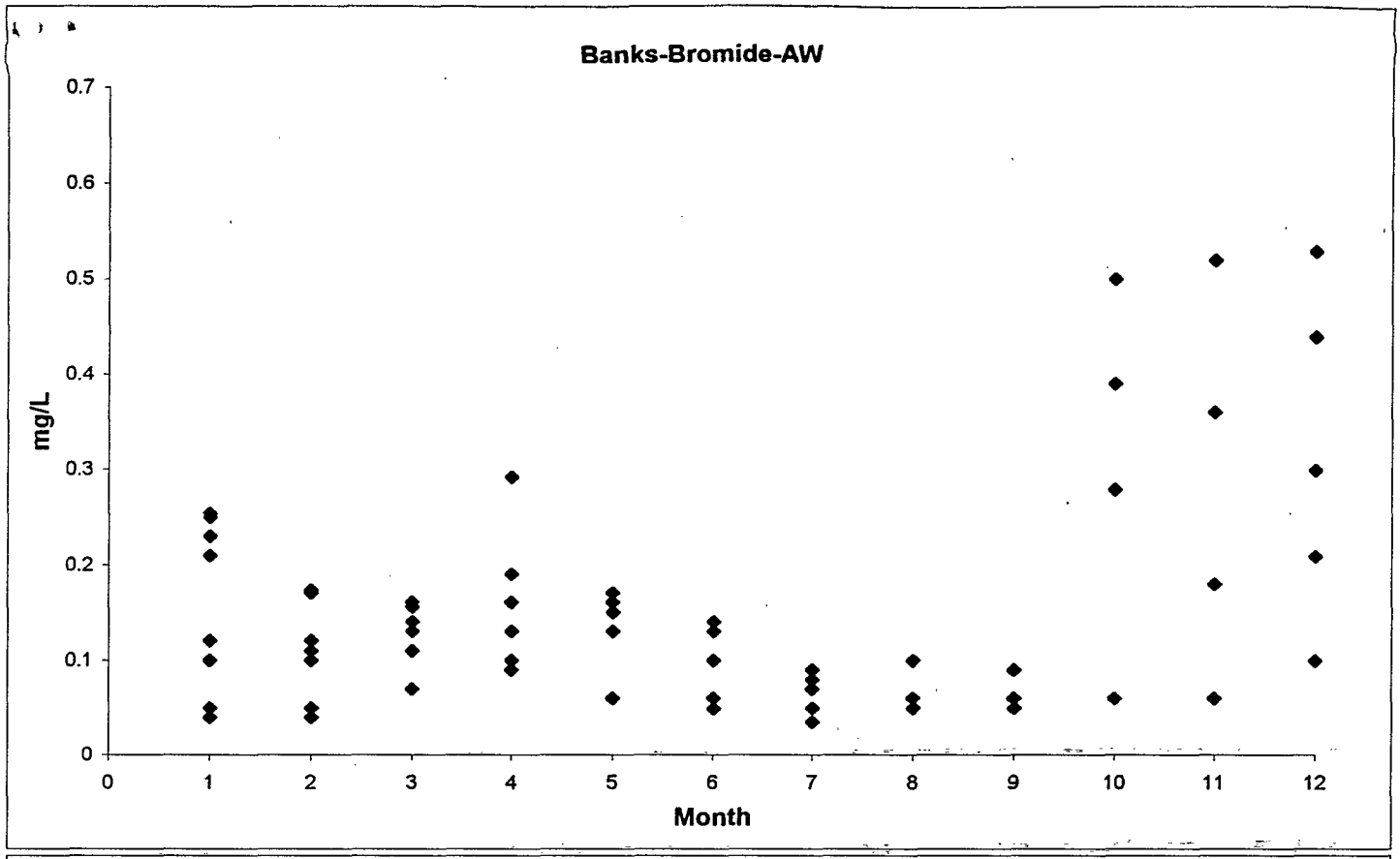
Figure ___. Cumulative Probability Distribution of Bromide (mg/L) at Banks Pumping Plant (1/90 to 9/98)

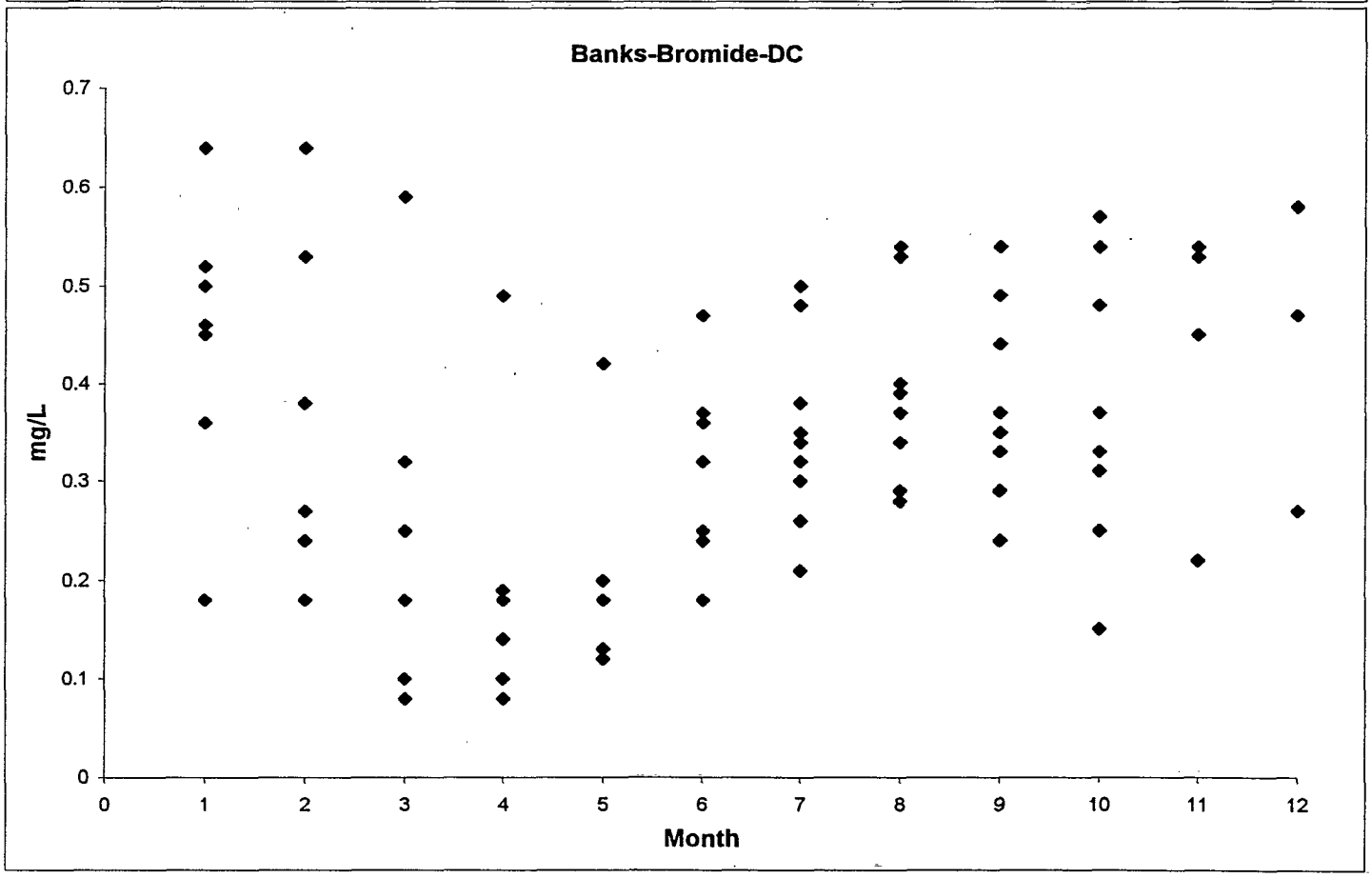


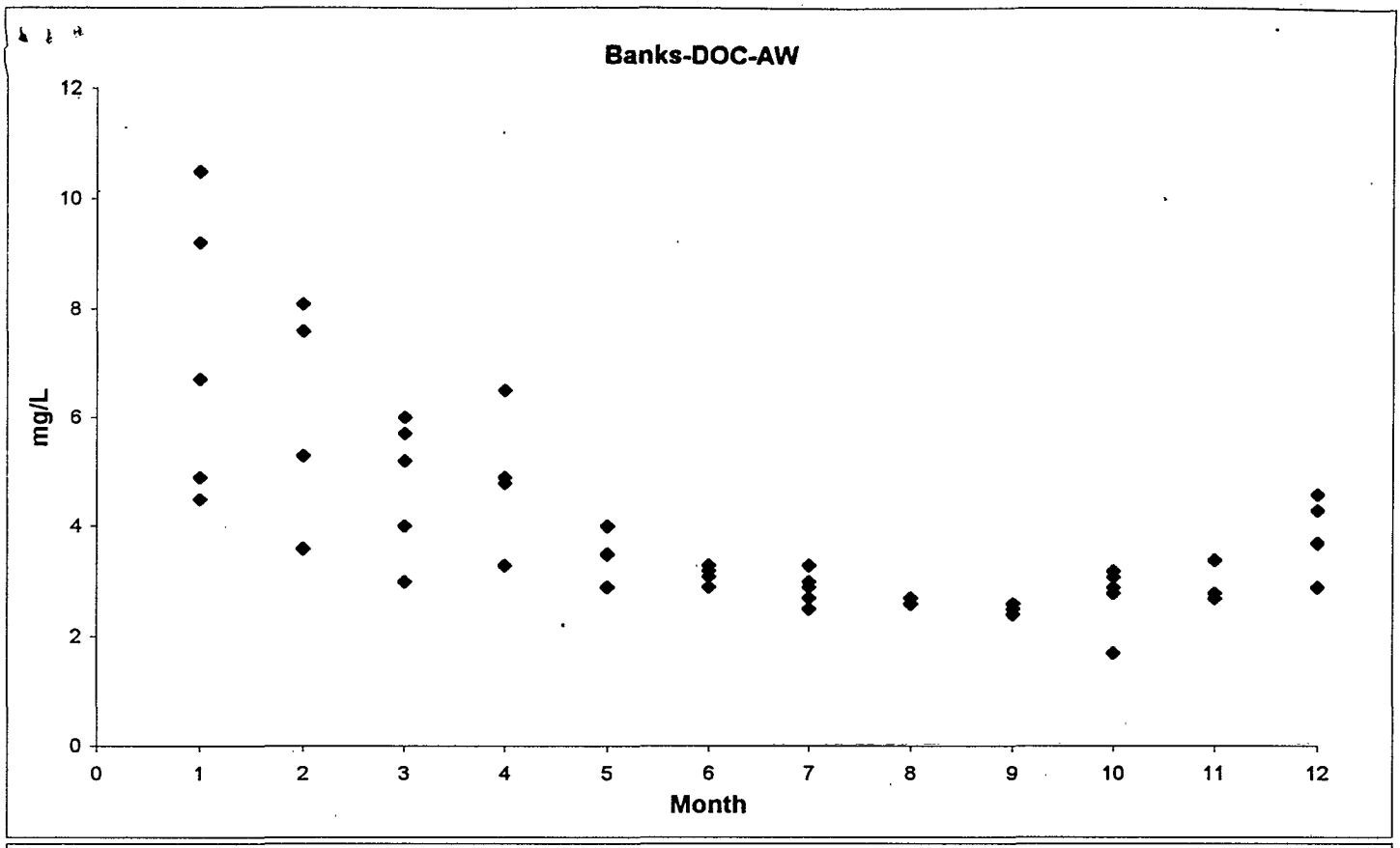
	0.04	0.1	0.2	0.3	0.4	0.5	0.6	0.64
Frequency	1	40	39	25	24	16	14	3
Cumulative %	0.6%	25.3%	49.4%	64.8%	79.6%	89.5%	98.1%	100.0%

E-026668

E—026668


Banks-Bromide-AW
mg/L
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0 1 2 3 4 5 6 7 8 9 10 11 12
Month


Banks-Bromide-DC
mg/L
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0 1 2 3 4 5 6 7 8 9 10 11 12
Month


Banks-DOC-AW
mg/L
Month
0
2
4
6
8
10
12
0
1
2
3
4
5
6
7
8
9
10
11
12

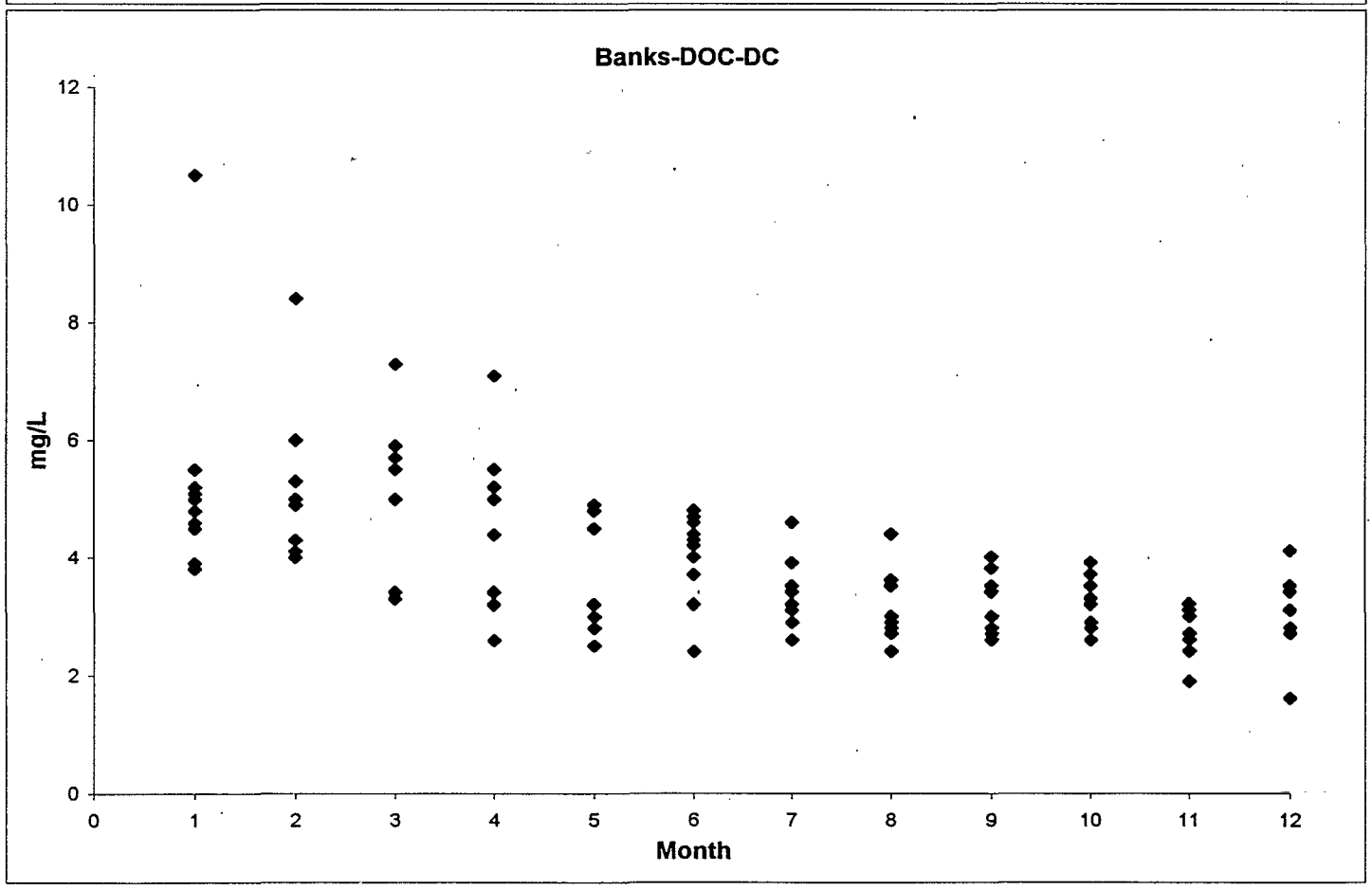
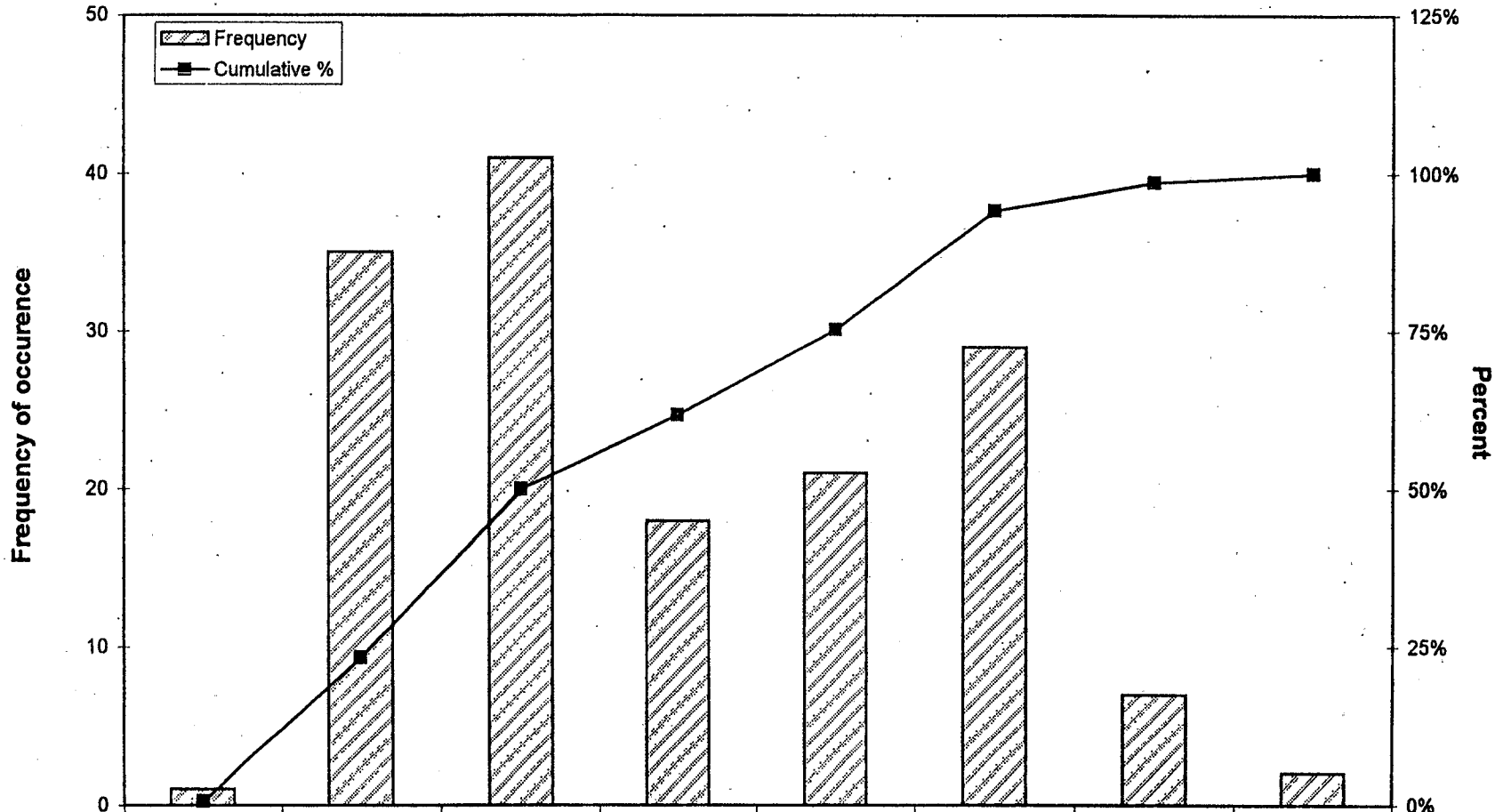

Banks-DOC-DC
mg/L
Month
0
2
4
6
8
10
12
0
1
2
3
4
5
6
7
8
9
10
11
12

Figure ___. Cumulative Probability Distribution of Bromide (mg/L) at DMC (1/90 to 6/98)



	0.03	0.1	0.2	0.3	0.4	0.5	0.6	0.62
Frequency	1	35	41	18	21	29	7	2
Cumulative %	0.6%	23.4%	50.0%	61.7%	75.3%	94.2%	98.7%	100.0%

E-026671

E—026671