Study for the Ongoing Assessment of Water Quality in Jordan Lake
2010 Results

Purpose:

The objective of this study is to evaluate progress in reducing nutrient and nutrient related pollution in Jordan Lake, as required by the Jordan water supply nutrient strategy (15A NCAC 02B.0262). This report summarizes results of samples collected in 2010.

Methods:

The detailed study plan can be found at http://portal.ncdenr.org/web/wq/ess/isu. A total of nine monitoring stations were sampled in 2010 in Jordan Lake, representing the three lake management areas, Upper New Hope, Lower New Hope, and Haw River. All stations were sampled twice per month from May through September, and once per month during all other months. Samples were collected from the photic zone and analyzed for nutrients (TP, TKN, NH_3, NO_2+NO_3), turbidity, and chlorophyll *a*. Duplicate samples were collected at one station per sampling event on a rotating schedule. Results for each duplicate station were averaged and used as a single result when data was analyzed for 2010.

Results:

Results are presented by station for each of the three management areas, Upper New Hope (Figure 1), Lower New Hope (Figure 2) and Haw River Arm (Figure 3). These figures show annual mean (average), minimum and maximum concentrations for total phosphorus (TP), total nitrogen (TN), chlorophyll *a* (Chla), and turbidity in the photic zone. Dissolved oxygen (DO) and pH values are listed as surface data for each station. Data summaries are calculated from seventeen sampling events (n = 17). Percent exceedance of state water quality standards are shown for each station during the 2010 sampling. All nitrate + nitrite and ammonium data below detection (< 0.02 mg/L) were entered as 0.01 mg/L in order to calculate TN values.

Figure 1. Upper New Hope section of Jordan Lake 2010 Results.

CPF086C

	n	TP	TN	Chla	Turb	DO	pH
Mean	17	0.09	1.19	54	20	9.3	8.2
Min	17	0.05	0.81	22	8.9	6.2	7.1
Max	17	0.15	1.57	98	39	12.5	9.1
n > Standard				*10*	*5*	*0*	*1*
% Exceedance				*59%*	*29%*	*0%*	*6%*

CPF081A1C

	n	TP	TN	Chla	Turb	DO	pH
Mean	17	0.10	1.12	53	20	9.5	8.3
Min	17	0.05	0.83	11	9.0	6.5	7.1
Max	17	0.14	1.41	110	35	12.5	9.2
n > Standard				*11*	*4*	*0*	*1*
% Exceedance				*65%*	*24%*	*0%*	*6%*

CPF086F

	n	TP	TN	Chla	Turb	DO	pH
Mean	17	0.08	1.04	47	14	9.1	8.0
Min	17	0.06	0.75	19	7.3	6.0	7.1
Max	17	0.10	1.42	100	25	12.4	9.2
n > Standard				*9*	*0*	*0*	*1*
% Exceedance				*53%*	*0%*	*0%*	*6%*

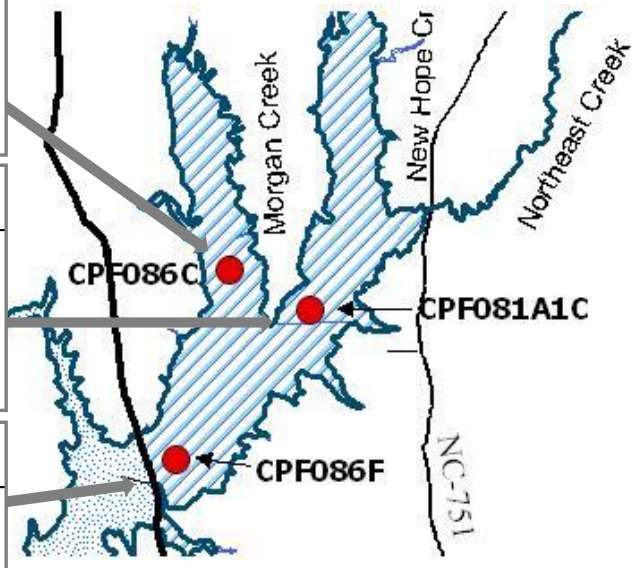
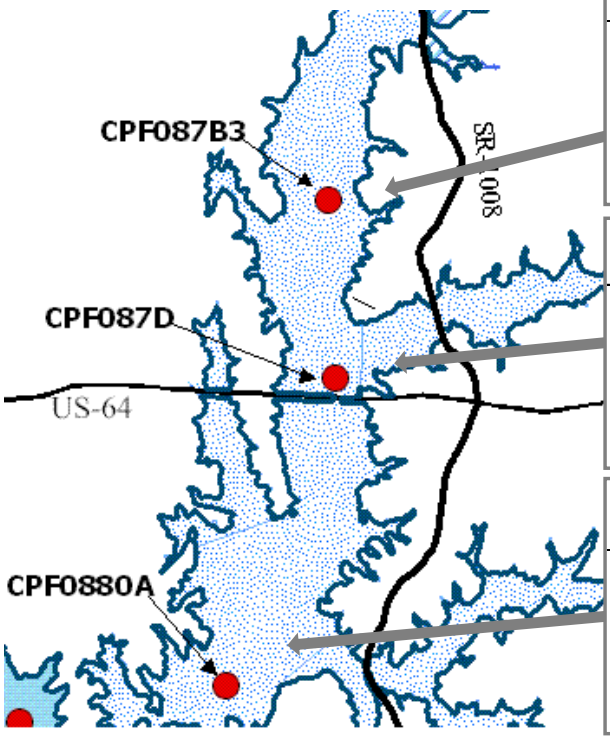


Figure 2. Lower New Hope area of Jordan Lake 2010 Results.

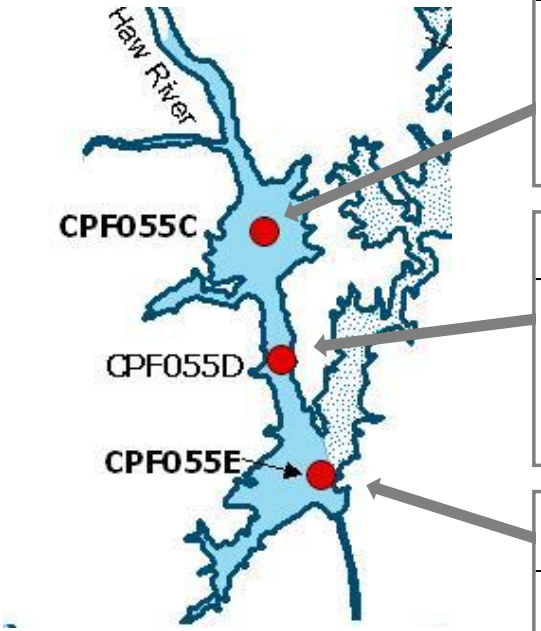


CPF087B3	n	TP	TN	Chla	Turb	DO	pH
Mean	17	0.04	0.80	29	7.3	8.6	7.6
Min	17	0.03	0.58	12	4.2	5.7	7.0
Max	17	0.07	1.19	57	14	12.4	8.9
n > Standard				*3*	*0*	*0*	*0*
% Exceedance				*18%*	*0%*	*0%*	*0%*

CPF087D	n	TP	TN	Chla	Turb	DO	pH
Mean	17	0.04	0.79	27	6.6	8.6	7.5
Min	17	0.02	0.57	9.2	3.7	5.5	6.5
Max	17	0.06	1.16	50	11	12.6	8.7
n > Standard				*2*	*0*	*0*	*0*
% Exceedance				*12%*	*0%*	*0%*	*0%*

CPF0880A	n	TP	TN	Chla	Turb	DO	pH
Mean	17	0.04	0.78	23	6.2	8.4	7.7
Min	17	0.02	0.52	10	3.0	5.7	6.0
Max	17	0.06	1.14	36	14	12.7	8.9
n > Standard				*0*	*0*	*0*	*0*
% Exceedance				*0%*	*0%*	*0%*	*0%*

Figure 3. Haw River Arm of Jordan Lake 2010 Results.



CPF055C	n	TP	TN	Chla	Turb	DO	pH
Mean	17	0.08	1.14	29	16	9.3	8.0
Min	17	0.04	0.73	2.7	4.8	7.5	6.9
Max	17	0.19	1.66	54	85	13.0	9.5
n > Standard				*6*	*2*	*0*	*1*
% Exceedance				*35%*	*12%*	*0%*	*6%*

CPF055D	n	TP	TN	Chla	Turb	DO	pH
Mean	17	0.07	1.08	25	14	9.0	7.9
Min	17	0.04	0.69	3.0	3.9	6.1	6.8
Max	17	0.19	1.84	46	80	12.8	9.3
n > Standard				*1*	*3*	*0*	*2*
% Exceedance				*6%*	*18%*	*0%*	*12%*

CPF055E	n	TP	TN	Chla	Turb	DO	pH
Mean	17	0.05	0.97	26	7.9	8.9	7.9
Min	17	0.03	0.63	8.3	3.8	6.8	6.7
Max	17	0.09	1.38	45	25	12.7	9.2
n > Standard				*1*	*0*	*0*	*2*
% Exceedance				*6%*	*0%*	*0%*	*12%*