Water Quality Assessment
Cahaba River (Birmingham - Riverview WWTP)
Birmingham, Alabama
Jefferson County

June 1998

Environmental Indicators Section
Field Operations Division
Alabama Department of Environmental Management
Report Date: March 1999

Introduction

The city of Birmingham has an NPDES permit (AL0045969) to discharge treated wastewater from Birmingham Riverview WWTP in Jefferson county to an unnamed tributary to the Cahaba River. The segment of the Cahaba River being studied is classified Fish and Wildlife (F&W). The Cahaba River is part of the Cahaba River basin and drains into the Alabama River.

At the request of the Municipal Branch of the Water Division of the Alabama Department of Environmental Management (ADEM), staff members of the Environmental Indicators Section (EIS) of Field Operations Division conducted a study to document the effects of the wastewater discharge on the in-stream macroinvertebrate community of the Cahaba River. This effort included aquatic macroinvertebrate assessments, toxicity testing and chemical analyses.

The aquatic macroinvertebrate sampling, habitat assessments and chemical sample collection were conducted on June 29, 1998. The bioassay portion of the study was initiated on April 22, 1998.

Sampling Locations and Methodology

The following sampling locations were chosen for the Cahaba River (see Figure 1). Even at low flow conditions, two of the stations (CARS-3 & CARS-4) were nonwadeable pools and were therefore not accessible for sampling.

CARJ-1 Cahaba River approximately 100 feet upstream of Riverview WWTP discharge. Just downstream of a low-head dam. This station was identified as CR-1 in the Cahaba River Intensive Survey – Synoptic Water Quality Data Collection Study (1995).
T18S, R2W, S35, NW1/4, Lat 33°25’25.1” Lon 86°43’11.8”

CARJ-2 Cahaba River approximately 50 feet downstream of Riverview WWTP discharge.
T18S, R2W, S35, SW1/4, Lat 33°25’20.7” Lon 86°43’10.7”

CARS-3 Cahaba River approximately 3/4 mile downstream of Riverview WWTP discharge and approximately 100 feet upstream of an unnamed trib and the Hoover – Inverness WWTP discharge.
T19S, R2W, S3, NE1/4, Lat 33°24’50” Lon 86°43’42.5”

CARS-4 Cahaba River approximately 100 feet downstream of the Hoover-Inverness WWTP discharge.
T19S, R2W, S3, NE1/4, Lat 33°24’46.6” Lon 86°43’46.3”

CARS-5 Cahaba River approximately 1.75 miles downstream of Riverview WWTP discharge near the Caldwell Mill Road crossing, just downstream of a low-head dam. This station was identified as CR-2 in the 1995 study.
T19S, R2W, S3, NW1/4, Lat 33°24’55.8” Lon 86°44’22.2”

Macroinvertebrate samples were collected using the intensive Multihabitat Bioassessment method (MB-I) described in the ADEM Standard Operating Procedures (SOP) and Quality Control Assurance (QCA) Manual, Volume 2 (1996). The laboratory methods for

this procedure were modified to identify only the three generally pollution sensitive orders Ephemeroptera (mayflies), Plecoptera (stoneflies) and Tricoptera (caddisflies). Habitat quality was assessed using the modified Barbour & Stribling (1996) habitat assessment form. Table 1 provides evaluation guidelines for the habitat assessment and EPT Taxa Richness metric.

Instream water samples collected for field parameters and chemical analyses were grab collections using the methodology outlined in Volume 1 of the ADEM SOP and QCA Manual (1994).

Samples collected from the WWTP discharge for toxicity testing were 24-hour composite samples taken at the permitted sampling point. The toxicity test was conducted as specified in NPDES permit number AL0045969 and per methodology outlined in ADEM SOP and QCA Manual, Volume 4 (1994).

Sample handling techniques, physical data collection and chain-of-custody procedures utilized during this assessment were as described in the ADEM Standard Operating Procedures and Quality Control Assurance Manual, Volumes 1(1994), 2(1996) & 4(1994). Chain-of-custody was maintained by locking the samples in a Departmental vehicle when not in sight of a Field Operations employee.

During this study, the ADEM Water Quality Branch collected diurnal field parameters over a two-day period using continuous recording remote datasondes. This information is included in Appendix C.

Discussion and Results

A. Physical

The study reaches of the Cahaba River are comprised of rocky substrate with run depths of approximately 1-3 feet and pool depths of approximately 2-4 feet. The Cahaba River had moderately stable banks along the stream reaches and canopy cover was estimated as ranging from open to 30% hardwoods.

The only two habitat types present at CARJ-2 were rock/log and sand. The other two stations (CARJ-1 & CARS-5) had five habitat types. All available habitats are used in the analyses. Two of the stations (CARS-3 & CARS-4) were nonwadeable pools and were therefore not accessible for MB-I macroinvertebrate sampling.

B. Chemical

The field parameters measured at each station were pH, conductivity, dissolved oxygen, turbidity and water temperature. Results showed little change in the pH, dissolved oxygen or conductivity between stations (Table 2 & Figure 2). However, the turbidity did appear to be slightly elevated downstream of the WWTP discharge.

Water samples were also collected for laboratory analyses and results are provided in Table 2. The Total Suspended Solids level downstream of the discharge (CARJ-2) was elevated as compared to the upstream station (CARJ-1). Nutrient levels downstream of the discharge were also slightly elevated as compared to the upstream station.

The composite sample from the WWTP effluent had a Zinc concentration of 0.169 mg/L and a Dissolved Zinc concentration of 0.147 mg/L. Levels of Zinc and Dissolved Zinc were also present in all the stream samples collected but in lower concentrations than that of the WWTP effluent sample. The levels of Zinc in the stream appear to be slightly elevated as a result of the effluent discharge whereas the Dissolved Zinc concentrations were not (Table 2).

The National Criteria for instream Zinc concentrations as described in Quality Criteria for Water (EPA 440/5-86-001, 1986) are calculated based on the hardness of the water. For comparison, at a hardness range of 50 – 100 mg/L as $CaCO_3$ the criteria for four-day average concentrations are 0.059 – 0.110 mg/L and the criteria for one-hour average concentrations are 0.065 – 0.120 mg/L. The actual criteria for Zinc concentrations in the WWTP effluent and the stream samples can not be compared to those concentrations since there was a lab error and the hardness of each sample was not determined.

C. Aquatic Macroinvertebrate Assessment

Aquatic macroinvertebrate data were analyzed according to EIS draft ecoregional evaluation guidelines. For EPT taxa richness, all habitats collected were included in the total. The upstream station, CARJ-1 was evaluated as “fair” using a stream condition category based on EPT taxa richness (Table 1). As compared to the upstream station, CARJ-2 downstream of the effluent discharge was evaluated as “poor”. CARS-5 showed a recovery to the condition of the upstream station.

D. Bioassay

Short-term chronic toxicity tests conducted on the Birmingham, Riverview WWTP effluent indicated that there was a significant difference to *Ceriodaphnia dubia* reproduction when exposed to a 100% effluent concentration (Appendix A).

Effluent samples were also collected for laboratory analyses in conjunction with the toxicity test. Results summarized in Appendix B showed that pesticide and metal concentrations were below detectable limits except for Zinc. Low levels of Zinc and Dissolved Zinc were present in the composite sample collected on April 21, 1998.

Conclusions

The results of this study indicate the water quality of the Cahaba River below the Birmingham, Riverview WWTP to be slightly impaired as compared to the upstream station. Adverse impact to the macroinvertebrate community below the discharge was evidenced by lower EPT taxa richness. The data from CARS-5, further downstream from the WWTP, suggest that the stream had recovered to the "fair" condition category of the upstream station.

The Water Use Classification for this segment of the Cahaba River is Fish & Wildlife, which specifies the best usage of waters to be suitable for fishing, propagation of fish, aquatic life, and wildlife, and any other usage except for swimming, and water-contact sports or as a source of water supply for drinking or food processing purposes (Rules and Regulations: Water Quality Criteria and Use Classifications, Water Division-Water Quality Program, ADEM, Ch.335-6-10). Based on the limited data available, the Cahaba River at each of the sampling locations does appear to be meeting the chemical/physical parameters of the Fish & Wildlife Water Use Classification Criteria. However, according to assessment data collected during this study, the Cahaba River at the study location CARJ-2 does not meet the General Conditions Applicable to All Water Quality Criteria (Ch. 335-6-10-.05 (1); …quality of any waters receiving sewage…will not cause the best usage(propagation of aquatic life)…to be adversely affected by such sewage…).

TABLE 1

Aquatic Macroinvertebrate Habitat/Data

	CARJ-1	CARJ-2	CARS-5
Habitat Assessment Score	180	161	179
Habitat Quality (% comparability to upstream station)		89%	99%
EPT Taxa Richness	10	4	10
Stream Condition Category (based on EPT taxa richness)	Fair	Poor	Fair

Evaluation Guidelines

METRIC	RANGE	INTERPRETATION
Habitat Assessment	170-220 118-169 60-117 0-59	Optimal Sub-optimal Marginal Poor
EPT Taxa Richness	>18 18-12 11-7 <7	Excellent Good Fair Poor

TABLE 2
Chemical Analyses & Field Parameters

Parameter	CARJ-WWTP	CARJ-1	CARJ-2	CARS-5
Organics (ug/L)				
Diazinon	0.162	<mdl	<mdl	<mdl
Miscellaneous Inorganics (mg/L)				
Total Alkalinity	115.0	117.0	109.0	95.0
BOD	2.1	1.6	2.7	2.4
CBOD Ultimate	6.87	---	---	---
Hexavalent Chromium	<mdl	<mdl	<mdl	<mdl
Total Dissolved Solids	404.0	181.0	228.0	223.0
Total Suspended Solids	1.00	2.00	41.0	2.00
Cyanide	<mdl	<mdl	<mdl	<mdl
Chloride	29.34	3.83	9.21	7.16
Nutrients (mg/L)				
Ammonia	<mdl	<mdl	<mdl	<mdl
Nitrate	10.10	0.07	3.69	1.28
Phosphate	5.53	0.02	1.64	0.49
Total Kjeldahl Nitrogen	1.27	<mdl	<mdl	<mdl
Total Organic Nitrogen	1.27	<mdl	<mdl	<mdl
Trace Metals (mg/L except those noted)				
Arsenic (ug/L)	<mdl	<mdl	<mdl	<mdl
Cadmium	<mdl	<mdl	<mdl	<mdl
Chromium	<mdl	<mdl	<mdl	<mdl
Copper	<mdl	<mdl	<mdl	<mdl
Lead (ug/L)	<mdl	<mdl	<mdl	<mdl
Mercury (ug/L)	<mdl	<mdl	<mdl	<mdl
Nickel	<mdl	<mdl	<mdl	<mdl
Silver	<mdl	<mdl	<mdl	<mdl
Zinc	0.169	0.061	0.095	0.071
Dissolved Zinc (all other dissolved metals as identified above were <mdl)	0.147	0.079	0.080	0.043
Fecal Coliform (colonies/100mL)				
Fecal Coliform Bacteria	est. 11	20	210	Est. 15
Field Parameters				
pH (standard units)	7.3	7.6*	7.8	7.5
Conductivity (umhos/cm)	564	250*	332	279
Dissolved Oxygen (mg/L)	6.7	7.2*	7.6	7.2
Turbidity (NTU)	1.1	4.8	14.3	4.0
Water Temperature (C)	28.9	27.6*	28.2	27.3
Flow (cfs)	1.87	1.74	3.61	10.94

* There was an error in data storage at CARJ-1 on 6/29/98. This data was collected on 7/1/98.

Cahaba River
Birmingham, AL

Figure 1

Station Location Map

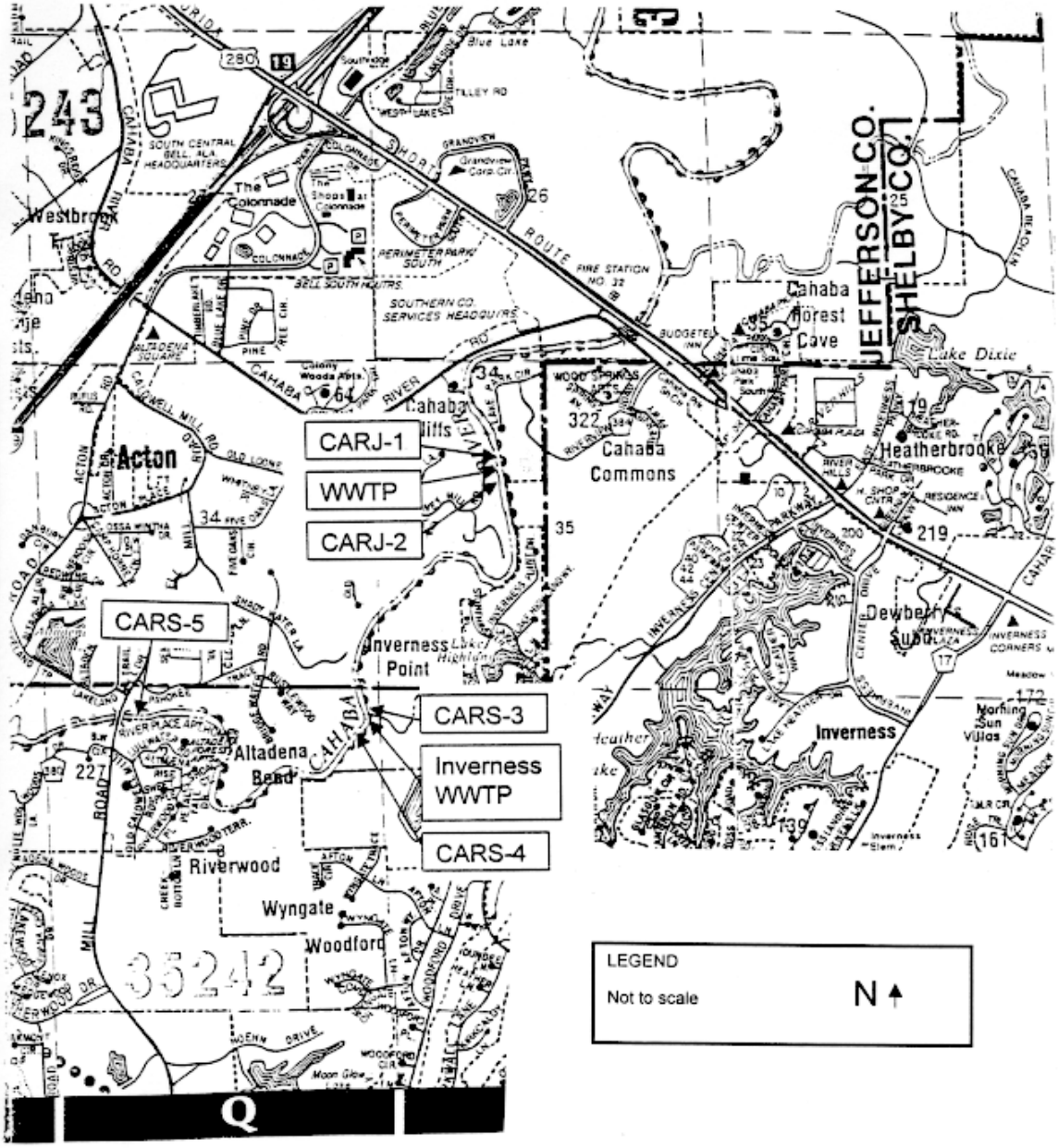


Figure 2
Field Parameters

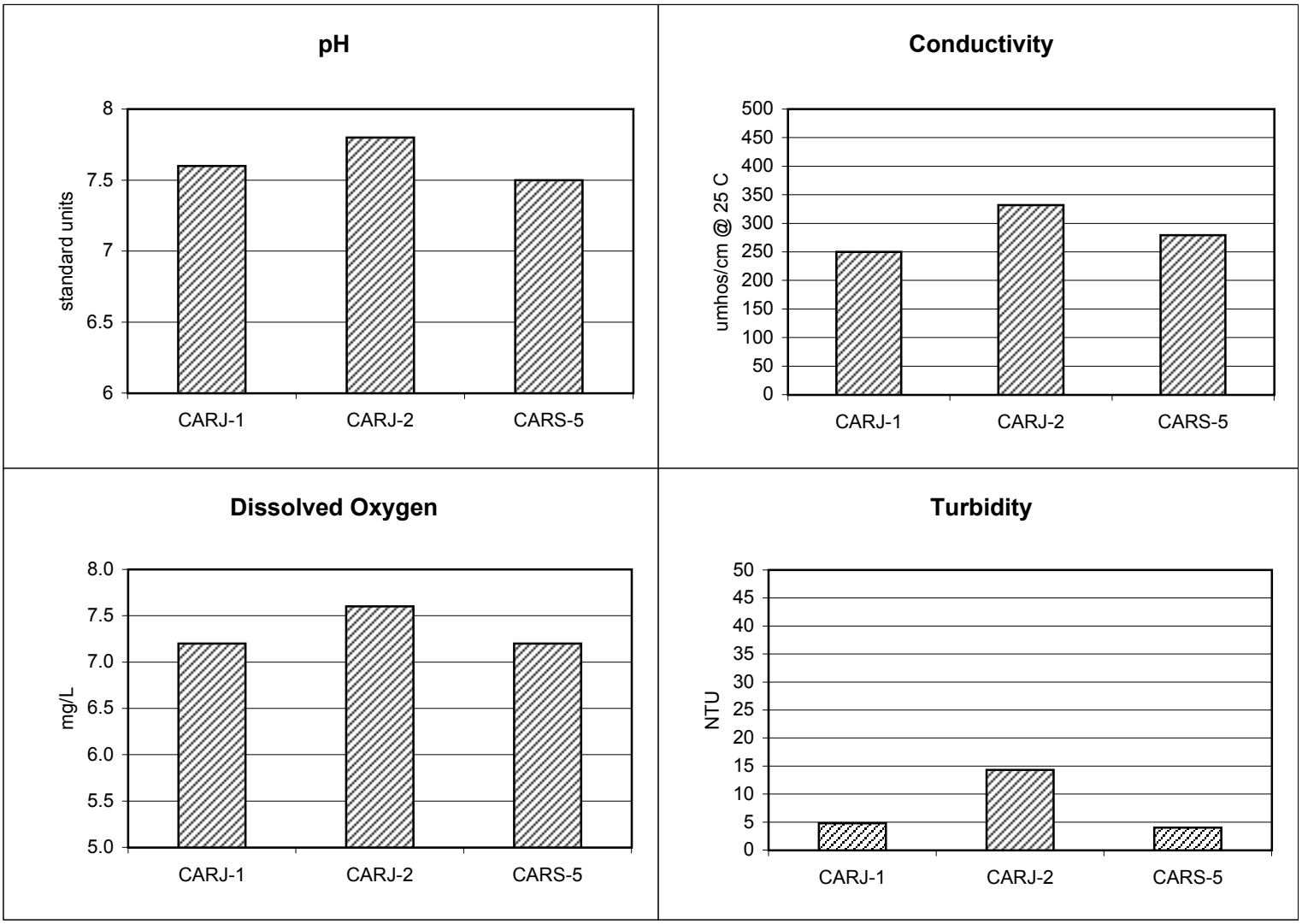
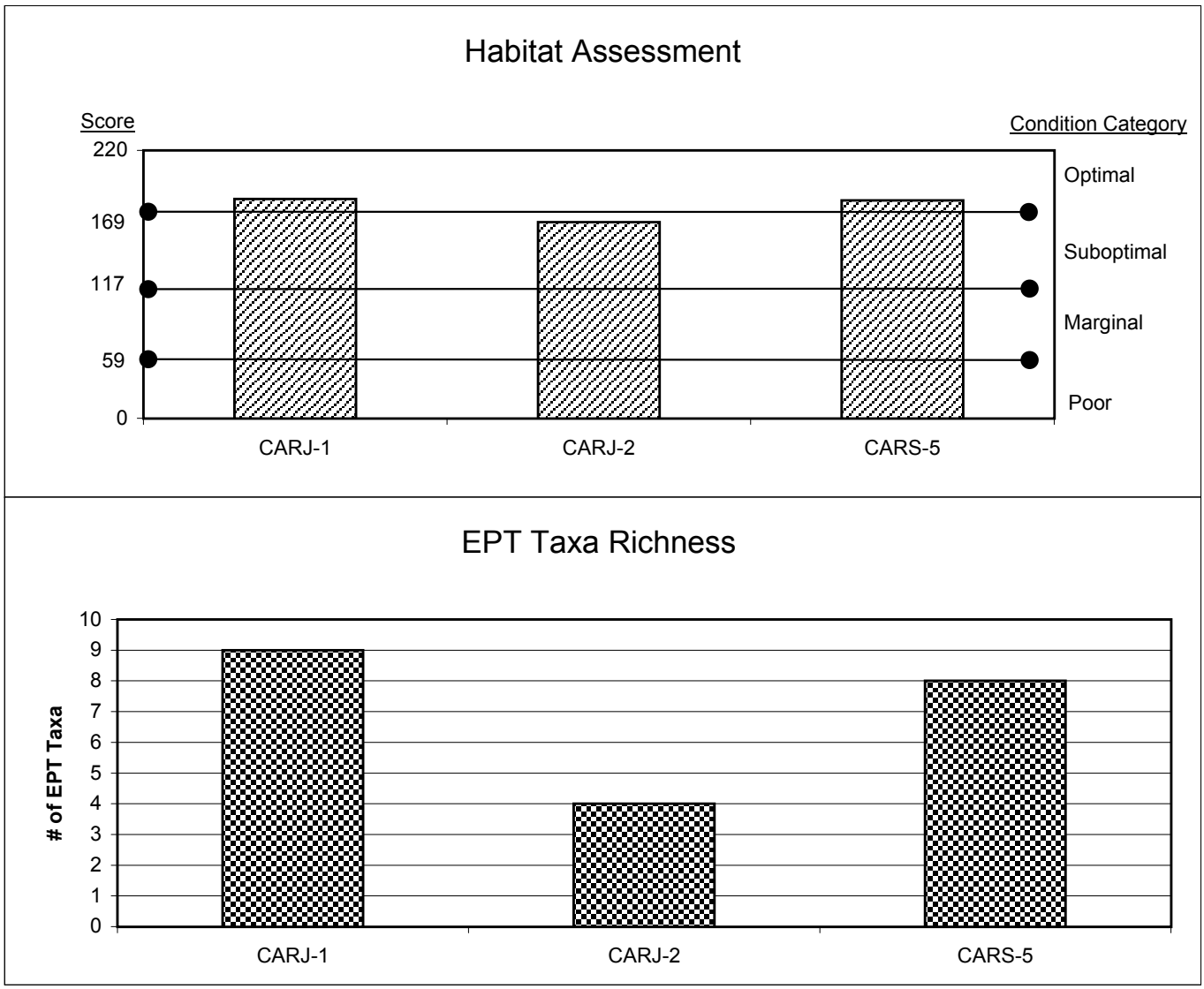


Figure 3
Aquatic Macroinvertebrate Assessment



APPENDIX A

Toxicity Test Report

ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
FIELD OPERATIONS DIVISION
ENVIRONMENTAL INDICATORS SECTION
BIOASSAY UNIT

TOXICITY TEST REPORT

1. GENERAL

NPDES PERMIT NO.: 0045969 DSN: 001 COUNTY: Shelby
Facility Name: Birmingham, Riverview WWTP
Receiving Water: Unnamed tributary to the Cahaba River
Total 24-Hour Flow: (1) 1.32 MGD (2) 1.27 MGD (3) 1.08 MGD
Test Type: Short-term Chronic Screening
Test Id. #: 980421-03

Test Organism	Date/Time Started YYMMDD HHMM	Date/Time Ended YYMMDD HHMM	Control Validity (Acceptable/Unacceptable)
Ceriodaphnia dubia	980422 1430	980429 1346	Acceptable
Pimephales promelas	980422 1430	980429 1345	Acceptable

2A. SUMMARY OF RESULTS FOR SCREENING TEST

Test Org.	Effluent Conc.	Test Number (1) Surv	(1) Repro	(1) Grow	(2) Surv	(2) Repro	(2) Grow	(3) Surv	(3) Repro	(3) Grow	(4) Surv	(4) Repro	(4) Grow
C. d.	100%	PASS	FAIL	N/A	-----	-----	-----	-----	-----	-----	-----	-----	-----
P. p.	100%	PASS	N/A	PASS	-----	-----	-----	-----	-----	-----	-----	-----	-----

3. LABORATORY ANALYSES OF UNDILUTED SAMPLES(S)

Sample Id.	pH su	Alkalinity mg/L as CaCO3	Hardness mg/L as CaCO3	Conductivity umhos/cm @ °C	TRC mg/L
980421-03	7.8	81	100	381 at 24.3	-----
980423-03	7.7	76	97	377 at 25.0	-----
980425-03	7.6	74	73	368 at 24.6	-----

4. SAMPLE COLLECTION:

Were split samples collected?: no
Were samples collected as specified in NPDES Permit (Location and/or Type)? yes

Sample Id.	Sample(s) Collected YYMMDD HHMM to YYMMDD HHMM	Arrival Temp (°C)	Used in Test(s) YYMMDD to YYMMDD
980421-03	980420 1430 to 980421 1400	4	980422 to 980423
980423-03	980422 0900 to 980423 0845	1	980424 to 980425
980425-03	980424 0900 to 980425 0845	1	980426 to 980428

5.CONTROL/DILUTION WATER

Carboy #	Preparation YYMMDD	Begin Use YYMMDD	Initial Water Chemistries pH (su)	Alkalinity (mg/L)	Hardness (mg/L)	Conductivity @ °C (umhos/cm)
C-3	980420	980422	8.2	68	75	282 at 23.9
C-5	980422	980427	8.1	68	75	283 at 24.6

PERMITTEE: Birmingham, Riverview WWTP NPDES #: 0045969 DSN: 001 TEST Id #: 980421-03

6. TOXICITY TEST INFORMATION

Test Organism	Organism Age	Organism Source	Org./Test Vessel	Replicates/Conc.
C.d.	6 hrs.	ADEM In-house cultures	1	10
P.p.	<24 hrs.	ADEM In-house cultures	12	4

Test Organism	Temperature Range (°C)	D.O. Range (mg/L)	pH Range (su)	Light Intensity Average (ft-c)
C.d.	*23.4 - 25.2	8.1 - 10.0	7.6 - 8.3	64
P.p.	*23.9 - 25.2	4.8 - 10.0	7.4 - 7.9	64

*below recommended test temperature range

7. FEEDING: Fed Daily

Brine Shrimp Fed 0.15 mL Suspension of Newly Hatched Larvae 2 Times Daily.
YCT Fed 0.15 mL Suspension Containing 1800 mg/L TSS Daily.
Algae Fed 0.15 mL Suspension Containing 3.4×10^7 Algal Cells/mL Daily.
*3.2×10^7 algal cells/ml on 980427-980428

8. REFERENCE TOXICANT TESTS

TOXICANT - Sodium Chloride (NaCl)

Test Organism	Test Date YYMMDD	Results LC50 (mg/L)	95% Confidence Interval (mg/L)
C.d.	980331	1530.4	1354.09/1729.67
P.p.	980331	6701.66	6451.19/6961.85

9. TEST CONDITION VARIABILITY

A. Deviations From Standard Test Conditions: The test temperature was slightly below the recommended test temperature range. There was a 20 minute power outage on 4/22/98. One of the composite samples was collected at a different time of day than the other two samples due to travel time. These deviations did not appear to affect test results.

B. Test Solution Manipulations or Test Modifications

- ☐ Dechlorination
- ☐ Aeration during the test
- ☐ Aeration prior to test initiation or sample renewal
- ☐ Filtration
- ☐ pH adjustment
- ☒ NO sample modifications

PERMITTEE: Birmingham, Riverview WWTP NPDES #: 0045969 DSN: 001 TEST Id #: 980421-03

11. CHRONIC SCREENING TOXICITY TESTS RESULTS **TEST ORGANISM: Ceriodaphnia dubia**

Test Validity:
Is survival in the CONTROL ≥ 80%? Yes
Are Average Neonates/Surviving Female in the CONTROL ≥ 15.0? Yes
Did 60% of the CONTROL Females Produce Their Third Brood? Yes

MORTALITY **CHRONIC TOXICITY INDICATED? PASS**

Solution Concentration (%)	% Survival at 7 days
Control (0%)	90
100%	90

STATISTICAL ANALYSES (Using proportion surviving):	COMMENTS:
☒ No Statistical Analysis Necessary	

REPRODUCTION **CHRONIC TOXICITY INDICATED? FAIL**

Solution Concentration (%)	Reproduction (Average # young /female)
Control (0%)	30.2
10%	16.7

STATISTICAL ANALYSES (Using number of neonates):

☐ No Statistical Analysis Necessary

Shapiro Wilk's Test (Normality)
Test Statistic: 0.9200 Critical Value: 0.8680 (Parametric)
Normally Distributed ☒ Yes (if test stat is > critical value) GOTO VARIANCE F-TEST
☐ No (if test stat is < critical value) GOTO WILCOXON RANK SUM TEST

F-TEST
F Statistic: 2.9339 Critical F: 6.5411
Variance ☒ Equal (if f stat is < critical f) GOTO T-TEST
☐ Unequal (if f stat is > critical f) GOTO MODIFIED T-TEST

T-TEST
t Statistic: 3.4835 Critical t value: 1.7341
Significant Difference ☒ YES (if t stat is > critical t) FAIL
☐ NO (if t stat is < critical t) PASS

COMMENTS:

PERMITTEE: Birmingham, Riverview WWTP NPDES #: 0045969 DSN: 001 TEST Id #: 980421-03

11. CHRONIC SCREENING TOXICITY TESTS RESULTS **TEST ORGANISM: Pimephales promelas**

Test Validity: Is survival in the CONTROL ≥ 80%? Yes
Is mean dry weight of surviving CONTROL fish ≥ 0.25mg? Yes

MORTALITY **CHRONIC TOXICITY INDICATED? PASS**

Solution Concentration (%)	% Survival at 7 days
Control (0%)	98
10%	81

STATISTICAL ANALYSES (Using Survival data as proportion surviving that is arc sine transformed):

Shapiro Wilk's Test (Normality)
Test Statistic: 0.7996 Critical Value: 0.7490 (Parametric)
Normally Distributed ☒ Yes (if test stat is > critical value) GOTO VARIANCE F-TEST
☐ No (if test stat is < critical value) GOTO WILCOXON RANK SUM TEST

F-TEST
F Statistic: 30.0764 Critical F: 47.4672
Variance ☒ Equal (if f stat is < critical f) GOTO T-TEST
☐ Unequal (if f stat is > critical f) GOTO MODIFIED T-TEST

T-TEST
t Statistic: 1.0289 Critical t value: 1.9432
Significant Difference ☐ YES (if t stat is > critical t) FAIL
☒ NO (if t stat is < critical t) PASS

COMMENTS:

GROWTH **CHRONIC TOXICITY INDICATED? PASS**

Solution Concentration (%)	Mean dry weight (mg)
Control (0%)	0.735
10%	0.695

STATISTICAL ANALYSES (Using mean dry weights):

Shapiro Wilk's Test (Normality)
Test Statistic: 0.9494 Critical Value: 0.7490 (Parametric)
Normally Distributed ☒ Yes (if test stat is > critical value) GOTO VARIANCE F-TEST
☐ No (if test stat is < critical value) GOTO WILCOXON RANK SUM TEST

F-TEST
F Statistic: 5.400 Critical F: 47.4672
Variance ☒ Equal (if f stat is < critical f) GOTO T-TEST
☐ Unequal (if f stat is > critical f) GOTO MODIFIED T-TEST

T-TEST
t Statistic: 0.9258 Critical t value: 1.9432
Significant Difference ☐ YES (if t stat is > critical t) FAIL
☒ NO (if t stat is < critical t) PASS

COMMENTS:

Signature: _____ Date: _____

APPENDIX B

Chemical Analyses of Samples Collected for Toxicity Testing

Chemical Analysis of Samples Collected for Toxicity Testing

Facility Name: Birmingham – Riverview WWTP
Location: Shelby
NPDES #: 0045969 DSN: 001
Collection Date: 4/21/98

PARAMETER	Result	
Diazinon	U 0.02	µg/l
Ethion	U 0.02	µg/l
Malathion	U 0.06	µg/l
Methyl Parathion	U 0.024	µg/l
Parathion	U 0.03	µg/l
Phosdrin	U 0.100	µg/l

PARAMETER	Result	
Arsenic by Graphite Furnace	U 0.0100	mg/l
Cadmium by ICP	U 0.0030	mg/l
Chromium by ICP	U 0.015	mg/l
Copper by ICP	U 0.020	mg/l
Hexavalent Chromium	U 0.020	mg/l
Lead by Graphite Furnace	U 0.002	mg/l
Mercury-Automated-Cold-Vapor	U 0.0005	µg/l
Nickel by ICP	U 0.030	mg/l
Silver using ICP	U 0.015	mg/l
Zinc by ICP	0.057	mg/l
Dissolved Arsenic	U 0.0100	mg/l
Dissolved Cadmium	U 0.0030	mg/l
Dissolved Chromium	U 0.015	mg/l
Dissolved Copper	U 0.020	mg/l
Dissolved Lead	U 0.0020	mg/l
Dissolved Mercury	U 0.0005	µg/l
Dissolved Nickel	U 0.030	mg/l
Dissolved Silver	U 0.015	mg/l
Dissolved Zinc	0.046	mg/l

BOD	92.0	mg/l
TSS	1	mg/l
Ammonia	U 0.3	mg/l
CN	U 0.004	mg/l

U denotes results less than instrument detection limit.

APPENDIX C

Diurnal Field Parameters

Log File Name : carj1
Setup Date (MMDDYY) : 062998
Setup Time (HHMMSS) : 083834
Starting Date (MMDDYY) : 062998
Starting Time (HHMMSS) : 120000
Stopping Date (MMDDYY) : 070198
Stopping Time (HHMMSS) : 120000
Interval (HHMMSS) : 001500
Warmup : Enable

Date MMDDYY	Time HHMMSS	Temp degC	pH units	SpCond mS/cm	DO %Sat	DO mg/l	Depth feet	Batt volts
62998	120000	25.18	7.68	0.0038	96.6	7.93	-6.6	13.2
62998	121500	25.80	7.67	0.0023	60.5	4.92	-6.5	13.1
62998	123000	26.46	7.63	0.0022	59.5	4.78	-6.5	13.1
62998	124500	27.14	7.60	0.0020	59.5	4.72	-6.5	13.1
62998	130000	27.79	7.57	0.0018	59.3	4.65	-6.5	13.1
62998	131500	28.38	7.56	0.0018	58.8	4.56	-6.4	13.1
62998	133000	28.93	7.28	0.0017	63.7	4.89	-6.4	13.1
62998	134500	29.32	7.29	0.0016	63.4	4.83	-6.3	13.1
62998	140000	29.56	7.36	0.0017	91.6	6.96	-6.3	13.1
62998	141500	30.00	8.11	0.0043	99.0	7.47	-6.2	13.1
62998	143000	28.07	6.54	0.0014	90.3	7.04	-6.3	12.6
62998	144500	27.52	7.65	0.2520	90.7	7.13	-6.4	12.6
62998	150000	27.54	7.65	0.2520	89.4	7.03	-6.4	12.6
62998	151500	27.66	7.67	0.2520	91.0	7.14	-6.4	12.6
62998	153000	27.54	7.67	0.2520	91.0	7.16	-6.4	12.5
62998	154500	27.18	7.66	0.2540	93.1	7.37	-6.4	12.5
62998	160000	27.20	7.67	0.2540	91.3	7.22	-6.4	12.5
62998	161500	27.08	7.68	0.2540	91.3	7.24	-6.4	12.5
62998	163000	27.29	7.71	0.2530	91.5	7.23	-6.4	12.4
62998	164500	27.49	7.72	0.2530	92.2	7.25	-6.4	12.4
62998	170000	27.29	7.69	0.2530	91.3	7.21	-6.4	12.4
62998	171500	27.56	7.73	0.2530	91.9	7.22	-6.4	12.4
62998	173000	27.60	7.72	0.2520	91.8	7.21	-6.3	12.4
62998	174500	27.37	7.71	0.2520	90.7	7.15	-6.3	12.4
62998	180000	27.50	7.73	0.2520	90.8	7.14	-6.3	12.3
62998	181500	27.47	7.72	0.2530	91.3	7.19	-6.3	12.3
62998	183000	27.37	7.72	0.2530	91.7	7.23	-6.3	12.3

Date MMDDYY	Time HHMMSS	Temp degC	pH units	SpCond mS/cm	DO %Sat	DO mg/l	Depth feet	Batt volts
62998	184500	27.35	7.73	0.2520	90.9	7.17	-6.3	12.3
62998	190000	27.29	7.70	0.2530	90.8	7.17	-6.3	12.3
62998	191500	27.24	7.73	0.2520	91.4	7.23	-6.3	12.3
62998	193000	27.16	7.73	0.2510	90.1	7.13	-6.3	12.2
62998	194500	27.14	7.75	0.2520	92.2	7.31	-6.3	12.2
62998	200000	27.10	7.75	0.2520	91.9	7.28	-6.3	12.2
62998	201500	27.10	7.75	0.2520	92.1	7.30	-6.3	12.2
62998	203000	27.06	7.74	0.2520	90.9	7.21	-6.2	12.2
62998	204500	27.01	7.73	0.2520	90.3	7.17	-6.2	12.2
62998	210000	26.97	7.73	0.2520	89.8	7.13	-6.2	12.2
62998	211500	26.89	7.71	0.2520	89.2	7.10	-6.2	12.1
62998	213000	26.83	7.71	0.2520	89.5	7.12	-6.2	12.1
62998	214500	26.76	7.71	0.2510	88.8	7.08	-6.2	12.1
62998	220000	26.68	7.70	0.2510	88.7	7.08	-6.2	12.1
62998	221500	26.61	7.70	0.2510	87.7	7.01	-6.2	12.1
62998	223000	26.55	7.69	0.2510	88.4	7.07	-6.2	12.0
62998	224500	26.47	7.69	0.2510	87.8	7.04	-6.1	12.0
62998	230000	26.40	7.68	0.2510	88.1	7.07	-6.2	12.0
62998	231500	26.34	7.68	0.2510	87.8	7.05	-6.1	12.0
62998	233000	26.27	7.67	0.2510	87.1	7.01	-6.1	12.0
62998	234500	26.21	7.66	0.2510	87.0	7.01	-6.1	12.0
63098	0	26.13	7.66	0.2510	86.7	6.99	-6.1	11.9
63098	1500	26.10	7.65	0.2510	86.9	7.01	-6.1	11.9
63098	3000	26.06	7.66	0.2520	87.0	7.03	-6.1	11.9
63098	4500	26.00	7.66	0.2520	86.7	7.01	-6.1	11.9
63098	10000	25.95	7.65	0.2520	86.8	7.03	-6.1	11.9
63098	11500	25.89	7.64	0.2520	86.7	7.03	-6.1	11.7
63098	13000	25.83	7.64	0.2510	86.1	6.98	-6.1	11.9
63098	14500	25.78	7.64	0.2520	86.0	6.98	-6.1	11.9
63098	20000	25.72	7.63	0.2520	85.4	6.94	-6.1	11.9
63098	21500	25.67	7.63	0.2510	85.4	6.95	-6.1	11.8
63098	23000	25.61	7.62	0.2510	85.1	6.93	-6.1	11.8
63098	24500	25.55	7.61	0.2520	84.9	6.92	-6.1	11.8
63098	30000	25.52	7.62	0.2520	85.1	6.94	-6.1	11.8
63098	31500	25.48	7.61	0.2510	84.2	6.87	-6.1	11.8
63098	33000	25.42	7.60	0.2520	84.3	6.89	-6.1	11.8
63098	34500	25.39	7.60	0.2520	83.6	6.83	-6.1	11.8
63098	40000	25.35	7.59	0.2510	83.8	6.86	-6.1	11.7
63098	41500	25.31	7.58	0.2520	83.5	6.83	-6.1	11.7
63098	43000	25.26	7.58	0.2510	83.1	6.81	-6.1	11.7
63098	44500	25.20	7.57	0.2510	83.0	6.81	-6.1	11.7
63098	50000	25.16	7.57	0.2510	82.2	6.75	-6.1	11.7
63098	51500	25.13	7.56	0.2510	82.6	6.79	-6.1	11.7

Date MMDDYY	Time HHMMSS	Temp degC	pH units	SpCond mS/cm	DO %Sat	DO mg/l	Depth feet	Batt volts
63098	53000	25.09	7.56	0.2510	82.3	6.76	-6.1	11.7
63098	54500	25.05	7.55	0.2510	81.7	6.72	-6.1	11.7
63098	60000	25.02	7.54	0.2510	81.3	6.69	-6.1	11.7
63098	61500	24.98	7.54	0.2510	81.3	6.69	-6.1	11.7
63098	63000	24.96	7.54	0.2510	81.6	6.73	-6.1	11.7
63098	64500	24.96	7.54	0.2510	81.7	6.73	-6.1	11.6
63098	70000	24.94	7.54	0.2510	82.0	6.76	-6.1	11.7
63098	71500	24.94	7.53	0.2510	81.7	6.74	-6.1	11.6
63098	73000	24.94	7.54	0.2510	81.9	6.75	-6.1	11.6
63098	74500	24.94	7.54	0.2520	82.2	6.78	-6.1	11.7
63098	80000	24.94	7.53	0.2520	82.2	6.78	-6.1	11.7
63098	81500	24.94	7.54	0.2510	82.4	6.79	-6.1	11.6
63098	83000	24.98	7.54	0.2520	83.0	6.84	-6.2	11.7
63098	84500	25.03	7.54	0.2510	83.3	6.86	-6.2	11.7
63098	90000	25.11	7.54	0.2510	83.5	6.86	-6.3	11.8
63098	91500	25.24	7.53	0.2510	84.1	6.89	-6.3	11.8
63098	93000	25.33	7.54	0.2510	84.5	6.91	-6.3	11.8
63098	94500	25.37	7.54	0.2520	84.8	6.94	-6.3	11.8
63098	100000	25.44	7.55	0.2520	85.4	6.97	-6.3	11.8
63098	101500	25.54	7.56	0.2520	85.9	7.01	-6.3	11.9
63098	103000	25.54	7.56	0.2520	85.8	7.00	-6.3	11.9
63098	104500	25.67	7.57	0.2540	86.6	7.04	-6.3	11.9
63098	110000	25.95	7.59	0.2520	87.2	7.05	-6.3	11.9
63098	111500	26.15	7.60	0.2510	88.3	7.12	-6.3	11.9
63098	113000	26.32	7.61	0.2520	88.3	7.10	-6.3	11.9
63098	114500	26.49	7.61	0.2520	88.6	7.10	-6.3	11.9
63098	120000	26.34	7.58	0.2520	87.0	6.99	-6.3	11.7
63098	121500	26.19	7.57	0.2520	86.1	6.93	-6.2	11.9
63098	123000	26.15	7.57	0.2520	86.1	6.94	-6.3	11.9
63098	124500	26.29	7.57	0.2520	87.2	7.01	-6.3	11.9
63098	130000	26.49	7.60	0.2520	88.2	7.06	-6.3	11.9
63098	131500	26.89	7.62	0.2520	89.1	7.09	-6.3	11.9
63098	133000	26.97	7.63	0.2520	90.2	7.17	-6.2	11.9
63098	134500	27.03	7.62	0.2520	90.1	7.15	-6.2	11.9
63098	140000	26.99	7.63	0.2520	89.8	7.13	-6.2	11.8
63098	141500	26.78	7.61	0.2520	89.4	7.12	-6.2	11.8
63098	143000	26.74	7.61	0.2510	88.6	7.07	-6.2	11.8
63098	144500	26.97	7.64	0.2540	90.0	7.15	-6.2	11.7
63098	150000	27.14	7.66	0.2520	89.0	7.05	-6.2	11.8
63098	151500	27.10	7.66	0.2520	88.7	7.03	-6.2	11.8
63098	153000	26.99	7.64	0.2520	89.0	7.07	-6.2	11.8
63098	154500	27.04	7.64	0.2520	88.5	7.02	-6.2	11.8
63098	160000	27.20	7.67	0.2520	88.6	7.01	-6.1	11.6

Date MMDDYY	Time HHMMSS	Temp degC	pH units	SpCond mS/cm	DO %Sat	DO mg/l	Depth feet	Batt volts
63098	161500	27.24	7.67	0.2530	89.3	7.06	-6.1	11.8
63098	163000	27.39	7.70	0.2530	89.8	7.08	-6.1	11.8
63098	164500	27.27	7.69	0.2520	89.6	7.08	-6.1	11.8
63098	170000	27.24	7.69	0.2530	89.8	7.10	-6.1	11.8
63098	171500	27.25	7.70	0.2530	89.3	7.05	-6.1	11.8
63098	173000	27.25	7.69	0.2530	90.7	7.17	-6.1	11.8
63098	174500	27.33	7.72	0.2530	90.4	7.13	-6.1	11.7
63098	180000	27.41	7.74	0.2530	90.6	7.14	-6.1	11.7
63098	181500	27.41	7.74	0.2530	90.7	7.15	-6.1	11.7
63098	183000	27.35	7.74	0.2540	91.1	7.18	-6.0	11.7
63098	184500	27.27	7.73	0.2530	89.1	7.04	-6.0	11.7
63098	190000	27.16	7.71	0.2530	89.6	7.09	-6.0	11.7
63098	191500	27.16	7.70	0.2530	88.4	7.00	-6.0	11.7
63098	193000	27.18	7.72	0.2530	90.2	7.14	-6.0	11.6
63098	194500	27.12	7.72	0.2530	90.0	7.13	-6.0	11.6
63098	200000	26.99	7.73	0.2520	88.9	7.06	-6.0	11.6
63098	201500	27.03	7.75	0.2510	89.2	7.08	-5.9	11.6
63098	203000	27.03	7.74	0.2510	87.9	6.98	-5.9	11.5
63098	204500	26.97	7.73	0.2520	88.9	7.06	-5.8	11.4
63098	210000	26.85	7.70	0.2520	88.3	7.03	-5.8	11.5
63098	211500	26.78	7.71	0.2520	87.3	6.96	-5.8	11.4
63098	213000	26.74	7.72	0.2510	87.5	6.98	-5.8	11.4
63098	214500	26.68	7.71	0.2510	87.7	7.00	-5.8	11.4
63098	220000	26.63	7.71	0.2510	87.9	7.03	-5.8	11.3
63098	221500	26.57	7.70	0.2510	87.2	6.98	-5.8	11.3
63098	223000	26.51	7.69	0.2520	87.5	7.01	-5.8	11.3
63098	224500	26.47	7.69	0.2510	87.3	6.99	-5.8	11.3
63098	230000	26.42	7.68	0.2520	87.1	6.98	-5.8	11.3
63098	231500	26.34	7.66	0.2520	86.7	6.97	-5.8	11.3
63098	233000	26.27	7.66	0.2510	85.8	6.91	-5.8	11.3
63098	234500	26.23	7.65	0.2520	86.0	6.92	-5.8	11.3
70198	0	26.19	7.65	0.2510	85.7	6.91	-5.8	11.2
70198	1500	26.13	7.66	0.2510	86.6	6.98	-5.8	11.3
70198	3000	26.10	7.65	0.2520	86.3	6.97	-5.8	11.2
70198	4500	26.04	7.64	0.2520	86.2	6.97	-5.8	11.2
70198	10000	26.02	7.64	0.2520	86.0	6.95	-5.8	11.2
70198	11500	25.98	7.63	0.2520	85.6	6.92	-5.8	11.2
70198	13000	25.93	7.62	0.2520	84.9	6.87	-5.8	11.2
70198	14500	25.87	7.61	0.2520	84.5	6.84	-5.8	11.2
70198	20000	25.82	7.61	0.2520	84.6	6.86	-5.8	11.2
70198	21500	25.78	7.61	0.2510	84.4	6.85	-5.8	11.2
70198	23000	25.74	7.60	0.2510	84.3	6.84	-5.8	11.1
70198	24500	25.68	7.59	0.2520	83.8	6.81	-5.8	11.1

Date MMDDYY	Time HHMMSS	Temp degC	pH units	SpCond mS/cm	DO %Sat	DO mg/l	Depth feet	Batt volts
70198	30000	25.65	7.58	0.2510	83.3	6.77	-5.8	11.1
70198	31500	25.59	7.57	0.2520	82.7	6.74	-5.8	11.1
70198	33000	25.54	7.56	0.2520	82.5	6.72	-5.8	11.1
70198	34500	25.50	7.55	0.2520	81.9	6.68	-5.8	11.1
70198	40000	25.44	7.55	0.2520	82.2	6.71	-5.8	11.1
70198	41500	25.40	7.55	0.2520	82.1	6.71	-5.8	11.1
70198	43000	25.37	7.55	0.2520	81.8	6.69	-5.8	11.0
70198	44500	25.33	7.54	0.2520	81.9	6.70	-5.8	11.0
70198	50000	25.29	7.54	0.2520	81.7	6.69	-5.8	11.0
70198	51500	25.26	7.53	0.2520	81.3	6.66	-5.8	11.0
70198	53000	25.20	7.52	0.2520	79.8	6.55	-5.8	11.0
70198	54500	25.20	7.53	0.2520	81.1	6.65	-5.8	11.0
70198	60000	25.16	7.54	0.2520	80.9	6.64	-5.8	11.0
70198	61500	25.14	7.53	0.2520	81.4	6.69	-5.8	11.0
70198	63000	25.11	7.53	0.2520	81.6	6.70	-5.8	10.9
70198	64500	25.07	7.52	0.2520	80.9	6.65	-5.8	10.9
70198	70000	25.07	7.51	0.2520	81.0	6.66	-5.8	10.9
70198	71500	25.05	7.50	0.2520	80.9	6.65	-5.8	10.9
70198	73000	25.03	7.51	0.2520	81.4	6.70	-5.8	10.9
70198	74500	25.02	7.51	0.2520	81.3	6.69	-5.8	10.9
70198	80000	25.00	7.50	0.2520	81.1	6.68	-5.8	10.9
70198	81500	25.00	7.51	0.2520	81.6	6.72	-5.8	10.9
70198	83000	25.00	7.51	0.2520	81.6	6.72	-5.8	10.9
70198	84500	25.02	7.51	0.2520	82.1	6.75	-5.9	10.9
70198	90000	25.07	7.52	0.2520	82.7	6.80	-5.9	10.8
70198	91500	25.14	7.52	0.2520	83.1	6.82	-5.9	11.0
70198	93000	25.20	7.53	0.2520	83.3	6.83	-5.9	11.0
70198	94500	25.22	7.53	0.2520	83.1	6.82	-5.9	11.0
70198	100000	25.26	7.52	0.2530	83.3	6.82	-5.9	11.0
70198	101500	25.29	7.52	0.2530	83.1	6.81	-5.9	11.0
70198	103000	25.37	7.52	0.2520	83.0	6.79	-5.9	11.1
70198	104500	25.40	7.51	0.2520	82.7	6.76	-5.9	11.0
70198	110000	25.52	7.51	0.2530	82.5	6.73	-6.0	11.0
70198	111500	25.65	7.51	0.2530	83.0	6.76	-5.9	11.0
70198	113000	25.76	7.52	0.2530	83.8	6.80	-5.9	11.0
70198	114500	26.00	7.51	0.2540	83.8	6.78	-5.9	11.0
70198	120000	26.25	7.50	0.2530	83.4	6.71	-5.9	11.0

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Log File Name : carj2
Setup Date (MMDDYY) : 062998
Setup Time (HHMMSS) : 083454
Starting Date (MMDDYY) : 062998
Starting Time (HHMMSS) : 120000
Stopping Date (MMDDYY) : 070198
Stopping Time (HHMMSS) : 120000
Interval (HHMMSS) : 001500
Warmup : Enable

Date	Time	Temp	pH	SpCond	DO	DO	Depth	Batt
MMDDYY	HHMMSS	degC	units	mS/cm	%Sat	mg/l	feet	volts
62998	120000	25.22	7.64	0.002	92.8	7.62	0.4	12.8
62998	121500	25.75	7.72	0.002	94.2	7.65	0.5	12.8
62998	123000	26.37	7.76	0.002	94.1	7.56	0.5	12.8
62998	124500	27.07	7.79	0.002	94.1	7.47	0.5	12.8
62998	130000	27.76	7.80	0.002	94.0	7.37	0.6	12.8
62998	131500	28.45	7.84	0.002	94.1	7.29	0.6	12.8
62998	133000	29.08	7.93	0.002	90.2	6.91	0.6	12.8
62998	134500	29.49	7.82	0.002	82.6	6.28	0.6	12.8
62998	140000	29.71	7.79	0.002	88.6	6.71	0.6	12.8
62998	141500	30.36	7.38	0.351	91.9	6.88	0.9	12.8
62998	143000	30.40	7.28	0.002	93.7	7.01	0.8	12.8
62998	144500	30.62	7.51	0.003	93.6	6.98	1.0	12.8
62998	150000	27.34	7.70	0.300	92.0	7.26	-0.5	12.4
62998	151500	27.53	7.70	0.302	90.1	7.08	-0.2	12.4
62998	153000	27.49	7.71	0.295	89.1	7.01	-0.2	12.4
62998	154500	27.69	7.74	0.314	90.0	7.05	-0.2	12.4
62998	160000	27.84	7.75	0.326	88.8	6.95	-0.2	12.5
62998	161500	28.06	7.79	0.329	92.1	7.17	-0.3	12.3
62998	163000	28.06	7.80	0.344	91.9	7.16	-0.3	12.3
62998	164500	28.11	7.80	0.363	91.8	7.14	-0.3	12.3
62998	170000	28.13	7.82	0.374	91.5	7.11	-0.4	12.3
62998	171500	28.09	7.83	0.355	91.9	7.15	-0.3	12.3
62998	173000	28.02	7.83	0.356	91.1	7.10	-0.3	12.3
62998	174500	27.98	7.82	0.348	91.9	7.17	-0.3	12.3
62998	180000	27.86	7.79	0.358	88.2	6.90	-0.3	12.3
62998	181500	27.76	7.80	0.330	90.0	7.04	-0.3	12.3
62998	183000	27.74	7.80	0.327	89.9	7.04	-0.3	12.3
62998	184500	27.73	7.78	0.345	86.9	6.81	-0.3	12.3
62998	190000	27.69	7.76	0.350	86.5	6.78	-0.3	12.3
62998	191500	27.61	7.76	0.330	85.8	6.74	-0.2	12.1
62998	193000	27.56	7.73	0.336	84.3	6.63	-0.2	12.3

Date	Time	Temp	pH	SpCond	DO	DO	Depth	Batt
MMDDYY	HHMMSS	degC	units	mS/cm	%Sat	mg/l	feet	volts
62998	194500	27.53	7.74	0.338	84.7	6.66	-0.2	12.2
62998	200000	27.46	7.72	0.330	84.7	6.67	-0.2	12.2
62998	201500	27.44	7.71	0.338	82.9	6.53	-0.2	12.2
62998	203000	27.38	7.70	0.345	82.8	6.52	-0.1	12.2
62998	204500	27.30	7.70	0.336	82.4	6.50	-0.1	12.2
62998	210000	27.28	7.68	0.334	81.8	6.46	-0.1	12.1
62998	211500	27.18	7.69	0.329	82.4	6.52	-0.1	12.1
62998	213000	27.13	7.67	0.332	80.2	6.35	0.0	12.1
62998	214500	27.09	7.66	0.327	80.1	6.35	0.0	12.1
62998	220000	27.03	7.64	0.328	78.6	6.23	0.0	12.1
62998	221500	27.00	7.63	0.335	79.2	6.28	0.0	12.0
62998	223000	26.94	7.61	0.331	76.5	6.08	0.0	12.0
62998	224500	26.83	7.63	0.322	78.3	6.23	0.0	12.0
62998	230000	26.80	7.64	0.326	77.0	6.13	0.0	12.0
62998	231500	26.76	7.60	0.326	74.8	5.97	0.1	12.0
62998	233000	26.69	7.60	0.333	76.1	6.08	0.1	12.0
62998	234500	26.71	7.59	0.332	75.0	5.99	0.1	11.9
63098	0	26.63	7.59	0.339	74.7	5.97	0.1	11.9
63098	1500	26.59	7.60	0.341	74.3	5.94	0.1	11.9
63098	3000	26.56	7.58	0.334	73.6	5.89	0.1	11.9
63098	4500	26.55	7.58	0.337	73.9	5.91	0.1	11.9
63098	10000	26.48	7.58	0.340	73.2	5.86	0.1	11.8
63098	11500	26.45	7.57	0.338	73.3	5.88	0.2	11.8
63098	13000	26.41	7.57	0.340	73.1	5.86	0.1	11.8
63098	14500	26.37	7.57	0.346	73.2	5.88	0.2	11.8
63098	20000	26.31	7.57	0.350	72.3	5.81	0.2	11.8
63098	21500	26.29	7.56	0.350	72.3	5.81	0.2	11.8
63098	23000	26.23	7.57	0.353	73.4	5.90	0.2	11.8
63098	24500	26.17	7.56	0.355	72.4	5.83	0.2	11.8
63098	30000	26.16	7.56	0.355	71.3	5.75	0.2	11.7
63098	31500	26.10	7.56	0.355	73.4	5.92	0.2	11.7
63098	33000	26.06	7.57	0.355	71.9	5.80	0.2	11.7
63098	34500	26.04	7.57	0.355	70.7	5.71	0.2	11.7
63098	40000	26.02	7.56	0.353	71.0	5.74	0.2	11.7
63098	41500	25.93	7.54	0.351	71.0	5.74	0.2	11.7
63098	43000	25.92	7.56	0.347	70.9	5.74	0.2	11.7
63098	44500	25.89	7.56	0.345	71.7	5.81	0.2	11.7
63098	50000	25.84	7.56	0.342	71.9	5.83	0.2	11.7
63098	51500	25.77	7.54	0.341	71.8	5.82	0.3	11.6
63098	53000	25.75	7.55	0.338	71.7	5.82	0.2	11.7
63098	54500	25.66	7.54	0.337	69.4	5.64	0.3	11.6
63098	60000	25.62	7.53	0.335	69.6	5.66	0.3	11.6
63098	61500	25.59	7.53	0.334	68.8	5.60	0.3	11.6

Date	Time	Temp	pH	SpCond	DO	DO	Depth	Batt
MMDDYY	HHMMSS	degC	units	mS/cm	%Sat	mg/l	feet	volts
63098	63000	25.50	7.49	0.331	66.9	5.46	0.3	11.6
63098	64500	25.47	7.49	0.331	67.0	5.47	0.3	11.6
63098	70000	25.44	7.48	0.331	66.6	5.44	0.3	11.6
63098	71500	25.38	7.47	0.329	67.3	5.50	0.3	11.6
63098	73000	25.37	7.47	0.327	67.1	5.49	0.3	11.6
63098	74500	25.28	7.48	0.313	70.5	5.77	0.3	11.6
63098	80000	25.17	7.50	0.322	71.1	5.83	0.3	11.6
63098	81500	25.21	7.51	0.320	72.1	5.91	0.3	11.6
63098	83000	25.33	7.51	0.331	71.9	5.88	0.3	11.6
63098	84500	25.36	7.53	0.330	72.6	5.93	0.2	11.6
63098	90000	25.42	7.51	0.328	70.0	5.72	0.2	11.6
63098	91500	25.55	7.55	0.348	75.0	6.11	0.2	11.6
63098	93000	25.54	7.54	0.340	73.7	6.01	0.1	11.6
63098	94500	25.57	7.55	0.331	77.3	6.30	0.1	11.7
63098	100000	25.85	7.59	0.351	78.3	6.35	0.0	11.7
63098	101500	25.94	7.61	0.343	81.0	6.55	0.0	11.7
63098	103000	26.12	7.61	0.353	82.8	6.67	0.0	11.7
63098	104500	26.24	7.62	0.348	83.3	6.70	0.0	11.7
63098	110000	26.22	7.65	0.326	86.0	6.93	-0.1	11.8
63098	111500	26.20	7.65	0.322	86.8	6.99	-0.1	11.8
63098	113000	26.25	7.64	0.324	83.4	6.71	-0.1	11.8
63098	114500	26.44	7.66	0.316	87.9	7.04	-0.1	11.8
63098	120000	26.67	7.68	0.301	88.8	7.09	-0.2	11.8
63098	121500	26.84	7.68	0.307	90.0	7.16	-0.2	11.8
63098	123000	26.82	7.69	0.304	89.4	7.12	-0.2	11.8
63098	124500	26.92	7.69	0.307	88.8	7.06	-0.2	11.7
63098	130000	27.13	7.71	0.317	91.0	7.21	-0.2	11.7
63098	131500	27.35	7.71	0.340	89.0	7.02	-0.2	11.7
63098	133000	27.53	7.72	0.345	88.0	6.92	-0.2	11.8
63098	134500	27.61	7.73	0.347	87.7	6.89	-0.2	11.8
63098	140000	27.84	7.75	0.337	89.9	7.03	-0.3	11.8
63098	141500	27.80	7.74	0.329	89.8	7.02	-0.2	11.7
63098	143000	27.78	7.75	0.334	89.0	6.96	-0.2	11.7
63098	144500	27.90	7.77	0.351	90.2	7.05	-0.2	11.6
63098	150000	27.84	7.79	0.370	89.5	7.00	-0.2	11.7
63098	151500	27.82	7.77	0.373	89.0	6.96	-0.3	11.7
63098	153000	27.96	7.81	0.365	91.4	7.13	-0.2	11.6
63098	154500	28.04	7.82	0.361	92.2	7.18	-0.2	11.6
63098	160000	27.90	7.83	0.358	92.1	7.19	-0.2	11.6
63098	161500	27.78	7.79	0.360	90.3	7.06	-0.2	11.6
63098	163000	28.00	7.82	0.356	91.8	7.16	-0.2	11.6
63098	164500	27.96	7.81	0.362	90.5	7.06	-0.2	11.6
63098	170000	27.96	7.81	0.362	90.2	7.04	-0.2	11.6

Date	Time	Temp	pH	SpCond	DO	DO	Depth	Batt
MMDDYY	HHMMSS	degC	units	mS/cm	%Sat	mg/l	feet	volts
63098	171500	27.94	7.80	0.354	90.5	7.07	-0.2	11.6
63098	173000	27.88	7.80	0.350	90.3	7.06	-0.2	11.6
63098	174500	27.90	7.81	0.349	90.0	7.03	-0.2	11.6
63098	180000	27.84	7.80	0.354	88.5	6.92	-0.2	11.6
63098	181500	27.89	7.80	0.354	90.3	7.05	-0.2	11.5
63098	183000	27.85	7.80	0.352	90.5	7.07	-0.2	11.5
63098	184500	27.75	7.79	0.348	87.6	6.86	-0.1	11.5
63098	190000	27.65	7.76	0.349	86.4	6.78	-0.1	11.5
63098	191500	27.57	7.75	0.336	85.6	6.73	-0.1	11.5
63098	193000	27.49	7.75	0.314	85.9	6.76	-0.1	11.5
63098	194500	27.47	7.73	0.323	84.6	6.66	0.0	11.5
63098	200000	27.42	7.71	0.330	82.6	6.50	0.2	11.3
63098	201500	27.26	7.76	0.325	84.9	6.71	0.2	11.4
63098	203000	27.21	7.75	0.329	84.3	6.67	0.2	11.3
63098	204500	27.15	7.73	0.321	82.3	6.52	0.2	11.4
63098	210000	27.11	7.71	0.325	81.8	6.48	0.2	11.4
63098	211500	27.01	7.70	0.304	81.9	6.50	0.2	11.4
63098	213000	26.96	7.68	0.314	80.1	6.36	0.2	11.4
63098	214500	26.91	7.70	0.301	80.5	6.40	0.2	11.4
63098	220000	26.87	7.66	0.309	79.2	6.30	0.2	11.3
63098	221500	26.82	7.64	0.314	77.1	6.14	0.2	11.3
63098	223000	26.79	7.63	0.315	78.4	6.25	0.2	11.3
63098	224500	26.75	7.64	0.317	77.8	6.20	0.2	11.1
63098	230000	26.75	7.64	0.330	77.0	6.14	0.2	11.3
63098	231500	26.69	7.65	0.331	78.6	6.28	0.2	11.3
63098	233000	26.66	7.62	0.324	76.6	6.11	0.2	11.3
63098	234500	26.61	7.66	0.334	78.6	6.29	0.2	11.3
70198	0	26.59	7.65	0.334	78.1	6.24	0.2	11.2
70198	1500	26.57	7.64	0.347	77.1	6.17	0.2	11.2
70198	3000	26.52	7.63	0.340	76.5	6.12	0.2	11.2
70198	4500	26.46	7.61	0.334	75.2	6.03	0.2	11.2
70198	10000	26.41	7.65	0.346	76.9	6.17	0.2	11.2
70198	11500	26.41	7.62	0.344	75.5	6.06	0.2	11.2
70198	13000	26.37	7.61	0.341	74.3	5.96	0.3	11.2
70198	14500	26.30	7.61	0.338	74.7	6.01	0.3	11.2
70198	20000	26.28	7.60	0.343	74.0	5.95	0.3	11.1
70198	21500	26.20	7.59	0.338	73.9	5.95	0.3	11.1
70198	23000	26.14	7.61	0.329	75.3	6.07	0.3	11.1
70198	24500	26.15	7.58	0.336	73.5	5.92	0.3	11.1
70198	30000	26.08	7.58	0.329	74.9	6.04	0.2	11.3
70198	31500	26.03	7.57	0.331	73.8	5.96	0.3	11.1
70198	33000	25.98	7.55	0.330	72.2	5.84	0.3	11.1
70198	34500	25.98	7.55	0.329	71.9	5.81	0.3	11.1

Date	Time	Temp	pH	SpCond	DO	DO	Depth	Batt
MMDDYY	HHMMSS	degC	units	mS/cm	%Sat	mg/l	feet	volts
70198	40000	25.91	7.55	0.329	72.1	5.84	0.3	11.1
70198	41500	25.87	7.52	0.326	70.6	5.72	0.3	11.1
70198	43000	25.81	7.53	0.318	72.2	5.86	0.3	11.0
70198	44500	25.81	7.51	0.325	70.3	5.70	0.3	11.0
70198	50000	25.82	7.50	0.327	69.8	5.66	0.3	11.0
70198	51500	25.71	7.49	0.315	69.8	5.68	0.3	11.0
70198	53000	25.61	7.50	0.311	70.1	5.71	0.3	11.0
70198	54500	25.57	7.49	0.311	69.6	5.67	0.3	11.0
70198	60000	25.44	7.51	0.295	72.4	5.92	0.3	11.0
70198	61500	25.38	7.50	0.299	72.4	5.91	0.4	11.0
70198	63000	25.35	7.50	0.302	71.9	5.88	0.4	11.0
70198	64500	25.23	7.51	0.281	74.1	6.07	0.4	11.0
70198	70000	25.20	7.52	0.281	75.6	6.20	0.4	10.9
70198	71500	25.19	7.52	0.283	75.3	6.18	0.4	11.0
70198	73000	25.19	7.53	0.282	76.7	6.29	0.5	10.9
70198	74500	25.21	7.54	0.287	77.1	6.32	0.5	10.9
70198	80000	25.20	7.54	0.290	77.2	6.33	0.5	10.9
70198	81500	25.16	7.54	0.281	78.5	6.45	0.5	10.9
70198	83000	25.14	7.53	0.277	78.3	6.43	0.5	10.9
70198	84500	25.10	7.53	0.273	78.7	6.47	0.5	10.9
70198	90000	25.25	7.56	0.292	79.8	6.54	0.4	10.9
70198	91500	25.29	7.56	0.293	79.5	6.51	0.4	10.8
70198	93000	25.33	7.57	0.288	81.2	6.64	0.4	10.8
70198	94500	25.51	7.58	0.296	81.9	6.68	0.4	10.8
70198	100000	25.64	7.59	0.300	82.5	6.71	0.3	10.8
70198	101500	25.77	7.60	0.305	83.2	6.75	0.3	10.9
70198	103000	25.80	7.61	0.301	83.3	6.76	0.2	10.8
70198	104500	25.74	7.59	0.302	82.5	6.70	0.2	10.8
70198	110000	25.95	7.61	0.297	82.3	6.66	0.2	10.8
70198	111500	26.02	7.61	0.298	82.3	6.65	0.1	10.9
70198	113000	26.04	7.60	0.296	83.1	6.71	0.1	10.8
70198	114500	26.24	7.60	0.298	84.5	6.80	0.1	10.8
70198	120000	26.12	7.60	0.287	85.8	6.92	0.0	10.8

Recovery finished at 070298 085455

Log File Name : cars3
Setup Date (MMDDYY) : 062998
Setup Time (HHMMSS) : 081411
Starting Date (MMDDYY) : 062998
Starting Time (HHMMSS) : 120000
Stopping Date (MMDDYY) : 070198
Stopping Time (HHMMSS) : 120000
Interval (HHMMSS) : 001500
Warmup (HHMMSS) : 000200
Parameter setup or calibration changed at 062998 081424

Date	Time	Temp	SpCond	pH	DO	Dep25	IBatt	DO%
MMDDYY	HHMMSS	øC	mS/cm	Units	mg/l	feet	Volts	Sat
62998	120000	27.66	1.700	0.00	7.41	2.5	12.2	94.9
62998	121500	30.25	0.000	0.60	8.00	2.5	12.1	106.6
62998	123000	29.11	0.562	0.00	7.70	2.3	12.1	100.8
62998	124500	29.57	0.000	0.00	7.74	2.3	12.1	102.0
62998	130000	27.15	0.264	7.35	5.67	2.2	12.1	71.7
62998	131500	27.21	0.264	7.52	5.70	2.2	12.2	72.0
62998	133000	27.21	0.263	7.51	5.47	2.2	12.1	69.2
62998	134500	27.26	0.264	7.52	5.49	2.2	12.2	69.4
62998	140000	27.24	0.263	7.51	5.61	2.2	12.1	71.0
62998	141500	27.29	0.264	7.52	5.66	2.2	12.1	71.6
62998	143000	27.39	0.264	7.53	5.76	2.2	12.2	73.0
62998	144500	27.45	0.264	7.53	5.62	2.2	12.2	71.3
62998	150000	27.48	0.265	7.53	5.70	2.2	12.2	72.4
62998	151500	27.52	0.264	7.52	5.57	2.1	12.2	70.8
62998	153000	27.59	0.265	7.52	5.64	2.1	12.1	71.8
62998	154500	27.67	0.264	7.52	5.71	2.1	12.1	72.8
62998	160000	27.65	0.265	7.52	5.68	2.1	12.1	72.4
62998	161500	27.74	0.264	7.54	5.63	2.1	12.1	71.8
62998	163000	27.54	0.264	7.52	5.95	2.1	12.1	75.7
62998	164500	27.66	0.265	7.53	5.84	2.1	12.1	74.5
62998	170000	27.79	0.263	7.53	6.00	2.1	12.1	76.6
62998	171500	27.79	0.263	7.52	5.86	2.0	12.1	74.9
62998	173000	27.68	0.263	7.52	6.03	2.1	12.1	76.9
62998	174500	27.92	0.263	7.52	5.86	2.0	12.1	75.1
62998	180000	27.91	0.263	7.55	5.94	2.0	12.1	76.0
62998	181500	27.93	0.261	7.53	5.89	2.1	12.1	75.4
62998	183000	27.84	0.263	7.53	5.89	2.1	12.1	75.3
62998	184500	27.87	0.263	7.52	5.93	2.1	12.1	75.9
62998	190000	27.80	0.263	7.51	5.96	2.1	12.1	76.2
62998	191500	27.84	0.263	7.52	5.98	2.1	12.1	76.5
62998	193000	27.86	0.263	7.51	5.96	2.1	12.1	76.3
62998	194500	27.92	0.264	7.51	5.90	2.1	12.1	75.6

Date	Time	Temp	SpCond	pH	DO	Dep25	IBatt	DO%
MMDDYY	HHMMSS	øC	mS/cm	Units	mg/l	feet	Volts	Sat
62998	200000	27.88	0.264	7.51	5.91	2.1	12.1	75.6
62998	201500	27.92	0.264	7.48	5.82	2.1	12.1	74.5
62998	203000	27.92	0.264	7.51	5.75	2.1	12.0	73.7
62998	204500	27.96	0.264	7.51	5.82	2.1	12.1	74.6
62998	210000	27.91	0.263	7.50	5.70	2.1	12.1	73.0
62998	211500	27.92	0.264	7.50	5.79	2.1	12.1	74.1
62998	213000	28.05	0.264	7.48	5.56	2.1	12.1	71.4
62998	214500	27.93	0.263	7.49	5.72	2.1	12.1	73.3
62998	220000	28.03	0.262	7.49	5.71	2.1	12.1	73.3
62998	221500	28.00	0.261	7.50	5.65	2.1	12.1	72.4
62998	223000	27.96	0.261	7.49	5.68	2.1	12.1	72.8
62998	224500	27.95	0.261	7.49	5.50	2.1	12.0	70.5
62998	230000	27.97	0.260	7.48	5.58	2.1	12.0	71.5
62998	231500	27.99	0.261	7.47	5.47	2.1	12.1	70.1
62998	233000	28.07	0.263	7.48	5.48	2.1	12.1	70.4
62998	234500	28.03	0.264	7.52	5.48	2.1	11.9	70.3
63098	0	27.99	0.265	7.47	5.42	2.1	12.0	69.4
63098	1500	27.94	0.267	7.51	5.45	2.1	12.1	69.8
63098	3000	27.90	0.268	7.52	5.54	2.1	12.1	70.9
63098	4500	27.89	0.269	7.49	5.28	2.1	12.0	67.6
63098	10000	27.84	0.269	7.55	5.62	2.2	12.1	71.9
63098	11500	27.79	0.268	7.51	5.55	2.2	12.1	70.9
63098	13000	27.73	0.269	7.50	5.34	2.2	12.0	68.2
63098	14500	27.71	0.269	7.53	5.73	2.2	12.1	73.0
63098	20000	27.65	0.269	7.53	5.59	2.2	12.0	71.3
63098	21500	27.61	0.270	7.53	5.58	2.2	11.9	71.0
63098	23000	27.58	0.270	7.52	5.65	2.2	11.9	72.0
63098	24500	27.52	0.270	7.52	5.46	2.2	11.9	69.5
63098	30000	27.49	0.271	7.53	5.73	2.2	12.0	72.9
63098	31500	27.46	0.270	7.52	5.57	2.2	12.0	70.7
63098	33000	27.39	0.270	7.51	5.51	2.2	12.0	69.9
63098	34500	27.38	0.270	7.52	5.77	2.2	11.9	73.1
63098	40000	27.33	0.270	7.51	5.50	2.2	12.0	69.7
63098	41500	27.31	0.271	7.51	5.52	2.2	12.0	69.9
63098	43000	27.28	0.271	7.51	5.57	2.2	12.0	70.5
63098	44500	27.25	0.271	7.50	5.43	2.2	11.9	68.7
63098	50000	27.22	0.271	7.51	5.55	2.2	11.9	70.2
63098	51500	27.18	0.271	7.50	5.53	2.2	11.9	69.9
63098	53000	27.16	0.271	7.50	5.40	2.2	11.9	68.2
63098	54500	27.11	0.271	7.50	5.49	2.2	11.8	69.3
63098	60000	27.08	0.271	7.50	5.41	2.2	11.9	68.3
63098	61500	27.05	0.272	7.50	5.59	2.2	11.8	70.5
63098	63000	27.02	0.271	7.50	5.54	2.2	11.8	69.9

Date	Time	Temp	SpCond	pH	DO	Dep25	IBatt	DO%
MMDDYY	HHMMSS	øC	mS/cm	Units	mg/l	feet	Volts	Sat
63098	64500	26.99	0.271	7.49	5.51	2.2	11.9	69.4
63098	70000	26.96	0.272	7.49	5.31	2.2	11.9	66.9
63098	71500	26.94	0.272	7.49	5.42	2.2	11.9	68.2
63098	73000	26.92	0.272	7.48	5.44	2.2	11.9	68.5
63098	74500	26.90	0.272	7.49	5.45	2.2	11.9	68.6
63098	80000	26.89	0.272	7.48	5.42	2.2	11.8	68.1
63098	81500	26.87	0.272	7.48	5.38	2.2	11.9	67.6
63098	83000	26.86	0.273	7.48	5.28	2.2	11.8	66.4
63098	84500	26.86	0.273	7.48	5.36	2.2	11.9	67.4
63098	90000	26.86	0.273	7.49	5.39	2.1	11.9	67.7
63098	91500	26.86	0.274	7.49	5.47	2.1	11.9	68.7
63098	93000	26.87	0.274	7.49	5.46	2.1	11.8	68.6
63098	94500	26.87	0.274	7.49	5.43	2.1	11.8	68.2
63098	100000	26.89	0.275	7.49	5.46	2.1	11.8	68.6
63098	101500	26.91	0.275	7.50	5.45	2.1	11.9	68.5
63098	103000	26.92	0.276	7.50	5.39	2.1	11.8	67.8
63098	104500	26.91	0.275	7.50	5.40	2.1	11.9	67.9
63098	110000	26.92	0.274	7.49	5.38	2.1	11.8	67.7
63098	111500	26.95	0.275	7.49	5.52	2.1	11.9	69.4
63098	113000	27.03	0.276	7.51	5.53	2.1	11.8	69.7
63098	114500	27.01	0.276	7.51	5.50	2.1	11.8	69.3
63098	120000	27.00	0.276	7.49	5.58	2.1	11.8	70.3
63098	121500	27.10	0.275	7.50	5.59	2.1	11.8	70.6
63098	123000	27.06	0.275	7.49	5.61	2.1	11.8	70.7
63098	124500	27.13	0.275	7.49	5.74	2.1	11.8	72.5
63098	130000	27.17	0.276	7.49	5.57	2.1	11.8	70.4
63098	131500	27.25	0.276	7.51	5.77	2.1	11.8	73.1
63098	133000	27.16	0.275	7.49	5.55	2.1	11.8	70.1
63098	134500	27.31	0.276	7.50	5.80	2.0	11.8	73.5
63098	140000	27.33	0.276	7.51	5.83	2.0	11.8	73.9
63098	141500	27.37	0.276	7.51	5.93	2.0	11.8	75.2
63098	143000	27.40	0.276	7.51	5.81	2.0	11.8	73.7
63098	144500	27.44	0.276	7.52	5.89	2.0	11.8	74.8
63098	150000	27.56	0.276	7.52	5.87	2.0	11.8	74.7
63098	151500	27.52	0.276	7.52	5.93	2.0	11.8	75.4
63098	153000	27.60	0.276	7.52	6.12	2.0	11.8	77.9
63098	154500	27.76	0.275	7.51	5.85	2.0	11.8	74.7
63098	160000	27.69	0.276	7.53	6.24	2.0	11.8	79.6
63098	161500	27.83	0.275	7.53	6.17	2.0	11.8	78.8
63098	163000	27.77	0.275	7.54	6.25	2.0	11.8	79.8
63098	164500	27.89	0.275	7.54	6.29	2.0	11.8	80.5
63098	170000	27.91	0.276	7.54	6.30	2.0	11.8	80.6
63098	171500	27.92	0.276	7.54	6.20	2.0	11.8	79.4

Date	Time	Temp	SpCond	pH	DO	Dep25	IBatt	DO%
MMDDYY	HHMMSS	øC	mS/cm	Units	mg/l	feet	Volts	Sat
63098	173000	27.90	0.275	7.53	6.08	2.0	11.8	77.9
63098	174500	28.03	0.276	7.55	6.20	1.9	11.8	79.6
63098	180000	28.05	0.274	7.55	6.13	1.9	11.8	78.7
63098	181500	28.13	0.275	7.55	6.14	1.9	11.8	78.9
63098	183000	28.29	0.275	7.55	6.05	2.0	11.8	77.9
63098	184500	28.17	0.274	7.52	5.83	2.0	11.8	75.0
63098	190000	28.21	0.275	7.54	6.00	2.0	11.8	77.2
63098	191500	28.16	0.275	7.54	6.02	2.0	11.8	77.4
63098	193000	28.26	0.276	7.55	5.91	2.0	11.8	76.1
63098	194500	28.13	0.275	7.52	5.76	2.0	11.8	74.0
63098	200000	28.19	0.273	7.51	5.84	2.2	11.8	75.2
63098	201500	28.21	0.272	7.52	5.81	2.2	11.8	74.7
63098	203000	28.25	0.271	7.50	5.77	2.2	11.8	74.3
63098	204500	28.10	0.273	7.50	5.82	2.2	11.8	74.8
63098	210000	28.06	0.273	7.52	5.78	2.2	11.8	74.1
63098	211500	28.10	0.272	7.51	5.81	2.2	11.8	74.7
63098	213000	28.00	0.273	7.51	5.62	2.2	11.8	72.0
63098	214500	28.07	0.271	7.51	5.76	2.2	11.8	73.9
63098	220000	28.00	0.272	7.49	5.52	2.2	11.8	70.8
63098	221500	28.14	0.273	7.50	5.66	2.2	11.8	72.8
63098	223000	27.95	0.272	7.49	5.70	2.2	11.8	73.1
63098	224500	28.18	0.274	7.52	5.62	2.2	11.8	72.3
63098	230000	28.03	0.275	7.48	5.66	2.2	11.8	72.6
63098	231500	28.02	0.272	7.50	5.67	2.2	11.8	72.8
63098	233000	28.03	0.273	7.52	5.64	2.2	11.7	72.3
63098	234500	27.99	0.275	7.52	5.68	2.2	11.8	72.8
70198	0	27.97	0.270	7.50	5.50	2.2	11.7	70.5
70198	1500	27.95	0.274	7.53	5.52	2.2	11.7	70.7
70198	3000	27.92	0.274	7.52	5.60	2.2	11.7	71.6
70198	4500	27.94	0.276	7.57	5.60	2.2	11.7	71.7
70198	10000	27.91	0.277	7.57	5.57	2.2	11.7	71.3
70198	11500	27.90	0.277	7.57	5.71	2.2	11.7	73.1
70198	13000	27.88	0.277	7.57	5.65	2.2	11.7	72.2
70198	14500	27.85	0.277	7.56	5.76	2.2	11.8	73.6
70198	20000	27.83	0.277	7.56	5.68	2.2	11.8	72.6
70198	21500	27.79	0.277	7.56	5.71	2.2	11.8	72.9
70198	23000	27.77	0.277	7.54	5.85	2.2	11.8	74.7
70198	24500	27.72	0.276	7.53	5.59	2.2	11.8	71.4
70198	30000	27.70	0.276	7.54	5.80	2.2	11.7	74.0
70198	31500	27.67	0.277	7.54	5.69	2.2	11.8	72.6
70198	33000	27.64	0.277	7.53	5.64	2.2	11.7	71.9
70198	34500	27.60	0.277	7.53	5.76	2.2	11.7	73.4
70198	40000	27.58	0.277	7.52	5.71	2.2	11.8	72.6

Date	Time	Temp	SpCond	pH	DO	Dep25	IBatt	DO%
MMDDYY	HHMMSS	øC	mS/cm	Units	mg/l	feet	Volts	Sat
70198	41500	27.54	0.277	7.53	5.61	2.2	11.7	71.4
70198	43000	27.49	0.277	7.52	5.65	2.2	11.7	71.9
70198	44500	27.48	0.277	7.52	5.70	2.2	11.7	72.5
70198	50000	27.44	0.277	7.52	5.64	2.2	11.7	71.6
70198	51500	27.41	0.277	7.52	5.56	2.2	11.7	70.5
70198	53000	27.39	0.277	7.52	5.38	2.2	11.6	68.3
70198	54500	27.35	0.277	7.52	5.63	2.2	11.7	71.4
70198	60000	27.33	0.278	7.51	5.60	2.2	11.7	71.0
70198	61500	27.30	0.277	7.52	5.56	2.2	11.8	70.5
70198	63000	27.28	0.277	7.51	5.57	2.2	11.6	70.5
70198	64500	27.25	0.277	7.51	5.54	2.2	11.6	70.1
70198	70000	27.21	0.277	7.50	5.42	2.2	11.8	68.5
70198	71500	27.19	0.277	7.50	5.39	2.2	11.7	68.2
70198	73000	27.16	0.277	7.50	5.42	2.2	11.7	68.4
70198	74500	27.14	0.277	7.49	5.37	2.2	11.7	67.8
70198	80000	27.13	0.278	7.49	5.45	2.3	11.7	68.7
70198	81500	27.11	0.278	7.49	5.39	2.3	11.6	68.1
70198	83000	27.09	0.278	7.49	5.34	2.3	11.8	67.4
70198	84500	27.08	0.278	7.49	5.29	2.3	11.7	66.8
70198	90000	27.08	0.278	7.49	5.32	2.3	11.7	67.1
70198	91500	27.08	0.278	7.48	5.33	2.3	11.7	67.2
70198	93000	27.06	0.279	7.49	5.31	2.3	11.7	67.0
70198	94500	27.06	0.279	7.49	5.35	2.3	11.6	67.4
70198	100000	27.06	0.279	7.48	5.33	2.3	11.6	67.2
70198	101500	27.08	0.280	7.49	5.33	2.3	11.7	67.2
70198	103000	27.11	0.280	7.49	5.44	2.3	11.6	68.6
70198	104500	27.12	0.280	7.49	5.39	2.3	11.7	68.0
70198	110000	27.14	0.280	7.49	5.39	2.3	11.6	68.1
70198	111500	27.17	0.281	7.49	5.41	2.3	11.7	68.4
70198	113000	27.21	0.281	7.49	5.28	2.3	11.7	66.8
70198	114500	27.27	0.281	7.49	5.39	2.3	11.6	68.2
70198	120000	27.30	0.281	7.49	5.33	2.3	11.6	67.6

Recovery finished at 070298 084926

Log File Name : cars5
Setup Date (MMDDYY) : 062998
Setup Time (HHMMSS) : 075906
Starting Date (MMDDYY) : 062998
Starting Time (HHMMSS) : 120000
Stopping Date (MMDDYY) : 070198
Stopping Time (HHMMSS) : 120000
Interval (HHMMSS) : 001500
Warmup (HHMMSS) : 000200

Date	Time	Temp	DO%	DO	SpCond	Turb	Dep25	IBatt
MMDDYY	HHMMSS	øC	Sat	mg/l	mS/cm	NTUs	feet	Volts
62998	120000	25.95	97.7	7.91	0.013	10.7	2.0	12.0
62998	121500	26.95	95.7	7.61	0.007	10.2	2.1	12.1
62998	123000	27.87	94.5	7.40	0.008	9.7	2.3	11.9
62998	124500	28.67	94.2	7.27	0.008	10.1	2.4	11.9
62998	130000	29.42	92.9	7.07	0.003	9.8	2.5	12.0
62998	131500	29.78	96.4	7.29	0.011	8.4	2.5	11.9
62998	133000	30.25	92.0	6.91	0.006	7.8	2.6	11.9
62998	134500	30.50	98.2	7.34	0.010	8.3	2.6	11.9
62998	140000	30.92	95.4	7.08	0.004	10.7	2.7	11.9
62998	141500	31.45	95.5	7.02	0.002	10.4	2.8	11.9
62998	143000	32.02	95.5	6.95	0.001	10.9	2.9	11.9
62998	144500	32.57	96.0	6.93	0.000	10.8	3.0	11.9
62998	150000	33.08	96.2	6.88	0.000	10.8	3.1	11.9
62998	151500	33.53	96.3	6.84	0.000	10.9	3.1	11.8
62998	153000	33.93	95.9	6.76	0.000	10.9	3.2	11.9
62998	154500	34.30	97.6	6.84	0.015	22.9	3.2	11.9
62998	160000	34.56	90.9	6.30	2.100	2.2	3.2	11.9
62998	161500	28.23	96.4	7.49	0.261	5.4	0.5	11.5
62998	163000	28.24	97.4	7.57	0.259	4.4	0.5	11.8
62998	164500	28.27	97.6	7.57	0.258	3.2	0.5	11.8
62998	170000	28.27	97.3	7.55	0.257	2.6	0.5	11.8
62998	171500	28.29	96.9	7.52	0.257	3.1	0.5	11.8
62998	173000	28.35	96.4	7.47	0.256	2.5	0.5	11.8
62998	174500	28.41	95.7	7.41	0.256	2.5	0.5	11.8
62998	180000	28.43	94.7	7.33	0.256	3.0	0.5	11.7
62998	181500	28.36	93.9	7.28	0.256	4.5	0.5	11.7
62998	183000	28.38	93.0	7.20	0.256	2.1	0.5	11.7
62998	184500	28.40	91.3	7.07	0.256	4.3	0.5	11.7
62998	190000	28.43	90.1	6.97	0.256	4.4	0.5	11.7
62998	191500	28.47	89.9	6.95	0.256	2.7	0.4	11.7
62998	193000	28.49	89.1	6.89	0.256	2.6	0.4	11.7
62998	194500	28.50	88.7	6.85	0.256	2.2	0.4	11.6

Date MMDDYY	Time HHMMSS	Temp øC	DO% Sat	DO mg/l	SpCond mS/cm	Turb NTUs	Dep25 feet	IBatt Volts
62998	200000	28.53	87.8	6.78	0.256	2.7	0.4	11.7
62998	201500	28.54	87.1	6.73	0.256	3.3	0.4	11.7
62998	203000	28.53	86.5	6.69	0.256	2.7	0.4	11.7
62998	204500	28.53	86.1	6.65	0.256	2.3	0.4	11.7
62998	210000	28.54	86.2	6.66	0.256	4.1	0.4	11.7
62998	211500	28.52	85.4	6.60	0.256	3.2	0.5	11.7
62998	213000	28.48	84.8	6.56	0.256	1.9	0.5	11.7
62998	214500	28.44	84.4	6.53	0.256	1.9	0.5	11.7
62998	220000	28.40	83.9	6.50	0.256	1.7	0.5	11.7
62998	221500	28.36	83.7	6.48	0.256	2.1	0.5	11.7
62998	223000	28.31	83.5	6.48	0.256	1.8	0.5	11.7
62998	224500	28.26	82.7	6.42	0.256	2.0	0.4	11.6
62998	230000	28.20	82.9	6.44	0.256	2.0	0.4	11.6
62998	231500	28.15	82.1	6.39	0.256	1.7	0.4	11.6
62998	233000	28.09	81.7	6.36	0.256	2.6	0.4	11.5
62998	234500	28.04	82.0	6.39	0.256	1.6	0.4	11.6
63098	0	27.99	81.3	6.34	0.256	2.0	0.4	11.5
63098	1500	27.95	80.9	6.31	0.256	2.7	0.4	11.5
63098	3000	27.89	80.8	6.31	0.256	2.1	0.4	11.5
63098	4500	27.83	80.5	6.29	0.256	2.3	0.4	11.5
63098	10000	27.78	80.2	6.28	0.256	3.0	0.4	11.4
63098	11500	27.73	80.1	6.28	0.256	1.9	0.4	11.5
63098	13000	27.69	80.1	6.28	0.256	2.4	0.4	11.5
63098	14500	27.64	79.6	6.25	0.256	4.2	0.4	11.4
63098	20000	27.60	79.7	6.26	0.256	2.6	0.4	11.5
63098	21500	27.56	79.7	6.26	0.256	2.7	0.4	11.5
63098	23000	27.52	79.7	6.27	0.256	1.6	0.4	11.5
63098	24500	27.48	79.8	6.28	0.255	2.3	0.4	11.5
63098	30000	27.45	80.2	6.32	0.255	3.2	0.4	11.4
63098	31500	27.41	80.5	6.34	0.255	2.7	0.4	11.5
63098	33000	27.36	80.1	6.32	0.255	1.4	0.4	11.5
63098	34500	27.32	79.9	6.31	0.255	1.8	0.4	11.4
63098	40000	27.29	80.4	6.35	0.255	2.2	0.4	11.5
63098	41500	27.25	79.6	6.29	0.255	2.4	0.4	11.4
63098	43000	27.22	79.1	6.26	0.255	1.8	0.4	11.4
63098	44500	27.18	78.8	6.24	0.255	1.6	0.4	11.4
63098	50000	27.15	79.0	6.26	0.255	2.8	0.4	11.4
63098	51500	27.11	79.0	6.26	0.255	2.5	0.4	11.4
63098	53000	27.08	78.3	6.21	0.255	2.1	0.4	11.5
63098	54500	27.05	78.6	6.23	0.255	1.7	0.5	11.3
63098	60000	27.03	78.8	6.25	0.255	1.9	0.5	11.4
63098	61500	27.01	78.4	6.22	0.254	2.3	0.5	11.4
63098	63000	27.01	78.4	6.22	0.254	2.1	0.5	11.3

Date MMDDYY	Time HHMMSS	Temp øC	DO% Sat	DO mg/l	SpCond mS/cm	Turb NTUs	Dep25 feet	IBatt Volts
63098	64500	26.98	78.7	6.25	0.254	2.3	0.5	11.4
63098	70000	26.96	79.5	6.31	0.254	1.7	0.5	11.4
63098	71500	26.97	79.8	6.34	0.255	1.5	0.5	11.4
63098	73000	26.97	79.9	6.35	0.255	1.7	0.5	11.4
63098	74500	26.97	79.5	6.31	0.254	1.9	0.5	11.4
63098	80000	26.98	79.9	6.34	0.254	3.3	0.5	11.4
63098	81500	27.01	79.9	6.34	0.254	1.6	0.5	11.4
63098	83000	27.05	80.6	6.39	0.253	1.3	0.5	11.4
63098	84500	27.10	81.7	6.47	0.253	1.8	0.5	11.4
63098	90000	27.17	82.2	6.51	0.254	53.6	0.5	11.4
63098	91500	27.27	83.9	6.63	0.254	12.3	0.5	11.4
63098	93000	27.36	85.3	6.73	0.254	0.0	0.5	11.4
63098	94500	27.39	86.1	6.79	0.253	6.6	0.5	11.4
63098	100000	27.35	86.3	6.81	0.253	2.9	0.5	11.4
63098	101500	27.41	86.9	6.85	0.253	0.0	0.5	11.4
63098	103000	27.39	86.2	6.80	0.253	101.0	0.5	11.4
63098	104500	27.50	87.2	6.86	0.253	12.3	0.5	11.4
63098	110000	27.61	87.7	6.89	0.253	0.0	0.5	11.4
63098	111500	27.80	90.1	7.05	0.253	999999.0	0.5	11.4
63098	113000	27.77	89.1	6.98	0.253	0.0	0.5	11.4
63098	114500	27.70	88.6	6.94	0.253	3.0	0.5	11.3
63098	120000	27.64	87.8	6.89	0.253	2.1	0.5	11.3
63098	121500	27.56	87.9	6.91	0.253	1.1	0.5	11.3
63098	123000	27.66	90.0	7.06	0.253	0.0	0.5	11.3
63098	124500	27.64	90.6	7.11	0.253	3.6	0.5	11.3
63098	130000	27.94	92.9	7.25	0.252	4.4	0.5	11.4
63098	131500	27.93	93.5	7.30	0.252	0.6	0.5	11.4
63098	133000	27.89	94.5	7.39	0.252	0.0	0.5	11.4
63098	134500	27.82	95.0	7.43	0.251	0.0	0.5	11.4
63098	140000	27.83	96.2	7.52	0.251	3.5	0.5	11.4
63098	141500	27.85	94.4	7.38	0.252	5.5	0.5	11.4
63098	143000	27.90	96.2	7.52	0.251	3.6	0.5	11.4
63098	144500	27.79	97.1	7.61	0.251	0.8	0.4	11.4
63098	150000	27.71	95.8	7.51	0.251	2.7	0.4	11.3
63098	151500	27.66	94.7	7.43	0.252	9.7	0.4	11.2
63098	153000	27.75	96.6	7.57	0.252	3.3	0.4	11.3
63098	154500	27.65	93.5	7.34	0.252	2.4	0.4	11.2
63098	160000	27.78	95.9	7.51	0.252	5.0	0.4	11.3
63098	161500	27.76	94.6	7.41	0.253	2.9	0.4	11.3
63098	163000	27.87	95.7	7.48	0.253	5.0	0.4	11.3
63098	164500	27.80	93.7	7.34	0.253	1.9	0.4	11.3
63098	170000	27.89	94.7	7.40	0.253	2.5	0.4	11.3
63098	171500	28.01	95.9	7.48	0.253	2.8	0.4	11.3

Date MMDDYY	Time HHMMSS	Temp øC	DO% Sat	DO mg/l	SpCond mS/cm	Turb NTUs	Dep25 feet	IBatt Volts
63098	173000	28.05	95.3	7.43	0.254	2.8	0.4	11.3
63098	174500	28.06	94.2	7.34	0.254	5.0	0.4	11.3
63098	180000	28.06	94.1	7.33	0.254	4.5	0.4	11.3
63098	181500	28.05	93.1	7.26	0.254	2.7	0.4	11.3
63098	183000	28.06	92.6	7.21	0.254	2.4	0.4	11.3
63098	184500	28.09	92.5	7.20	0.254	4.5	0.4	11.3
63098	190000	28.10	91.9	7.16	0.254	2.7	0.4	11.3
63098	191500	28.14	91.9	7.15	0.255	3.2	0.4	11.3
63098	193000	28.18	91.1	7.08	0.255	2.6	0.4	11.3
63098	194500	28.17	90.8	7.06	0.255	2.3	0.5	11.2
63098	200000	28.09	89.7	6.98	0.254	3.4	0.5	11.2
63098	201500	28.02	89.5	6.98	0.254	2.9	0.5	11.2
63098	203000	28.01	89.5	6.98	0.255	2.3	0.5	11.2
63098	204500	28.03	89.1	6.94	0.255	3.0	0.5	11.1
63098	210000	28.03	88.4	6.89	0.256	2.4	0.5	11.1
63098	211500	28.02	87.1	6.79	0.256	2.3	0.5	11.1
63098	213000	28.05	87.9	6.85	0.256	2.5	0.5	11.1
63098	214500	28.06	87.9	6.85	0.256	2.5	0.5	10.8
63098	220000	28.07	86.9	6.77	0.256	2.9	0.5	10.8
63098	221500	28.07	86.2	6.72	0.256	2.6	0.5	10.8
63098	223000	28.06	87.0	6.78	0.256	2.3	0.5	10.9
63098	224500	28.04	87.1	6.79	0.257	2.7	0.5	10.8
63098	230000	28.01	85.8	6.69	0.256	2.1	0.5	10.9
63098	231500	27.99	85.3	6.66	0.256	2.6	0.5	11.0
63098	233000	27.96	85.4	6.67	0.256	3.0	0.5	10.8
63098	234500	27.94	84.5	6.60	0.256	2.5	0.5	10.9
70198	0	27.90	84.3	6.59	0.257	2.7	0.5	10.9
Power loss from 070198 001402 to 070198 001413								
Late probe turn on at 070198 001414								
70198	1500	27.86	81.0	6.34	0.257	2.3	0.5	10.8
70198	3000	27.82	78.9	6.17	0.257	2.5	0.5	10.7
70198	4500	27.78	78.0	6.11	0.265	2.9	0.5	10.6
70198	10000	27.76	79.0	6.19	0.257	2.4	0.5	10.6
70198	11500	27.74	79.3	6.21	0.257	1.9	0.5	10.6
70198	13000	27.69	78.0	6.11	0.256	4.8	0.5	10.6
70198	14500	27.65	78.6	6.17	0.257	2.8	0.5	10.6
70198	20000	27.62	77.4	6.07	0.256	3.2	0.5	10.6
70198	21500	27.58	78.9	6.20	0.256	3.1	0.5	10.5
70198	23000	27.55	77.2	6.07	0.257	2.2	0.5	10.6
70198	24500	27.51	76.1	5.99	0.257	2.8	0.5	10.6
70198	30000	27.47	76.0	5.98	0.257	2.4	0.5	10.5
70198	31500	27.44	75.1	5.92	0.257	2.7	0.5	10.5
70198	33000	27.40	75.2	5.93	0.264	2.6	0.5	10.5

Date	Time	Temp	DO%	DO	SpCond	Turb	Dep25	IBatt
MMDDYY	HHMMSS	øC	Sat	mg/l	mS/cm	NTUs	feet	Volts
70198	34500	27.36	75.3	5.94	0.263	2.6	0.5	10.5
70198	40000	27.33	73.9	5.83	0.267	2.9	0.5	10.5
70198	41500	27.29	74.8	5.90	0.267	2.3	0.5	10.4
70198	43000	27.26	75.0	5.93	0.262	2.7	0.5	10.5
70198	44500	27.23	75.2	5.95	0.264	2.4	0.5	10.5
70198	50000	27.20	74.0	5.86	0.262	3.0	0.5	10.4
70198	51500	27.18	74.4	5.89	0.266	2.4	0.5	10.4
70198	53000	27.16	74.3	5.88	0.265	3.3	0.5	10.4
70198	54500	27.13	73.7	5.84	0.266	3.4	0.5	10.4
70198	60000	27.10	74.3	5.89	0.266	3.2	0.5	10.4
70198	61500	27.08	72.6	5.76	0.266	3.1	0.5	10.4
70198	63000	27.07	72.8	5.78	0.266	2.4	0.5	10.4
70198	64500	27.05	72.9	5.79	0.266	2.2	0.5	10.4
70198	70000	27.03	72.6	5.76	0.266	3.3	0.5	10.4
70198	71500	27.02	71.9	5.71	0.266	3.1	0.5	10.4
70198	73000	27.02	74.3	5.89	0.266	2.3	0.5	10.4
70198	74500	27.03	74.3	5.90	0.266	3.0	0.5	10.4
70198	80000	27.06	76.3	6.05	0.266	5.0	0.6	10.4
70198	81500	27.07	76.0	6.02	0.265	1.8	0.6	10.4
70198	83000	27.12	77.2	6.12	0.262	6.7	0.6	10.3
70198	84500	27.13	77.6	6.15	0.261	3.7	0.6	10.4
70198	90000	27.18	77.6	6.14	0.262	18.9	0.6	10.3
70198	91500	27.27	79.7	6.30	0.263	11.0	0.6	10.4
70198	93000	27.34	81.4	6.42	0.263	0.0	0.7	10.4
70198	94500	27.43	82.1	6.46	0.263	57.8	0.7	10.4
70198	100000	27.53	83.3	6.55	0.263	34.5	0.7	10.4
70198	101500	27.59	83.8	6.58	0.263	0.0	0.7	10.4
70198	103000	27.68	82.0	6.43	0.263	70.3	0.7	10.3
70198	104500	27.78	85.4	6.69	0.261	0.0	0.7	10.4
70198	110000	27.85	85.7	6.70	0.263	0.0	0.7	10.4
70198	111500	27.91	86.0	6.71	0.262	8.0	0.7	10.4
70198	113000	28.02	86.7	6.76	0.266	0.0	0.7	10.4
70198	114500	28.09	87.8	6.84	0.266	10.3	0.7	10.4
70198	120000	28.16	88.4	6.87	0.266	4.0	0.7	10.4

Recovery finished at 070298 090323