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October 14, 1994

Ms. Terry L. Phipps
Environmental Sciences Division
Oak Ridge National Laboratory
Building 1504
Bethal Valley Road
Oak Ridge, Tennessee 37831

Dear Terry:

Enclosed is a copy of the report presenting results from the fourth whole sediment toxicity test conducted by TVA, September 13-22, 1994, in conjunction with the Clinch River - Environmental Restoration Program (CR-ERP) Study. Attachments to the report include Chain of Custody Form - Original (I), Toxicity Test Bench Sheets (II), Ammonia Analysis Request and Results (III), and Meter Calibration Log Sheets (IV). Exposure of juvenile freshwater mussels to sediment samples collected from Poplar Creek Mile 6.0 and Mile 1.0 on September 8 resulted in no toxicity to test organisms.

Please call Damien Simbeck (205-729-4805) or me (205-729-3340) if you have questions or comments regarding the report or conductance of the study.

Sincerely,

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Jennifer Moses, Unit Supervisor
Toxicity Testing Laboratory

MASTER

JM: DTH

Enclosures

cc: J. D. Milligan, HB 2C-C (w/enclosures)
G. Quintero, CC 1A-C
D. C. Wade, OSA 1B-M (w/enclosures)
Files, WM, CST 16C-C (w/enclosures)

Prepared by Damien J. Simbeck

PLARC501-715

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By E. Ollon Date 11/21/97

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STANDARD REPORT FORM

STATIC RENEWAL TESTS USING ANODONTA IMBECILLIS
(FRESHWATER MUSSELS)

Test Title: Anodonta imbecillis QA Test 4, Clinch River - Environmental
Restoration Program (CR-ERP)

Principle Investigator: Damien J. Simbeck

Starting Date: September 13, 1994

Ending Date: September 22, 1994

1.0 EXECUTIVE SUMMARY

Toxicity testing of split whole sediment samples using juvenile freshwater mussels (Anodonta imbecillis) was conducted by TVA to provide a quality assurance mechanism for test organism quality and overall performance of the test being conducted by CR-ERP personnel as part of the CR-ERP biomonitoring study of Clinch River sediments [1]

Testing of sediment samples collected September 8 from Poplar Creek Miles 6.0 and 1.0 was conducted September 13-22, 1994. Results from this test showed no toxicity (survival effects) to fresh-water mussels during a 9-day exposure to the sediments.

2.0 SAMPLE COLLECTION/TREATMENTS

- 2.1 Test Sample Identification (Chemical/Effluent/Elutriate, etc.):
The samples used for biomonitoring were whole sediments collected from Poplar Creek Miles 6.0 (CR-ERP ID No. 53046) and 1.0 (CR-ERP ID No. 53044).
- 2.2 Control and/or Dilution Sediment: Poplar Creek Mile (PCM) 6.0.
- 2.3 Sample Date: September 8, 1994
- 2.4 Sampling Method: Samples were collected by TVA Engineering Services personnel. An Eckman dredge was used to obtain whole sediments at each location. Sediment samples from numerous dredge collections were composited in a large container, then split into two samples. One set of samples was sent to TVA's Toxicity Testing Laboratory (TTL) at the Browns Ferry Nuclear Plant site near Athens, Alabama, and the other to Oak Ridge National Laboratory (ORNL) for comparative testing.

- 2.5 Sample Transport: All samples were placed in coolers on ice at the time of collection and shipped to TTL by TVA mail.
- 2.6 Sample Storage/Handling: All samples were stored in a refrigerator at $\leq 4^{\circ}\text{C}$ prior to and during the test.
- 2.7 Test Treatments: Three treatments, PCM 6.0 (Control), PCM 1.0-100% and PCM 1.0-50% (diluted with PCM 6.0 sediment), were tested. Filtered (100 μm) non-toxic sediment (approximately 800 mg/L dry weight) from the same source used for culture maintenance was also included as a laboratory reference. Moderately hard reconstituted water served as overlying water for all sediment treatments.
- 2.8 Sample Pretreatment: Sediment samples were stirred thoroughly on September 12 with a stainless steel spoon, and sufficient 50 percent sample (V:V) was prepared. Four crystallizing dishes per treatment were set up by adding 25 mL of sediment and 100 mL moderately hard water to each dish. The dishes were placed in the test incubator 24-hr prior to test initiation to allow settling and temperature equilibration.

3.0 TEST ORGANISMS/CULTURING CONDITIONS

- 3.1 Species: Anodonta imbecillis, freshwater mussel
- 3.2 Culture of Test Organisms:
- 3.2.1 Source: In vitro culture, August 31-September 7, 1994, TVA Toxicity Testing Laboratory. The gravid adults from which glochidia were extracted were obtained from Monticello Reservoir, near Clinton, South Carolina, on August 28 and shipped to TTL via UPS overnight delivery on August 30, 1994.
- 3.2.2 Culture medium: Mussel culture medium used to transform larvae (glochidia) into juveniles consisted of a 2:1 mixture of cell culture medium (MEM) and 0.22 μm filtered catfish plasma. Antibiotics and antimycotics were added in small concentrations to prevent bacterial and fungal contamination. [2]
- 3.2.3 Temperature of culture: $24^{\circ}\text{C} \pm 1^{\circ}\text{C}$
- 3.3 Maintenance of Test Organisms:
- 3.3.1 Culture water: After transformation of larval mussels (September 7), the free living juveniles were placed in filtered (100 μm) TR water with bloomed indigenous algae (phytoplankton). Non-toxic sediment (100 μm filtered) was added to provide additional food and substrate for healthy growth of the juvenile mussels. [3]
- 3.3.2 Temperature of culture: $24^{\circ}\text{C} \pm 1^{\circ}\text{C}$

- 3.3.3 General maintenance: Cultures were maintained in 2000-mL Nalgene® trays in 24-h dark incubators. September 8-12, cultures were changed out daily with fresh phytoplankton water and silt. Cultures were also fed concentrated phytoplankton (25 mL/L) daily. Health and survival of the culture were checked by microscopic examination of animals when culture water was changed.

One day prior to test initiation (September 12) mussels were counted and transferred into test cylinders which were placed in crystallizing dishes containing moderately hard water spiked with reference sediment and YCT-S.

3.4 Food Preparation:

- 3.4.1 Phytoplankton preparation: Phytoplankton was bloomed in 20-L glass aquaria 4-7 days (until dark green). Blooms were initiated by adding concentrated solids from TTL channel water to filtered (100 µm) TR water. Algal nutrients used for Selenastrum cultures were added (1 mL/L) to boost algal blooms. [4] Blooms were centrifuged at 3000 rpm for 10 minutes at <4°C to concentrate the algal cells into a dark green suspension, obtaining about 0.5 L per aquarium. The concentrate was then centrifuged and excess river water was decanted and replaced with moderately hard reconstituted water. Prepared phytoplankton concentrate was refrigerated until used.

- 3.4.2 YCT and Selenastrum preparation: YCT is made according to methods modified from EPA/600/4-89/001 with tropical fish food substituted for trout chow and alfalfa substituted for Cerophyll. [5] The alga Selenastrum capricornutum concentrated to 30 x 10⁶ cells/mL is also fed as part of the test diet.

- 3.5 Sediment Preparation: Whole, non-toxic sediment from Taylor's Catfish ponds, Town Creek, Alabama, was filtered through a 100-µm nylon mesh filter. Filtered sediment was stored at ≤4°C until used.

4.0 TEST METHODS

- 4.1 Mussels, Anodonta imbecillis, Survival Test, TVA Test Method, SOP-22, solid phase protocol. [4]
- 4.2 Modification/Deviations to SOP-22:
- 4.2.1 Mussels were fed 3 mL/L YCT and 3mL/L Selenastrum daily instead of concentrated phytoplankton.
- 4.2.2 Test sediment (25 mL per replicate) with overlying moderately hard reconstituted water (100 mL per replicate) was placed into dishes 24 hr before test initiation and placed in the incubator to allow settling and temperature equilibration. This sediment was not renewed during the 9-day test period.

- 4.2.3 Sample volume was 25 mL sediment and 100 mL water instead of 20 mL sediment and 150 mL water.
- 4.3 Date/Time Test Initiated: September 13, 1994/0830 CDT
- 4.4 Date/Time Test Terminated: September 22, 1994/0900 CDT
- 4.5 Age of Test Organisms: 6 days old
- 4.6 Test Chamber: 50 mm-diameter glass cylinder (75 mm tall) with 100- μ m nylon mesh bottom, placed in 200-mL crystallizing dish
- 4.7 Volume per Chamber: 100 mL water, 25 mL sediment
- 4.8 Number of Organisms Per Replicate: 10
- 4.9 Number of Replicates Per Treatment: 4
- 4.10 Test Control: PCM 6.0
- 4.11 Dilution Sediment: PCM 6.0
- 4.12 Overlying Water: Moderately hard synthetic water
- 4.13 Test Temperature: 24°C $\pm$ 1
- 4.14 Photoperiod: 24-h dark
- 4.15 Renewal Period: 24-h
- 4.16 Renewal Method: Following removal of 60 mL of the overlying water for chemical analyses, each test cylinder was placed in a petri dish with moderately hard reconstituted water for microscopic examination. After examination, the cylinder was returned to the same crystallizing dish, and 60 mL fresh water was poured into the test vessel through the test cylinder. Test sediment was not renewed during this test.
- Taylor's reference sediment was renewed daily by adding approximately 800 mg dry weight filtered sediment (2.0 mL) per liter of moderately hard water. Dishes were emptied and renewed with 150 mL water/sediment mixture.
- 4.17 Feeding Regime During Test: Following renewal, 0.45 mL each of YCT and Selenastrum were added to each test chamber.
- 4.18 Physical and Chemical Parameters Measured: Parameters measured daily ("initial") on overlying and reference waters (following addition of silt) were temperature (temperature adjusted to equal "final" temperature before renewal), DO, pH, conductivity, alkalinity and hardness. Total ammonia was also measured on reference water following addition of silt.

"Final" measurements of temperature, DO, and pH were taken in one replicate per treatment before renewal. "Final" measurements of conductivity, alkalinity, hardness and total ammonia were measured in a combination of overlying waters (60 mL/replicate/day) from all replicates per treatment following renewal. The test solutions (75 mL) were preserved with 1:4 H₂SO₄ and refrigerated until sent to TVA's Environmental Chemistry Laboratory in Chattanooga, Tennessee, for ammonia analysis using the automated alkaline phenate methodology.

4.19 Test Endpoint Determination:

4.19.1 Survival: Test animals were counted as dead when microscopic examination revealed valves gaped open and no observable internal movement or an empty shell.

4.20 Statistics: Revised statistical procedures contained in the fourth edition of EPA's acute toxicity methods require a decision process for testing statistical assumptions before selecting a specific statistical test to determine toxicity endpoints. [6] No statistical analysis was necessary due to 100 percent survival in all test treatments. Control survival was also 100 percent.

5.0 QUALITY ASSURANCE

5.1 Toxicity Test Methods: All phases of the study including, but not limited to, sample collection, handling and storage; glassware preparation; test organism culturing/acquisition and acclimation; test organism handling during test; and maintaining appropriate test conditions were conducted according to the protocol as described in this report, the TTL Quality Assurance Plan and SOP Manual, and EPA/600/4-89/001. [4][5] Any known deviations were noted during the study and are reported herein.

5.2 Physical and Chemical Methods

5.2.1 Reagents, Titrants, Buffers, etc.: All chemicals were certified products used before expiration dates (where applicable). All TTL chemicals are recorded in a bound Laboratory Chemical Logbook and specific chemicals used were documented on a chemical record sheet contained in the study notebook.

5.2.2 Instruments: All identification, service, and calibration information pertaining to TTL laboratory instruments is contained in bound Laboratory Instrument Logbooks and specific instruments used were documented on an instrument record sheet, along with daily calibration record sheets, contained in the study notebook.

- 5.2.3 Temperature was measured using mercury thermometers. The instrument was standardized and inspected with readings made according to TVA procedure ES-42.11. [7]
- 5.2.4 Dissolved oxygen was measured using a YSI Model 57 oxygen meter. The instrument was standardized (using the Winkler method) and readings were taken according to TVA procedures ES-43.6 and ES-42.4, respectively. [7]
- 5.2.5 The pH was measured using an Orion Model SA250 meter equipped with an Orion Ross combination electrode. The instrument was standardized and readings were made according to TVA procedures ES-43.7 and ES-42.8, respectively. [7]
- 5.2.6 Conductance was measured using a YSI Model 32 SCT meter. The instrument was standardized and readings were taken according to TVA procedures ES-43.3 and ES-42.3, respectively. [7]
- 5.2.7 Alkalinity was measured by titration of 100 mL samples with 0.02 N H₂SO₄ to an end point of 4.5 according to TVA procedure ES-42.1. [7]
- 5.2.8 Hardness was determined by titration of 50 mL samples with EDTA to a colorimetric endpoint using an indicator (Instructions provided by Reagent Manufacturer [Calgon]), Schwarzenbach Method.

6.0 RESULTS

- 6.1 Summary of Results: Nine day exposure of juvenile freshwater mussels, Anodonta imbecillis, to whole sediments from Poplar Creek showed no toxicity at PCM 6.0 (Control) or PCM 1.0 (100 percent and 50 percent sample).
- 6.2 Results, Survival Data:
- 6.2.1 Statistical Decision Process for Determining Toxicity Endpoints for 9-day Exposure of the Juvenile Mussel, Anodonta imbecillis, to Test Sediments, September 13-22, 1994.

Not applicable

- 6.2.2 Daily Percent Survival Summary for Anodonta imbecillis, Whole Sediment QA Test 4, CR-ERP, September 13-22, 1994.

Treatment	Total Daily % Survival								
	1	2	3	4	5	6	7	8	9
PCM 6.0	100	100	100	100	100	100	100	100	100
PCM 1.0-100%	100	100	100	100	100	100	100	100	100
PCM 1.0-50%	100	100	100	100	100	100	100	100	100
Taylor's Silt Refer.	100	100	100	100	100	100	100	100	100

6.2.3 Nine-day Percent Survival Summary for Anodonta imbecillis, Whole Sediment QA Test 4, CR-ERP, September 13-22, 1994.

<u>Mussel Survival Data (% Survival)</u>											
Treatment	Replicate										Mean S*
	1	2	3	4	5	6	7	8	9	10	
PCM 6.0	100	100	100	100							100
PCM 1.0-100%	100	100	100	100							100
PCM 1.0-50%	100	100	100	100							100

*S-Significant

6.3 Water Chemistry Summary for Anodonta imbecillis, Whole Sediment QA Test 4, CR-ERP, September 13-22, 1994.

6.3.1 Test Temperature: 23.8°C (23.0°-24.2°C)

6.3.2 See: Appendix A Water Chemistry Mean Values and Ranges for Anodonta imbecillis, Whole Sediment QA Test 4, CR-ERP, September 13-22, 1994.

7.0 CONCLUSION

Testing of sediment samples collected September 8 from Poplar Creek Miles 6.0 and 1.0 was conducted September 13-22, 1994. Results from this test showed no toxicity (survival effects) to fresh-water mussels during a 9-day exposure to the sediments.

8.0 REFERENCES

1. Phipps, T. L., and L. A. Kszos, Statement of Work to Provide Assistance to Staff of the Clinch River-Environmental Restoration Program (CR-ERP) and to Evaluate Toxicity Tests of Water and Sediment Conducted by CR-ERP Staff, Environmental Sciences Division, Biomonitoring Group, Oak Ridge National Laboratory (April 1993).
2. Isom, B. G., and R. G. Hudson, "In Vitro Culture of Parasitic Freshwater Mussel Glochidia," The Nautilus, Vol. 96, No. 4, 1982, pp. 147-151.
3. Hudson, R. G., and B. G. Isom, "Rearing Juveniles of the Freshwater Mussels (Unionidae) in a Laboratory Setting," The Nautilus, Vol. 98, No. 4, 1984, pp. 129-135.
4. Toxicity Testing Laboratory Quality Assurance Program and Standard Operating Procedures Manual, Division of Water Resources, Tennessee Valley Authority (October 1992).
5. Weber, C. I., W. H. Peltier, T. J. Norberg-King, W. B. Horning, F. A. Kessler, J. R. Menkdick, T. W. Neiheisel, P. A. Lewis, D. J. Klemm, Q. H. Pickering, F. L. Robinson, J. M. Lazorchak, L. J. Wymer, and R. W. Freyberg. Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms. EPA/600/4-89/001 (March 1989) and EPA/600/4-89/001a (September 1989).

6. Weber, C. I. (ed.), Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms, EPA/600/4-90/027 (September 1991).
7. Field Operations Natural Resource Engineering Procedures Manual, Vol. 1, Division of Natural Resource Operations, Tennessee Valley Authority.

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Appendix A

Water Chemistry Mean Values and Ranges for Anadonta imbecillis, Whole Sediment QA Test 4, CR-ERP, September 13-22, 1994

Source	Temperature		Dissolved Oxygen		pH		Conductivity		Alk		Hardness		Ammonia	
	Final	(°C)	Initial	(mg/L)	Initial	(S.U.)	Initial	(µmhos)	Final	(µmhos)	Initial	(mg/L)	Final	(mg/L)
PCM 6.0	23.8 (23.5-24.2)	-	6.5 (6.2-7.0)	7.8 (7.6-7.9)	-	352 (343-362)	-	51 (48-64)	-	94.4 (92.0-100.0) (<0.001-0.007)	-	<0.002 (92.0-100.0) (<0.001-0.007)	-	<0.002
PCM 1.0-50%	23.7 (23.0-24.0)	-	6.5 (6.0-6.8)	7.8 (7.7-7.8)	-	379 (373-387)	-	73 (68-85)	-	112.0 (104.0-130.0) (<0.001-0.019)	-	<0.004 (104.0-130.0) (<0.001-0.019)	-	<0.004
PCM 1.0-100%	23.8 (23.3-24.2)	-	6.3 (5.8-6.6)	7.9 (7.8-7.9)	-	386 (379-395)	-	81 (75-90)	-	120.9 (114.0-142.0) (<0.001-0.049)	-	<0.007 (114.0-142.0) (<0.001-0.049)	-	<0.007
Taylor's Silt Refer.	23.8 (23.2-24.0)	8.2 (8.0-8.4)	7.9 (7.7-8.0)	8.2 (8.1-8.2)	333 (323-337)	347 (340-352)	65 (60-69)	66 (63-69)	90.6 (88.0-94.0)	94.9 (90.0-100.0) (<0.001-0.016)	-	<0.009 (90.0-100.0) (<0.001-0.016)	-	<0.009
Moderately Hard Water	-	8.4 (8.2-8.5)	-	8.3 (8.2-8.3)	335 (326-341)	-	66 (62-70)	-	90.8 (88.0-92.0)	-	-	-	-	-

* mg/L as CaCO3

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ATTACHMENT I

CHAIN OF CUSTODY RECORD - ORIGINAL

FIELD CHAIN OF CUSTODY

FILED
MAR 24 1964

CLINCH RIVER ER PROJECT Sampling Date: ~~09 SEP 94~~ Field COC Id: 0909943 PAGE: 1 OF 1

Task: S3

Matrix: SE

Sm 40/64

[illegible]

PCM 1.0	REG	ML	HDPE	TOX	EG	NA
53044		500				

53046	PCM 6.0	REG	500	ML	HDPE	TOX	EG	NA
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Team Leader: Samyoussef Sampling Team:

Field Custodian: J. Stockman
 2/14/92
 TANKS

Relinquished by: _____ Date: _____
Received by: _____ Date: _____
Time: 2:15 PM
Date: 9-9-94 Time: 0630

Relinquished by: _____ Date: _____ Time: _____

Received by: _____ Date: _____ Time: _____

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
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Sample Disposed by: _____ Date: _____ Time: _____

7COC Rev. 03 28JAN94

Document ID:

CR2-02982



custody sent's twofold on Cook's
Oct

ATTACHMENT II

TOXICITY TEST BENCH SHEETS

ARL ACUTE TOXICITY TEST (MUSSEL) MASTER CHECKLIST Study: CR-ERP QA September 1994Date Issued: 9-6-94 To: DL From: JM1. Test organism availability: T.L.* DL C.U.* DL Date NA2. Sample Collection Coordination: Date 9-2-94 By DL With LG/inter3. Glassware availability: T.L. DL Tech MAN Date 9-6-944. Silt/Phytoplankton availability: Silt- By DL/MLB Date 9-1-94
Phytoplankton- By NA Date NA5. Glassware prep. complete: Date 9-9-94 By DL6. Data Sheet prep. complete: Date 9-7-94 By DL7. Test organism availability verification: T.L. DL8. Test Initiation: Date/Time 9-13-94/0830

9. Test Renewal:	Day#:	0	1	2	3	4	5	6	7	8	9
Meter Calib.	T.L.	<u>DL</u>	<u>DL</u>	<u>DL</u>	<u>DL</u>	<u>DL</u>	<u>DL</u>	<u>DL</u>	<u>DL</u>	<u>DL</u>	<u>DL</u>
	T.M.*	<u>MLB</u>	<u>MLB</u>	<u>MLB</u>	<u>MLB</u>	<u>MLB</u>	<u>MLB</u>	<u>MLB</u>	<u>MLB</u>	<u>MLB</u>	<u>MLB</u>
Log Samples	T.L.	<u>DL</u>	<u>NA</u>								<u>N/A</u>
	T.M.	<u>NA</u>	<u>NA</u>								<u>N/A</u>
Storage Temp		<u>NA</u>									<u>N/A</u>
		<u>NA</u>									<u>N/A</u>
Initial Chem.	T.L.	<u>DL</u>	<u>DL</u>	<u>DL</u>	<u>DL</u>	<u>DL</u>	<u>DL</u>	<u>DL</u>	<u>DL</u>	<u>DL</u>	<u>N/A</u>
	T.M.	<u>MLB</u>	<u>MLB</u>	<u>MLB</u>	<u>MLB</u>	<u>MLB</u>	<u>MLB</u>	<u>MLB</u>	<u>MLB</u>	<u>MLB</u>	<u>N/A</u>
Renewal/Counts	T.L.	<u>DL</u>	<u>DL</u>	<u>DL</u>	<u>DL</u>	<u>DL</u>	<u>DL</u>	<u>DL</u>	<u>DL</u>	<u>DL</u>	<u>DL</u>
	T.M.	<u>MLB</u>	<u>MLB</u>	<u>MLB</u>	<u>MLB</u>	<u>MLB</u>	<u>MLB</u>	<u>MLB</u>	<u>MLB</u>	<u>MLB</u>	<u>MLB</u>
Final Chem.	T.L.	<u>N/A</u>	<u>DL</u>	<u>DL</u>	<u>DL</u>	<u>DL</u>	<u>DL</u>	<u>DL</u>	<u>DL</u>	<u>DL</u>	<u>DL</u>
	T.M.	<u>N/A</u>	<u>MLB</u>	<u>MLB</u>	<u>MLB</u>	<u>MLB</u>	<u>MLB</u>	<u>MLB</u>	<u>MLB</u>	<u>MLB</u>	<u>MLB</u>
Meter Recal.	T.L.	<u>NA</u>	<u>DL</u>	<u>DL</u>	<u>DL</u>	<u>DL</u>	<u>DL</u>	<u>DL</u>	<u>DL</u>	<u>DL</u>	<u>DL</u>
	T.M.	<u>NA</u>	<u>MLB</u>	<u>MLB</u>	<u>MLB</u>	<u>MLB</u>	<u>MLB</u>	<u>MLB</u>	<u>MLB</u>	<u>MLB</u>	<u>MLB</u>
Paperwork	T.L.	<u>DL</u>	<u>DL</u>	<u>DL</u>	<u>DL</u>	<u>DL</u>	<u>DL</u>	<u>DL</u>	<u>DL</u>	<u>DL</u>	<u>DL</u>
reviewed	T.M.	<u>MLB</u>	<u>MLB</u>	<u>MLB</u>	<u>MLB</u>	<u>MLB</u>	<u>MLB</u>	<u>MLB</u>	<u>MLB</u>	<u>MLB</u>	<u>MLB</u>

10. Test Termination: Date/Time 9-22-94/090012. Run Stats: Date NA By DL13. Report Prep.: Date 10-7-94 By DL14. Report Final: Date 10-13-94 By JM Approved: JM/DCW=NA

*Team Leader

†Culture Unit

*Team Member

MUSSEL TEST RECORD SHEET

Anodonta imbecillisProject CR-ERP September 1994

Beginning

Date/Time 09-13-94 / 0830

Ending

Date/Time 09-22-94 / 0900Personnel Simbeck, BarfieldMussels placed in test vessels: Date 09-12-94 Time 1200-1400Mussels per test vessel: 10

Test Teatments:

1	Taylor's Silt (Reference)	11	
2	PCM 6.0 100% (Control)	12	
3	PCM 1.0 50%	13	
4	PCM 1.0 100%	14	
5	Cu Control	15	
6	0.312 mg/L Cu	16	
7	0.625 mg/L Cu	17	
8	1.250 mg/L Cu	18	
9	2.500 mg/L Cu	19	
10	5.000 mg/L Cu	20	

Control/Dilution Water: MHRW #'s 1834, 1836Source TTLDate Collected/Prepared 6/26/94CULTURE HISTORY:

Culture ID	Date Started	Date Transformed
<u>94-O</u>	<u>8-31-94</u>	<u>9-7-94</u>
<u>94-P</u>	<u>8-31-94</u>	<u>9-7-94</u>

TREATMENT: Taylor's Silt (Reference)

DAY:		0	1	2	3	4	5	6	7	8	9
DATE:		9/13	9/14	9/15	9/16	9/17	9/18	9/19	9/20	9/21	9/22
BY:		MS	DJS	MAB	JK	MAB	DJS	MAB	DJS	MAB	DJS
Rep 1:	# Alive	10	10	10	10	10	10	10	10	10	10
	# Stressed	0	0	0	0	0	0	0	0	0	0
	# Dead	0	0	0	0	0	0	0	0	0	0
Rep 2:	# Alive	10	10	10	10	10	10	10	10	10	10
	# Stressed	0	0	0	0	0	0	0	0	0	0
	# Dead	0	0	0	0	0	0	0	0	0	0
Rep 3:	# Alive	10	10	10	10	10	10	10	10	10	10
	# Stressed	0	0	0	0	0	0	0	0	0	0
	# Dead	0	0	0	0	0	0	0	0	0	0
Rep 4:	# Alive	10	10	10	10	10	10	10	10	10	10
	# Stressed	0	0	0	0	0	0	0	0	100	0
	# Dead	0	0	0	0	0	0	0	0	0	0

Notes:

TREATMENT: PCM 6.0 100% (Control)

DAY:		0	1	2	3	4	5	6	7	8	9
DATE:		9/13	9/14	9/15	9/16	9/17	9/18	9/19	9/20	9/21	9/22
BY:		MAB	MS	MAB	JK	MAB	DJS	MAB	DJS	MAB	DJS
Rep 1:	# Alive	10	10	10	10	10	10	10	10	10	10
	# Stressed	0	0	0	0	0	0	0	0	0	0
	# Dead	0	0	0	0	0	0	0	0	0	0
Rep 2:	# Alive	10	10	10	10	10	10	10	10	10	10
	# Stressed	0	0	0	0	0	0	0	0	0	0
	# Dead	0	0	0	0	0	0	0	0	0	0
Rep 3:	# Alive	10	10	10	10	10	10	10	10	10	10
	# Stressed	0	0	0	0	0	0	0	0	0	0
	# Dead	0	0	0	0	0	0	0	0	0	0
Rep 4:	# Alive	10	10	10	10	10	10	10	10	10	10
	# Stressed	0	0	0	0	0	0	0	0	0	0
	# Dead	0	0	0	0	0	0	0	0	0	0

Notes:

Reviewed By: DJS

TREATMENT: PCM 1.0 50%

DAY:		0	1	2	3	4	5	6	7	8	9
DATE:		9/13	9/14	9/15	9/16	9/17	9/18	9/19	9/20	9/21	9/22
BY:		DJS	DJS	MAB	DJS	MAB	DJS	MAB	MAB	MAB	DJS
Rep 1:	# Alive	10	10	10	10	10	10	10	10	10	10
	# Stressed	0	0	0	0	0	0	0	0	0	0
	# Dead	0	0	0	0	0	0	0	0	0	0
Rep 2:	# Alive	10	10	10	10	10	10	10	10	10	10
	# Stressed	0	0	0	0	0	0	0	0	0	0
	# Dead	0	0	0	0	0	0	0	0	0	0
Rep 3:	# Alive	10	10	10	10	10	10	10	10	10	10
	# Stressed	0	0	0	0	0	0	0	0	0	0
	# Dead	0	0	0	0	0	0	0	0	0	0
Rep 4:	# Alive	10	10	10	10	10	10	10	10	10	10
	# Stressed	0	0	0	0	0	0	0	0	0	0
	# Dead	0	0	0	0	0	0	0	0	0	0

Notes:

TREATMENT: PCM 1.0 100%

DAY:		0	1	2	3	4	5	6	7	8	9
DATE:		0/13	9/14	9/15	9/16	9/17	9/18	9/19	9/20	9/21	9/22
BY:		MAB	DJS	MAB	DJS	MAB	DJS	MAB/DJS	MAB	MAB/DJS	DJS
Rep 1:	# Alive	10	10	10	10	10	10	10	10	20	10
	# Stressed	0	0	0	0	0	0	0	0	0	0
	# Dead	0	0	0	0	0	0	0	0	0	0
Rep 2:	# Alive	10	10	10	10	10	10	10	10	10	10
	# Stressed	0	0	0	0	0	0	0	0	0	0
	# Dead	0	0	0	0	0	0	0	0	0	0
Rep 3:	# Alive	10	10	10	10	10	10	10	10	9 ²	9
	# Stressed	0	0	0	0	0	0	0	0	0	0
	# Dead	0	0	0	0	0	0	0	0	0	0
Rep 4:	# Alive	10	10	10	10	10	10	10	10	10	10
	# Stressed	0	0	0	0	0	0	0	0	0	0
	# Dead	0	0	0	0	0	0	0	0	0	0

Notes: * One with cracked shell; count as 9 Intact only

Reviewed By: DJS

COULTER COUNTER DATA SHEET

Study: Algae for MusselsStudy Dates: Beginning: 9-12-94 End: 9-12-94Analysis Date: 9-12-94Counter Calibration Date: 8-29-94Personnel: LinardCalibration Constant: 7.890

SAMPLE ID	REP.	ml SAMPLE	ml ISOTON	ml MANOK.	TL	CORRECTED COUNT	CELLS/ ml
--------------	------	--------------	--------------	--------------	----	--------------------	--------------

RO 5 Till H ₂ O	1	19	100			54	
----------------------------	---	----	-----	--	--	----	--

						55	
--	--	--	--	--	--	----	--

						51	53
--	--	--	--	--	--	----	----

Algae 1:50	1					5101	
------------	---	--	--	--	--	------	--

Algae 1:50	2					4194	
------------	---	--	--	--	--	------	--

Algae 1:50	3					3675	
------------	---	--	--	--	--	------	--

Algae 1:50	4A					2907	$\bar{x}$ 3006 - 53 =
------------	----	--	--	--	--	------	-----------------------

						3077	2953 $\times$ 200 =
--	--	--	--	--	--	------	---------------------

						3035	590666.6 $\times$ 50 =
							2953333.33

Algae 1:50	4B					3165	$\bar{x}$ 3110 - 53 =
------------	----	--	--	--	--	------	-----------------------

						3096	3057 $\times$ 200 =
--	--	--	--	--	--	------	---------------------

						3070	611466.6 $\times$ 50 =
							3057333.33

Comments: _____

Algae 1:50 4C

3015 $\bar{x}$ 3013 - 53 =2951 2960 $\times$ 200 = $\bar{x}$ 2990333.333074 592066.6 $\times$ 50 =

INITIAL CHEMISTRYProject: CR-ERP QA September 1994Personnel: SimbeckBeginning Date: September 13, 1994BarfieldEnding Date: September 14, 1994Date: 9-12-94

TREATMENT	Taylor Silt	F-Med #1834	Cntrl Cu	0.312 mg/L	0.625 mg/L	1.250 mg/L	2.500 mg/L	5.000 mg/L
Temperature	23.0	22.3*						
D.O. (before air)								
(after air)								
(w/silt/algae)	8.3	8.3						
pH (before air)	8.1	8.2						
(after air)								
(w/silt/algae)	8.1	8.2						
(Aeration time)								
Conductivity	337	341						
Hardness	4.5	4.4						
x 20.0	90	88						
Alkalinity	6.6	6.5						
x 10	66	65						
Chlorine								
Ammonia								

NOTES: * temperature of mussels to be picked = 22.8PCM 1.0 temperature = 1.4°CPCM 6.0 temperature = 1.3°CReviewed By: BJS
(PLARC501-130)

INITIAL CHEMISTRYProject: CR-ERP QA September 1994Personnel: SimbeckBeginning Date: September 13, 1994BarfieldEnding Date: September 14, 1994Date: 9-13-94

TREATMENT	Taylor Silt	F-Med #1834	Cntrl Cu	0.312 mg/L	0.625 mg/L	1.250 mg/L	2.500 mg/L	5.000 mg/L
Temperature	23.5		23.5	23.5	23.5	23.5	23.5	23.5
D.O. (before air)	8.0		8.0	8.0	8.0	8.0	8.0	8.0
(after air)	↓		↓	↓	↓	↓	↓	↓
(w/silt/algae)	↓		↓	↓	↓	↓	↓	↓
pH (before air)								
(after air)								
(w/silt/algae)	7.9		6.9	6.9	6.9	6.8	6.7	6.6
(Aeration time)								
Conductivity	336		349	350	350	352	353	357
Hardness	4.5		4.6	4.6				4.8
x 20.0	90		92	92				96
Alkalinity	6.7		4.3	4.2				4.0
x 10	67		43	42				40
Chlorine								
Ammonia	0.006		0.001	0.001				<0.001

NOTES: _____

Reviewed By: DB
(PLARC501-130)

INITIAL CHEMISTRYProject: CR-ERP QA September 1994Personnel: SimbeckBeginning Date: September 13, 1994BarfieldEnding Date: September 14, 1994Date: 9-14-94

TREATMENT	Taylor Silt	F-Med #1836	Cntrl Cu	0.312 mg/L	0.625 mg/L	1.250 mg/L	2.500 mg/L	5.000 mg/L
Temperature	24.0	23.8	24.1	24.2	24.0	24.1	24.0	23.9
D.O. (before air)		^{MSA} 8.9-14-94						
(after air)								
(w/silt/algae)	8.1	8.3	8.1	8.1	8.1	8.1	8.1	8.1
pH (before air)								
(after air)								
(w/silt/algae)	7.8	8.2	7.0	6.9	6.9	6.8	6.7	6.6
(Aeration time)								
Conductivity	³²³ 326	326	336	337	338	338	340	344
Hardness	4.6	4.6	4.5	4.5				4.7
x 20.0	92	92	90	90				94
Alkalinity	6.1	6.2	3.5	3.5				3.3
x 10	61	62	35	35				33
Chlorine								
Ammonia	0.005		0.001	0.001				<0.001

NOTES: _____

Reviewed By: DPF
(PLARC501-130)

INITIAL CHEMISTRYProject: CR-ERP QA September 1994Personnel: SimbeckBeginning Date: September 13, 1994BarfieldEnding Date: September 14, 1994
22 ~~21~~ 9-21-94Date: 9-15-94

TREATMENT	Taylor Silt	F-Med #1836	Cntrl Cu	0.312 mg/L	0.625 mg/L	1.250 mg/L	2.500 mg/L	5.000 mg/L
Temperature	24.0	24.1	24.2	24.4	24.2	24.0	24.0	24.0
D.O. (before air)								
(after air)								
(w/silt/algae)	8.3	8.5	8.3	8.3	8.3	8.4	8.3	8.3
pH (before air)								
(after air)	7.9							
(w/silt/algae)	8.2	8.2	6.8	6.8	6.7	6.7	6.6	6.4
(Aeration time)								
Conductivity	324	326	337	338	337	338	341	345
Hardness	4.4		4.5	4.4				4.5
x 20.0	88		90	88				90
Alkalinity	6.0		3.6	3.5				3.4
x 10	60		36	35				34
Chlorine								
Ammonia	0.006		<0.001	0.001				<0.001

NOTES: _____

Reviewed By: BAF
(PLARC501-130)

INITIAL CHEMISTRYProject: CR-ERP QA September 1994Personnel: SimbeckBeginning Date: September 13, 1994BarfieldEnding Date: September 14, 1994 ^{22 Sept 9-21-94}Date: 9-16-94

TREATMENT	Taylor Silt	F-Med # 1839	Cntrl Cu	0.312 mg/L	0.625 mg/L	1.250 mg/L	2.500 mg/L	5.000 mg/L
Temperature	23.9	23.9	24.1	24.1	24.0	24.0	24.0	
D.O. (before air)								
(after air)								
(w/silt/algae)	8.3	8.4 6.4 4.3	8.3	8.3	8.3	8.3	8.3	
pH (before air)								
(after air)								
(w/silt/algae)	7.9 8.3 4.3	8.3	7.0	7.0	6.9	6.9	6.7	
(Aeration time)								
Conductivity	335	337	348	349	349	348	352	
Hardness	4.7	4.6	4.7	4.7			4.8	
x 20.0	94	92	94	94			96	
Alkalinity	4.2	6.4	3.8	3.9			3.8	
x 10	42	64	38	39			38	
Chlorine								
Ammonia	0.006		0.001	0.001			<0.001	

NOTES: _____

Reviewed By: AYS
(PLARC501-130)

INITIAL CHEMISTRYProject: CR-ERP QA September 1994Personnel: SimbeckBeginning Date: September 13, 1994BarfieldEnding Date: September 14, 1994
²² ^{MS 9-21-94}Date: 9-17-94

TREATMENT	Taylor Silt	F-Med #1839	Cntrl Cu	0.312 mg/L	0.625 mg/L	1.250 mg/L	2.500 mg/L	5.000 mg/L
Temperature	23.7	23.7	23.9	24.0	23.9	23.8		
D.O. (before air)								
(after air)								
(w/silt/algae)	8.2	8.4	8.2	8.2	8.2	8.2		
pH (before air)								
(after air)								
(w/silt/algae)	8.30	8.3	7.2	7.1	7.0	6.9		
(Aeration time)								
Conductivity	335	338	348	349	349	350		
Hardness	4.85		4.6	4.7		4.7		
x 20.0	90		92	94		94		
Alkalinity	6.2		4.0	3.9		3.8		
x 10	62		40	39		38		
Chlorine								
Ammonia	0.006		0.001	0.001		0.001		

NOTES: _____

Reviewed By: MS
(PLARC501-130)

INITIAL CHEMISTRYProject: CR-ERP QA September 1994Personnel: SimbeckBeginning Date: September 13, 1994BarfieldEnding Date: September 14, 1994Date: 9-18-94

TREATMENT	Taylor Silt	F-Med # 1841	Cntrl Cu	0.312 mg/L	0.625 mg/L	1.250 mg/L	2.500 mg/L	5.000 mg/L
Temperature	24.0	23.9	24.1	24.1	24.0	24.0		
D.O. (before air)								
(after air)								
(w/silt/algae)	8.0	8.2	8.0	8.0	8.0	8.0		
pH (before air)		8.5						
(after air)								
(w/silt/algae)	7.8	8.3	7.0	7.0	6.9	6.8		
(Aeration time)								
Conductivity	335	338	349	349	350	350		
Hardness	4.5	4.5	4.5	4.5		4.6		
x 20.0	90	90	90	90		92		
Alkalinity	6.9	7.0	4.4	4.2		4.2		
x 10	69	70	44	42		42		
Chlorine								
Ammonia	0.005		0.001	0.001		0.001		

NOTES: _____

Reviewed By: BS
(PLARC501-130)

INITIAL CHEMISTRYProject: CR-ERP QA September 1994Personnel: SimbeckBeginning Date: September 13, 1994BarfieldEnding Date: September 14, 1994Date: 9-19-94

TREATMENT	Taylor	F-Med	Cntrl	0.312	0.625	1.250	2.500	5.000
	Silt	#1841	Cu	mg/L	mg/L	mg/L	mg/L	mg/L
Temperature	24.0	23.8	24.1	24.2	23.9	23.8		
D.O. (before air)								
(after air)								
(w/silt/algae)	8.3	8.4	8.3	8.3	8.3	8.3		
pH (before air)								
(after air)								
(w/silt/algae)	7.9	8.3	7.0	7.0	6.9	6.8		
(Aeration time)								
Conductivity	336	338	350	349	350	352		
Hardness	4.5		4.7	4.7		4.6		
x 20.0	90		94	94		92		
Alkalinity	6.4		4.1	4.2		4.0		
x 10	64		41	42		40		
Chlorine								
Ammonia	0.006		0.001	0.001		<0.001		

NOTES: _____

Reviewed By: MS
(PLARC501-130)

INITIAL CHEMISTRYProject: CR-ERP OA September 1994Personnel: SimbeckBeginning Date: September 13, 1994BarfieldEnding Date: September 14, 1994Date: 9-20-94

TREATMENT	Taylor Silt	F-Med # 1842	Cntrl Cu	0.312 mg/L	0.625 mg/L	1.250 mg/L	2.500 mg/L	5.000 mg/L
Temperature	24.2	24.0	24.4	24.2	24.1	24.0		
D.O. (before air)		14.5 9-20-94						
(after air)								
(w/silt/algae)	8.4	8.5	8.4	8.4	8.4	8.4		
pH (before air)								
(after air)								
(w/silt/algae)	7.8	8.2	7.0	6.9	6.8	6.7		
(Aeration time)								
Conductivity	333	335	346	345	346	347		
Hardness	4.6	4.6	4.6	4.5		4.6		
x 20.0	92	92	92	90		92		
Alkalinity	6.7	6.8	4.2	4.0		4.1		
x 10	67	68	42	40		41		
Chlorine								
Ammonia	0.005		0.001	0.001		<0.001		

NOTES: _____

Reviewed By: DJS
(PLARC501-130)

INITIAL CHEMISTRYProject: CR-ERP QA September 1994Personnel: SimbeckBeginning Date: September 13, 1994BarfieldEnding Date: September 14, 1994Date: 9-21-94

TREATMENT	Taylor Silt	F-Med #1842	Cntrl Cu	0.312 mg/L	0.625 mg/L	1.250 mg/L	2.500 mg/L	5.000 mg/L
Temperature	23.8	24.2	24.0	24.0	24.2 42.8	24.1		
D.O. (before air)								
(after air)								
(w/silt/algae)	8.4	8.5	8.4	8.4	8.4	8.4		
pH (before air)								
(after air)								
(w/silt/algae)	7.9	8.3	7.1	6.9	6.9	6.8		
(Aeration time)								
Conductivity	333	335	346	346	348	347		
Hardness	4.5	4.4	4.54	4.5	4.6	4.6		
x 20.0	90	88	88	90	92	92		
Alkalinity	6.7	4.2	4.2	4.2	4	4.2		
x 10	67	42	42	42	42	42		
Chlorine								
Ammonia	0.009		0.002	0.001		0.001		

NOTES: _____

Reviewed By: [Signature]
(PLARC504-130)

FINAL CHEMISTRYD/S
9-2-94Project: CR-ERP QA September 1994Personnel: SimbeckBeginning Date: September 13, 1994BarfieldEnding Date: September 22, 1994Date: 9-14-94Replicate: 1

TREATMENT	Taylor Silt	M6.0 100%	M1.0 50%	M1.0 100%	Cntrl Cu	0.312 mg/L	0.625 mg/L	1.250 mg/L
Temperature	23.8	23.5	23.7	23.3	23.9	23.5	23.0	24.1
D.O.	7.9	6.5	6.0	6.1	7.9	7.9	8.1	8.0
pH	8.2	7.6	7.7	7.9	7.9	8.0	8.0	8.0
Conductivity	352	343	387	395	360	376	373	365
Hardness	4.7	5.0	6.5	7.1	4.7	5.0		
x 20.0	94	100	130	142	94	100		
Alkalinity	6.9	5.7	8.5	9.0	4.2	4.5		
x 10	69	57	85	90	42	45		
Chlorine								
Ammonia	0.013	0.007	0.019	0.049	0.008	0.009		

NOTES: _____

Reviewed By: D/S
(PLARC501-130)

FINAL CHEMISTRYProject: CR-ERP QA September 1994Personnel: SimbeckBeginning Date: September 13, 1994BarfieldEnding Date: September 22, 1994Date: 9-14-94Replicate: 1

TREATMENT	2.500 mg/L	5.000 mg/L						
Temperature	24.0	24.1						
D.O.	8.0	8.0						
pH	7.9	7.9						
Conductivity	370	370						
Hardness		5.0						
x 20.0		100						
Alkalinity		4.0						
x 10		40						
Chlorine		0.010						
Ammonia								

NOTES: _____

_____Reviewed By: DLS
(PLARC501-130)

FINAL CHEMISTRYProject: CR-ERP QA September 1994Personnel: SimbeckBeginning Date: September 13, 1994BarfieldEnding Date: September 22, 1994Date: 9-15-94Replicate: 2

TREATMENT	Taylor Silt	M6.0 100%	M1.0 50%	M1.0 100%	Cntrl Cu	0.312 mg/L	0.625 mg/L	1.250 mg/L
Temperature	23.2	23.6	23.0	23.6	23.7	24.1	24.0	24.0
D.O.	8.0	6.3	6.7	5.8	7.9	7.9	7.9	8.0
pH	8.1	7.9	7.8	7.9	7.9	7.9	7.9	7.9
Conductivity	340	346	385	382	346	360	355	348
Hardness	4.6	4.8	6.0	6.3	4.6	4.9		
x 20.0	92	96	120	126.75 129 mg/L	92	98		
Alkalinity	6.4	*	7.3	7.8	3.7	3.8		
x 10	64	*	73	78	37	38		
Chlorine								
Ammonia	0.013	0.001	0.004	0.005	0.008	0.008		

NOTES: * overshoot endpoint; not enough to redo; 5.9 mL
titrant to pH = 3.9

Reviewed By: gjs
(PLARC501-130)

FINAL CHEMISTRY

Project: CR-ERP QA September 1994

Personnel: Simbeck

Beginning Date: September 13, 1994

Barfield

Ending Date: September 22, 1994

Date: 9-15-94

Replicate: 2

TREATMENT	2.500	5.000						
	mg/L	mg/L						
Temperature	24.0	24.0						
D.O.	8.0	8.0						
pH	7.9	7.8						
Conductivity	348	358						
Hardness	4.8	4.8						
x 20.0	<i>28.5</i> 9.15	9.6						
Alkalinity	3.4	3.4						
x 10	34	34						
Chlorine								
Ammonia		0.005						

NOTES: _____

Reviewed By: *AS*
 (PLARC501-130)

FINAL CHEMISTRY

Project: CR-ERP QA September 1994

Personnel: Simbeck

Beginning Date: September 13, 1994
Barfield

Ending Date: September 22, 1994

Date: 9-16-94

Replicate: 3

TREATMENT	Taylor	M6.0	M1.0	M1.0	Cntrl	0.312	0.625	1.250
	Silt	100%	50%	100%	Cu	mg/L	mg/L	mg/L
Temperature	23.6	23.9	23.0	23.6	23.8	24.0	23.9	24.1
D.O.	7.9	6.2	6.5	6.1	7.8	7.8	7.8	7.8
pH	8.1	7.7	7.7	7.8	7.8	7.9	7.9	7.9
Conductivity	342	350 350	386 386	379	351	346	359	349
Hardness	4.8	4.6	5.8	4.8	4.8	4.7		
x 20.0	96	92	116	96	96	94		
Alkalinity	6.3	* 2.4	* 3.4	7.5	3.7	3.7		
x 10	63	48	68	75	37	37		
Chlorine								
Ammonia	0.013	0.001	<0.001	<0.001	0.007	0.008		

NOTES:

* 50 ml sample

Reviewed By: MS
(PLARC501-130)

FINAL CHEMISTRY

Project: CR-ERP QA September 1994

Personnel: Simbeck

Beginning Date: September 13, 1994

Barfield

Ending Date: September 22, 1994

Date: 9-16-94

Replicate: _____

TREATMENT	2.500	5.000							
	mg/L	mg/L							
Temperature	23.5								
D.O.	7.9								
pH	7.9								
Conductivity	363								
Hardness	5.0								
x 20.0	100								
Alkalinity	3.6								
x 10	36								
Chlorine									
Ammonia	0.006								

NOTES: _____

Reviewed By: AMS
 (PLARC501-130)

FINAL CHEMISTRY

Project: CR-ERP QA September 1994

Personnel: Simbeck

Beginning Date: September 13, 1994
Barfield

Ending Date: September 22, 1994

Date: 9-17-94

Replicate: 4

TREATMENT	Taylor	M6.0	M1.0	M1.0	Cntrl	0.312	0.625	1.250
	Silt	100%	50%	100%	Cu	mg/L	mg/L	mg/L
Temperature	23.8	23.7	23.9	23.9	23.8	23.7	23.8	23.9
D.O.	7.9	6.4	6.5	6.5	7.8	7.9	8.0	8.0
pH	8.2	7.8	7.8	7.8	7.8	8.0	8.0	8.0
Conductivity	347	351	376	382	363	360	363	362
Hardness	4.8	4.7	5.5	5.9	4.8	4.8		4.8
x 20.0	96	94	110	118	96	96		96
Alkalinity	6.7	5.2	6.9	7.8	3.9	4.0		3.9
x 10	6.7	52	69	78	39	40		39
Chlorine								
Ammonia	<0.001	0.001	0.001	0.001	0.008	0.011		0.009

NOTES: _____

Reviewed By: DJS
(PLARC501-130)

FINAL CHEMISTRYProject: CR-ERP QA September 1994Personnel: SimbeckBeginning Date: September 13, 1994BarfieldEnding Date: September 22, 1994Date: 9-18-94Replicate: 1

TREATMENT	Taylor	M6.0	M1.0	M1.0	Cntrl	0.312	0.625	1.250
	Silt	100%	50%	100%	Cu	mg/L	mg/L	mg/L
Temperature	24.0	24.2	24.0	24.0	23.8	24.0	24.0	24.2
D.O.	7.7	6.5	6.3	6.3	7.6	7.7	7.7	7.7
pH	8.2	7.8	7.8	7.8	7.9	7.9	7.9	7.9
Conductivity	351	353	379	387	367	362	361	361
Hardness	5.0	4.6	5.5	6.0	4.8	4.8		4.7
x 20.0	100	92	110	120	96	96		94
Alkalinity	6.5	5.6	7.2	8.2	4.3	4.0	4	4.0
x 10	65	56	72	82	43	40		40
Chlorine								
Ammonia	0.016	0.001	0.001	0.001	0.010	0.010		0.009

NOTES: _____

Reviewed By: MS
(PLARC501-130)

FINAL CHEMISTRY

Project: CR-ERP QA September 1994

Personnel: Simbeck

Beginning Date: September 13, 1994

Barfield

Ending Date: September 22, 1994

Date: 9-18-94

Replicate: 2

TREATMENT	Taylor	M6.0	M1.0	M1.0	Cntrl	0.312	0.625	1.250
	Silt	100%	50%	100%	Cu	mg/L	mg/L	mg/L
Temperature	24.0	23.8	23.9	23.8	23.9	23.6	23.9	24.0
D.O.	7.8	6.5	6.4	6.4	7.9	7.9	7.9	7.8
pH	8.2	7.7	7.8	7.9	8.0	8.0	8.0	8.0
Conductivity	348	351	373	384	363	386.19	360	361
Hardness	4.8	4.8	5.3	5.7	4.8	4.8		4.8
x 20.0	96	96	106	114	96	96		96
Alkalinity	6.5	6.0	7.0	7.8	4.3	4.3		4.1
x 10	65	60	70	78	43	43		41
Chlorine								
Ammonia	0.014	0.001	0.001	0.001	0.011	0.012		0.011

NOTES: _____

Reviewed By: DA
 (PLARC501-130)

FINAL CHEMISTRY

Project: CR-ERP QA September 1994

Personnel: Simbeck

Beginning Date: September 13, 1994
Barfield

Ending Date: September 22, 1994

Date: 9-20-94

Replicate: 3

TREATMENT	Taylor	M6.0	M1.0	M1.0	Cntrl	0.312	0.625	1.250
	Silt	100%	50%	100%	Cu	mg/L	mg/L	mg/L
Temperature	23.9	23.8	23.6	23.8	23.9	23.9	24.0	24.0
D.O.	7.9	6.7	6.8	6.4	7.9	8.0	8.0	8.0
pH	8.2	7.8	7.8	7.9	7.9	7.9	7.9	7.9
Conductivity	349	357	377	388	362	361	366	363
Hardness	4.8	4.6	5.4	5.9	4.7	4.7		4.8
x 20.0	96	92	108	118	94	94		96
Alkalinity	6.8	6.3	7.4	4.3	4.4	4.3		4.2
x 10	68	63	74	83	44	43		42
Chlorine								
Ammonia	0.008	0.001	<0.001	0.001	0.007	0.008		0.010

NOTES: _____

Reviewed By: DAS
(PLARC501-130)

FINAL CHEMISTRY

Project: CR-ERP QA September 1994

Personnel: Simbeck

Beginning Date: September 13, 1994
Barfield

Ending Date: September 22, 1994

Date: 9-21-94

Replicate: 4

TREATMENT	Taylor	M6.0	M1.0	M1.0	Cntrl	0.312	0.625	1.250
	Silt	100%	50%	100%	Cu	mg/L	mg/L	mg/L
Temperature	23.8	23.8	23.9	23.8	24.0	23.8	23.7	* 23.9
D.O.	7.9	7.9 ²² 6.7	6.8	6.6	7.9	7.9	7.9	8.0
pH	8.1	7.8	7.8	7.9	7.9	7.9	7.9	8.0
Conductivity	346	362	373	388	358	360	357	361
Hardness	4.5	4.7	5.2	5.7	4.5	4.6	4.5	
x 20.0	90	94	104	114	90	92	90	
Alkalinity	6.9	6.4	7.4	8.4	4.4	4.3	4.2	
x 10	69	64	74	84	44	43	42	
Chlorine								
Ammonia	0.003	<0.001	0.001	0.001	0.005	0.005		0.012

NOTES: * Rep 1 Final Chemistry (Only Rep remaining) - no alk & hardness; Alk only

Reviewed By: SL2
(PLARC501-130)

FINAL CHEMISTRYProject: CR-ERP QA September 1994Personnel: SimbeckBeginning Date: September 13, 1994BarfieldEnding Date: September 22, 1994Date: 9-22-94Replicate: 1

TREATMENT	Taylor	M6.0	M1.0	M1.0	Cntrl	0.312	0.625	1.250
	Silt	100%	50%	100%	Cu	mg/L	mg/L	mg/L
Temperature	24.0	24.1	24.0	24.2	24.2	24.1	24.1	
D.O.	7.9	7.0	6.8	6.6	7.8	7.8	7.9	
pH	8.2	7.8	7.7	7.9	8.0	7.9	7.9	
Conductivity	349	356	376	385	362	358	359	
Hardness	4.7	4.7	5.2	5.8	4.7	4.6	4.8	
x 20.0	94	94	104	116	94	92	96	
Alkalinity	6.8	6.3	7.4	6.2	4.2	4.2	4.2	
x 10	68	63	74	62	42	42	42	
Chlorine								
Ammonia	0.003	<0.001	0.009	<0.001	0.005	0.005	0.011	

NOTES: _____

Reviewed By: OS
(PLARC501-130)

CR - ERP - QA3 - September 13-22, 1994 -- INITIAL AND FINAL CHEMISTRY

INITIAL CHEMISTRY

TAYLOR'S SILT

DAY	TEMP	DO	pH	COND	HARD	ALK	AMMONIA
-1	23.0	8.3	8.1	337	90.0	66	--
0	23.5	8.0	7.9	336	90.0	67	0.006
1	24.0	8.1	7.8	323	92.0	61	0.005
2	24.0	8.3	7.9	324	88.0	60	0.006
3	23.9	8.3	7.9	335	94.0	62	0.006
4	23.7	8.2	8.0	335	90.0	62	0.006
5	24.0	8.0	7.8	335	90.0	69	0.005
6	24.0	8.3	7.9	336	90.0	64	0.006
7	24.2	8.4	7.8	333	92.0	67	0.005
8	23.8	8.4	7.9	333	90.0	67	0.009
MEAN	23.8	8.2	7.9	333	90.6	65	0.006
MIN	23.0	8.0	7.8	323	88.0	60	0.005
MAX	24.2	8.4	8.1	337	94.0	69	0.009

FISH MEDIUM

DAY	TEMP	DO	pH	COND	HARD	ALK	CHLORINE
-1	22.3	8.3	8.2	341	88.0	65	--
0	--	--	--	--	--	--	--
1	23.8	8.3	8.2	326	92.0	62	--
2	24.1	8.5	8.2	326	--	--	--
3	23.9	8.4	8.3	337	92.0	64	--
4	23.7	8.4	8.3	338	--	--	--
5	23.9	8.2	8.3	338	90.0	70	--
6	23.8	8.4	8.3	338	--	--	--
7	24.0	8.5	8.2	335	92.0	68	--
8	24.2	8.5	8.3	335	--	--	--
MEAN	23.7	8.4	8.3	335	90.8	66	--
MIN	22.3	8.2	8.2	326	88.0	62	--
MAX	24.2	8.5	8.3	341	92.0	70	--

===== FINAL CHEMISTRY =====

TAYLOR SILT

DAY	TEMP	DO	pH	COND	HARD	ALK	AMMONIA
1	23.8	7.9	8.2	352	94.0	69	0.013
2	23.2	8.0	8.1	340	92.0	64	0.013
3	23.6	7.9	8.1	342	96.0	63	0.013
4	23.8	7.9	8.2	347	96.0	67	0.001
5	24.0	7.7	8.2	351	100.0	65	0.016
6	24.0	7.8	8.2	348	96.0	65	0.014
7	23.9	7.9	8.2	349	96.0	68	0.008
8	23.8	7.9	8.1	346	90.0	69	0.003
9	24.0	7.9	8.2	349	94.0	68	0.003

MEAN 23.8 7.9 8.2 347 94.9 66 (0.009

MIN 23.2 7.7 8.1 340 90.0 63 (0.001

MAX 24.0 8.0 8.2 352 100.0 69 0.016

M1.0-50%

DAY	TEMP	DO	pH	COND	HARD	ALK	AMMONIA
1	23.7	6.0	7.7	387	130.0	85	0.019
2	23.0	6.7	7.8	385	120.0	73	0.004
3	23.0	6.5	7.7	386	116.0	68	0.001
4	23.9	6.5	7.8	376	110.0	69	0.001
5	24.0	6.3	7.8	379	110.0	72	0.001
6	23.9	6.4	7.8	373	106.0	70	0.001
7	23.6	6.8	7.8	377	108.0	74	0.001
8	23.9	6.8	7.8	373	104.0	74	0.001
9	24.0	6.8	7.7	376	104.0	74	0.009

MEAN 23.7 6.5 7.8 379 112.0 73 (0.004

MIN 23.0 6.0 7.7 373 104.0 68 (0.001

MAX 24.0 6.8 7.8 387 130.0 85 0.019

M6.0-100%

DAY	TEMP	DO	pH	COND	HARD	ALK	AMMONIA
1	23.5	6.5	7.6	343	100.0	57	0.007
2	23.6	6.3	7.9	346	96.0	--	0.001
3	23.9	6.2	7.7	350	92.0	48	0.001
4	23.7	6.4	7.8	351	94.0	52	0.001
5	24.2	6.5	7.8	353	92.0	56	0.001
6	23.8	6.5	7.7	351	96.0	60	0.001
7	23.8	6.7	7.8	357	92.0	63	0.001
8	23.8	6.7	7.8	362	94.0	64	0.001
9	24.1	7.0	7.8	356	94.0	63	0.001

MEAN 23.8 6.5 7.8 352 94.4 51 (0.002

MIN 23.5 6.2 7.6 343 92.0 48 (0.001

MAX 24.2 7.0 7.9 362 100.0 64 0.007

M1.0-100%

DAY	TEMP	DO	pH	COND	HARD	ALK	AMMONIA
1	23.3	6.1	7.9	395	142.0	90	0.049
2	23.6	5.8	7.9	382	126.0	78	0.005
3	23.6	6.1	7.8	379	120.0	75	0.001
4	23.9	6.5	7.8	382	118.0	78	0.001
5	24.0	6.3	7.8	387	120.0	82	0.001
6	23.8	6.4	7.9	384	114.0	78	0.001
7	23.8	6.4	7.9	388	118.0	83	0.001
8	23.8	6.6	7.9	388	114.0	84	0.001
9	24.2	6.6	7.9	385	116.0	82	0.001

MEAN 23.8 6.3 7.9 386 120.9 81 (0.007

MIN 23.3 5.8 7.8 379 114.0 75 (0.001

MAX 24.2 6.6 7.9 395 142.0 90 0.049

Test Temperature: 23.8

MIN 23.0

MAX 24.2

Reviewed by:

Wang reviewed by:

JS 10-6-94
dt 10-6-94

PROJECT REAGENT RECORD SHEET

Project/Study: CR-ERP Mussel QA
 Personnel: Smbeck, Barfield

Beginning Date: Sept 13, 1994
 Ending Date: Sept 22, 1994

WINKLER TITRATION METHOD

Alkaline-Iodide-Azide:

Brand Fisher
 Lot # 935045-24
 Exp. 9-95

Manganous Sulfate:

Brand Fisher
 Lot # 935044-24
 Exp. 8-95

Sodium Thiosulfate:

Brand Ricca
 Lot # B068
 Exp. 6-95

Sulfuric Acid:

Brand Fisher
 Lot # 941412
 Exp. NA

Thyodene:

Brand Fisher
 Lot # 935313A
 Exp. NA

pH BUFFER SOLUTIONS

pH 4:

Brand Mallinckrodt
 Lot # 0097 KLEA
 Exp. 9-94

pH 7:

Brand Mallinckrodt
 Lot # 0098 KMBIC
 Exp. 10-95

pH 10:

Brand Mallinckrodt
 Lot # 0099 KLSH
 Exp. 10-94

pH 4:

Brand Mallinckrodt
 Lot # 0097 KLM
 Exp. 2-95

pH 7:

Brand Mallinckrodt
 Lot # 0098 KMBIC
 Exp. 9-95

CONDUCTIVITY STANDARD SOLUTIONS

200 μ mhos:

Brand BioPharm
 Lot # F174A
 Exp. 7-94

720 μ mhos:

Brand Whatman
 Lot # 3143
 Exp. 9-94

720 μ mhos:

Brand BioPharm
 Lot # F164B
 Exp. 7-96

ALKALINITY TITRATION

Sulfuric Acid Solution N/50:

Brand Fisher
 Lot # 935306
 Exp. NA

HARDNESS TITRATION

Hardness Titrating Solution:

Brand Calgon
 Lot # R4005702
 Exp. NA

Hardness Indicator:

Brand Calgon
 Lot # 0129B
 Exp. NA

Hardness Buffer Solution:

Brand Calgon
 Lot # 26C6R
 Exp. NA

CHLORINE TITRATION

DPD Powder Pillows:

Brand NA
 Lot #
 Exp.

Potassium Iodide:

Brand NA
 Lot #
 Exp.

FAS:

Brand NA
 Lot #
 Exp.

Project Instrument Record Sheet

Project Study CR-ERP Mussel QA

Beginning Date Sept. 13; 1994

Ending Date Sept. 22; 1994

DO Meter

Model YSI Model 57

TVA Tag 543348

Calibration Date 8-24-94

pH Meter(s)

Model Orion Research Model SA250

TVA Tag SN = 7413

Calibration Date 5-5-94

Model Orion Research Model 407A

TVA Tag 472857

Calibration Date 5-19-94

Conductivity Meter

Model YSI Model 32

TVA Tag SN = 2341

Calibration Date 8-23-94

Thermometer(s)

Model SAMA CP-40

TVA Tag M216

Calibration Date 11-30-93

Model NA

TVA Tag _____

Calibration Date _____

ATTACHMENT III

AMMONIA ANALYSIS REQUEST AND RESULTS

TENNESSEE VALLEY AUTHORITY
Resource Development Group
River Basin Operations
Water Resources
Department of Water Quality
Environmental Chemistry
150 401 Chestnut Street
Chattanooga, Tennessee 37402-2801

DAMIEN J. SIMBECK
TTL 1A-BFN

Dear DAMIEN J. SIMBECK :

Enclosed is a copy of the analytical results for your sample(s)
received by our laboratory.

If you have any questions, please contact me at (615) 751-3135 and
refer to the Lab Sample Number.

Sincerely,

TENNESSEE VALLEY AUTHORITY

Larry O. Hill , Analytical Chemist
Environmental Chemistry

Lab Sample Number :94/12984 Project Leader :Larry O. Hill

Sample ID Information :TAYLOR'S SILT-INITIAL
 Sample comments :CR-ERP MUSSEL QA
 Sample type/matrix :WATER
 Sample collected by :DJS
 Sample collection date :940913
 Sample login date :940916 Sample received by lab :940916
 Sample account number :0009687.LOHDSNH3
 Laboratory comments :TTL:PH=7.9;TEMP=24

Alt. IDC	Analysis Performed	result	units
00610	Ammonia Nitrogen	0.11	mg/L
00619	Calc Union NH3 in Water	0.006	mg NH3/L
NH3NH4'W	Calc NH3+NH4-NH3 Water	0.13	mg NH3/L
00630	Nitrate-Nitrite Nitrogen	< 0.01	mg/L

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| TVA Environmental Chemistry           Chattanooga, Tennessee |
| 09/22/94                           FINAL DATA REPORT        13:19 |
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Lab Sample Number :94/12989 Project Leader :Larry O. Hill

Sample ID Information :TAYLOR'S SILT-INITIAL
 Sample comments :CR-ERP MUSSEL QA
 Sample type/matrix :WATER
 Sample collected by :DJS
 Sample collection date :940914
 Sample login date :940916 Sample received by lab :940916
 Sample account number :0009687.LOHDSNH3
 Laboratory comments :TTL:PH=7.8;TEMP=24

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| Alt. IDC | Analysis Performed | result | units |
=====
00610      Ammonia Nitrogen      0.10    mg/L
00619      Calc Union NH3 in Water 0.005   mg NH3/L
NH3NH4'W   Calc NH3+NH4-NH3 Water 0.12    mg NH3/L

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| TVA Environmental Chemistry          Chattanooga, Tennessee |
| 09/22/94                          FINAL DATA REPORT        13:19 |
===== Page 1 =====

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Lab Sample Number :94/12993 Project Leader :Larry O. Hill

Sample ID Information :TAYLOR'S SILT-FINAL
 Sample comments :CR-ERP MUSSEL QA
 Sample type/matrix :WATER
 Sample collected by :DJS
 Sample collection date :940914
 Sample login date :940916 Sample received by lab :940916
 Sample account number :0009687.LOHDSNH3
 Laboratory comments :TTL:PH=8.2;TEMP=24

Alt. IDC	Analysis Performed	result	units
00610	Ammonia Nitrogen	0.12	mg/L
00619	Calc Union NH3 in Water	0.013	mg NH3/L
NH3NH4'W	Calc NH3+NH4-NH3 Water	0.15	mg NH3/L

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| TVA Environmental Chemistry          Chattanooga, Tennessee |
| 09/22/94              FINAL DATA REPORT          13:19 |
===== Page 1 =====

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Lab Sample Number :94/12994 Project Leader :Larry O. Hill

Sample ID Information :PCM 6.0-FINAL
 Sample comments :CR-ERP MUSSEL QA
 Sample type/matrix :WATER
 Sample collected by :DJS
 Sample collection date :940914
 Sample login date :940916 Sample received by lab :940916
 Sample account number :0009687.LOHDSNH3
 Laboratory comments :TTL:PH=7.6;TEMP=24

Alt. IDC	Analysis Performed	result	units
00610	Ammonia Nitrogen	0.22	mg/L
00619	Calc Union NH3 in Water	0.007	mg NH3/L
NH3NH4'W	Calc NH3+NH4-NH3 Water	0.27	mg NH3/L
00630	Nitrate-Nitrite Nitrogen	0.24	mg/L

Lab Sample Number :94/12995 Project Leader :Larry O. Hill

Sample ID Information :PCM 6.0-FINAL PRECISION
 Sample comments :CR-ERP MUSSEL QA
 Sample type/matrix :WATER
 Sample collected by :DJS
 Sample collection date :940914
 Sample login date :940916 Sample received by lab :940916
 Sample account number :0009687.LOHDSNH3
 Laboratory comments :TTL:PH=7.6;TEMP=24

Alt. IDC	Analysis Performed	result	units
00610	Ammonia Nitrogen	0.23	mg/L
00619	Calc Union NH3 in Water	0.007	mg NH3/L
NH3NH4'W	Calc NH3+NH4-NH3 Water	0.28	mg NH3/L
00630	Nitrate-Nitrite Nitrogen	0.25	mg/L

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| TVA Environmental Chemistry           Chattanooga, Tennessee |
| 09/22/94                           FINAL DATA REPORT       13:19 |
===== Page 1 =====

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Lab Sample Number :94/12996 Project Leader :Larry O. Hill

Sample ID Information :PCM 1.0-(50%) FINAL
 Sample comments :CR-ERP MUSSEL QA
 Sample type/matrix :WATER
 Sample collected by :DJS
 Sample collection date :940914
 Sample login date :940916 Sample received by lab :940916
 Sample account number :0009687.LOHDSNH3
 Laboratory comments :TTL:PH=7.6;TEMP=24

Alt. IDC	Analysis Performed	result	units
00610	Ammonia Nitrogen	0.60	mg/L
00619	Calc Union NH3 in Water	0.019	mg NH3/L
NH3NH4'W	Calc NH3+NH4-NH3 Water	0.73	mg NH3/L
00630	Nitrate-Nitrite Nitrogen	0.34	mg/L

Lab Sample Number :94/12997 Project Leader :Larry O. Hill

Sample ID Information :PCM 1.0-(100%)FINAL
 Sample comments :CR-ERP MUSSEL QA
 Sample type/matrix :WATER
 Sample collected by :DJS
 Sample collection date :940914
 Sample login date :940916 Sample received by lab :940916
 Sample account number :0009687.LOHDSNH3
 Laboratory comments :TTL:PH=7.9;TEMP=24

Alt. IDC	Analysis Performed	result	units
00610	Ammonia Nitrogen	0.88	mg/L
00619	Calc Union NH3 in Water	0.049	mg NH3/L
NH3NH4'W	Calc NH3+NH4-NH3 Water	1.1	mg NH3/L
00630	Nitrate-Nitrite Nitrogen	0.48	mg/L

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| TVA Environmental Chemistry          Chattanooga, Tennessee |
| 09/22/94                          FINAL DATA REPORT        13:19 |
===== Page 1 =====

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Lab Sample Number :94/13001 Project Leader :Larry O. Hill

Sample ID Information :TAYLOR'S SILT -INITIAL
 Sample comments :CR-ERP MUSSEL QA
 Sample type/matrix :WATER
 Sample collected by :DJS
 Sample collection date :940915
 Sample login date :940916 Sample received by lab :940916
 Sample account number :0009687.LOHDSNH3
 Laboratory comments :TTL:PH=7.9;TEMP=24

Alt. IDC	Analysis Performed	result	units
00610	Ammonia Nitrogen	0.10	mg/L
00619	Calc Union NH3 in Water	0.006	mg NH3/L
NH3NH4'W	Calc NH3+NH4-NH3 Water	0.12	mg NH3/L
00630	Nitrate-Nitrite Nitrogen	< 0.01	mg/L

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| TVA Environmental Chemistry          Chattanooga, Tennessee |
| 09/22/94                          FINAL DATA REPORT        13:19 |
===== Page 1 =====

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Lab Sample Number :94/13005 Project Leader :Larry O. Hill

Sample ID Information :TAYLOR'S SILT-FINAL
 Sample comments :CR-ERP MUSSEL QA
 Sample type/matrix :WATER
 Sample collected by :DJS
 Sample collection date :940915
 Sample login date :940916 Sample received by lab :940916
 Sample account number :0009687.LOHDSNH3
 Laboratory comments :TTL:PH=8.1;TEMP=24

Alt. IDC	Analysis Performed	result	units
00610	Ammonia Nitrogen	0.14	mg/L
00619	Calc Union NH3 in Water	0.013	mg NH3/L
NH3NH4'W	Calc NH3+NH4-NH3 Water	0.17	mg NH3/L

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| TVA Environmental Chemistry          Chattanooga, Tennessee |
| 09/22/94                          FINAL DATA REPORT        13:21 |
===== Page 1 =====

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Lab Sample Number :94/13006 Project Leader :Larry O. Hill

Sample ID Information :PCM 6.0-FINAL
 Sample comments :CR-ERP MUSSEL QA
 Sample type/matrix :WATER
 Sample collected by :DJS
 Sample collection date :940915
 Sample login date :940916 Sample received by lab :940916
 Sample account number :0009687.LOHDSNH3
 Laboratory comments :TTL:PH=7.9;TEMP=24

Alt. IDC	Analysis Performed	result	units
00610	Ammonia Nitrogen	0.02	mg/L
00619	Calc Union NH3 in Water	0.001	mg NH3/L
NH3NH4'W	Calc NH3+NH4-NH3 Water	0.024	mg NH3/L
00630	Nitrate-Nitrite Nitrogen	0.34	mg/L

Lab Sample Number :94/13007 Project Leader :Larry O. Hill

Sample ID Information :PCM 1.0(50%)-FINAL
 Sample comments :CR-ERP MUSSEL QA
 Sample type/matrix :WATER
 Sample collected by :DJS
 Sample collection date :940915
 Sample login date :940916 Sample received by lab :940916
 Sample account number :0009687.LOHDSNH3
 Laboratory comments :TTL:PH=7.8;TEMP=24

```

-----
| Alt. IDC | Analysis Performed | result | units |
-----
00610      Ammonia Nitrogen      0.09    mg/L
00619      Calc Union NH3 in Water 0.004   mg NH3/L
NH3NH4'W   Calc NH3+NH4-NH3 Water 0.11    mg NH3/L
00630      Nitrate-Nitrite Nitrogen 0.67    mg/L

```

Lab Sample Number :94/13008 Project Leader :Larry O. Hill

Sample ID Information :PCM 1.0(100%)-FINAL
 Sample comments :CR-ERP MUSSEL QA
 Sample type/matrix :WATER
 Sample collected by :DJS
 Sample collection date :940915
 Sample login date :940916 Sample received by lab :940916
 Sample account number :0009687.LOHDSNH3
 Laboratory comments :TTL:PH=7.9;TEMP=24

```

-----
| Alt. IDC | Analysis Performed | result | units |
-----
00610      Ammonia Nitrogen      0.09    mg/L
00619      Calc Union NH3 in Water 0.005   mg NH3/L
NH3NH4'W   Calc NH3+NH4-NH3 Water  0.11    mg NH3/L
00630      Nitrate-Nitrite Nitrogen 1.0     mg/L

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Lab Sample Number :94/13013 Project Leader :Larry O. Hill

Sample ID Information :RO BLANK
 Sample comments :CR-ERP MUSSEL QA
 Sample type/matrix :WATER
 Sample collected by :DJS
 Sample collection date :940915
 Sample login date :940916 Sample received by lab :940916
 Sample account number :0009687.LOHDSNH3
 Laboratory comments :TTL:PH=5.4;TEMP=24

```

-----
| Alt. IDC | Analysis Performed | result | units |
-----
00610      Ammonia Nitrogen      < 0.01      mg/L
00619      Calc Union NH3 in Water < 0.001     mg NH3/L
NH3NH4'W   Calc NH3+NH4-NH3 Water < 0.012     mg NH3/L
00630      Nitrate-Nitrite Nitrogen < 0.01      mg/L

```

Lab Sample Number :94/13191

Project Leader :Larry O. Hill

Sample ID Information :TAYLOR'S SILT-INITIAL
Sample comments :CR-ERP MUSSEL QA
Sample type/matrix :WATER
Sample collected by :DJS
Sample collection date :940916
Sample login date :940920 Sample received by lab :940920
Sample account number :0009687.LOHDSNH3
Laboratory comments :TTL:PH=7.9;TEMP=24

Alt. IDC	Analysis Performed	result	units
00610	Ammonia Nitrogen	0.10	mg/L
00619	Calc Union NH3 in Water	0.006	mg NH3/L
NH3NH4'W	Calc NH3+NH4-NH3 Water	0.12	mg NH3/L
00630	Nitrate-Nitrite Nitrogen	< 0.01	mg/L

Lab Sample Number :94/13195 Project Leader :Larry O. Hill

Sample ID Information :TAYLOR'S SILT-FINAL
 Sample comments :CR-ERP MUSSEL QA
 Sample type/matrix :WATER
 Sample collected by :DJS
 Sample collection date :940916
 Sample login date :940920 Sample received by lab :940920
 Sample account number :0009687.LOHDSNH3
 Laboratory comments :TTL:PH=8.1;TEMP=24

```

-----
| Alt. IDC | Analysis Performed | result | units |
-----
00610      Ammonia Nitrogen      0.14    mg/L
00619      Calc Union NH3 in Water 0.013   mg NH3/L
NH3NH4'W   Calc NH3+NH4-NH3 Water  0.17    mg NH3/L
00630      Nitrate-Nitrite Nitrogen 0.05    mg/L

```

Lab Sample Number :94/13196 Project Leader :Larry O. Hill

Sample ID Information :PCM 6.0-FINAL
 Sample comments :CR-ERP MUSSEL QA
 Sample type/matrix :WATER
 Sample collected by :DJS
 Sample collection date :940916
 Sample login date :940920 Sample received by lab :940920
 Sample account number :0009687.LOHDSNH3
 Laboratory comments :TTL:PH=7.7;TEMP=24

Alt. IDC	Analysis Performed	result	units
00610	Ammonia Nitrogen	0.02	mg/L
00619	Calc Union NH3 in Water	0.001	mg NH3/L
NH3NH4'W	Calc NH3+NH4-NH3 Water	0.024	mg NH3/L
00630	Nitrate-Nitrite Nitrogen	0.20	mg/L

Lab Sample Number :94/13197 Project Leader :Larry O. Hill

Sample ID Information :PCM 1.0 50%-FINAL
 Sample comments :CR-ERP MUSSEL QA
 Sample type/matrix :WATER
 Sample collected by :DJS
 Sample collection date :940916
 Sample login date :940920 Sample received by lab :940920
 Sample account number :0009687.LOHDSNH3
 Laboratory comments :TTL:PH=7.7;TEMP=24

Alt. IDC	Analysis Performed	result	units
00610	Ammonia Nitrogen	0.01	mg/L
00619	Calc Union NH3 in Water	< 0.001	mg NH3/L
NH3NH4'W	Calc NH3+NH4-NH3 Water	0.012	mg NH3/L
00630	Nitrate-Nitrite Nitrogen	0.35	mg/L

Lab Sample Number :94/13198 Project Leader :Larry O. Hill

Sample ID Information :PCM 1.0 100%-FINAL
 Sample comments :CR-ERP MUSSEL QA
 Sample type/matrix :WATER
 Sample collected by :DJS
 Sample collection date :940916
 Sample login date :940920 Sample received by lab :940920
 Sample account number :0009687.LOHDSNH3
 Laboratory comments :TTL:PH=7.8;TEMP=24

Alt. IDC	Analysis Performed	result	units
00610	Ammonia Nitrogen	0.01	mg/L
00619	Calc Union NH3 in Water	< 0.001	mg NH3/L
NH3NH4'W	Calc NH3+NH4-NH3 Water	0.012	mg NH3/L
00630	Nitrate-Nitrite Nitrogen	0.61	mg/L

Lab Sample Number :94/13202 Project Leader :Larry O. Hill

Sample ID Information :TAYLOR'S SILT-INITIAL
 Sample comments :CR-ERP MUSSEL QA
 Sample type/matrix :WATER
 Sample collected by :DJS
 Sample collection date :940917
 Sample login date :940920 Sample received by lab :940920
 Sample account number :0009687.LOHDSNH3
 Laboratory comments :TTL:PH=8.0;TEMP=24

Alt. IDC	Analysis Performed	result	units
00610	Ammonia Nitrogen	0.09	mg/L
00619	Calc Union NH3 in Water	0.006	mg NH3/L
NH3NH4'W	Calc NH3+NH4-NH3 Water	0.11	mg NH3/L
00630	Nitrate-Nitrite Nitrogen	< 0.01	mg/L

Lab Sample Number :94/13207 Project Leader :Larry O. Hill

Sample ID Information :TAYLOR'S SILT-FINAL
 Sample comments :CR-ERP MUSSEL QA
 Sample type/matrix :WATER
 Sample collected by :DJS
 Sample collection date :940917
 Sample login date :940920 Sample received by lab :940920
 Sample account number :0009687.LOHDSNH3
 Laboratory comments :TTL:PH=8.2;TEMP=24

```

-----
| Alt. IDC | Analysis Performed | result | units |
-----
00610      Ammonia Nitrogen      < 0.01  mg/L
00619      Calc Union NH3 in Water < 0.001 mg NH3/L
NH3NH4'W   Calc NH3+NH4-NH3 Water   < 0.012 mg NH3/L
00630      Nitrate-Nitrite Nitrogen 0.03    mg/L

```

Lab Sample Number :94/13208 Project Leader :Larry O. Hill

Sample ID Information :PCM 6.0-FINAL
 Sample comments :CR-ERP MUSSEL QA
 Sample type/matrix :WATER
 Sample collected by :DJS
 Sample collection date :940917
 Sample login date :940920 Sample received by lab :940920
 Sample account number :0009687.LOHDSNH3
 Laboratory comments :TTL:PH=7.8;TEMP=24

Alt. IDC	Analysis Performed	result	units
00610	Ammonia Nitrogen	0.02	mg/L
00619	Calc Union NH3 in Water	0.001	mg NH3/L
NH3NH4'W	Calc NH3+NH4-NH3 Water	0.024	mg NH3/L
00630	Nitrate-Nitrite Nitrogen	0.23	mg/L

Lab Sample Number :94/13209 Project Leader :Larry O. Hill

Sample ID Information :PCM 6.0-FINAL PRECISION
 Sample comments :CR-ERP MUSSEL QA
 Sample type/matrix :WATER
 Sample collected by :DJS
 Sample collection date :940917
 Sample login date :940920 Sample received by lab :940920
 Sample account number :0009687.LOHDSNH3
 Laboratory comments :TTL:PH=7.8;TEMP=24

Alt. IDC	Analysis Performed	result	units
00610	Ammonia Nitrogen	0.02	mg/L
00619	Calc Union NH3 in Water	0.001	mg NH3/L
NH3NH4'W	Calc NH3+NH4-NH3 Water	0.024	mg NH3/L
00630	Nitrate-Nitrite Nitrogen	0.24	mg/L

Lab Sample Number :94/13210 Project Leader :Larry O. Hill

Sample ID Information :PCM 1.0-50%-FINAL
 Sample comments :CR-ERP MUSSEL QA
 Sample type/matrix :WATER
 Sample collected by :DJS
 Sample collection date :940917
 Sample login date :940920 Sample received by lab :940920
 Sample account number :0009687.LOHDSNH3
 Laboratory comments :TTL:PH=7.8;TEMP=24

```

-----
| Alt. IDC | Analysis Performed | result | units |
-----
00610      Ammonia Nitrogen      0.02    mg/L
00619      Calc Union NH3 in Water 0.001   mg NH3/L
NH3NH4'W   Calc NH3+NH4-NH3 Water  0.024   mg NH3/L
00630      Nitrate-Nitrite Nitrogen 0.27    mg/L

```

Lab Sample Number :94/13211 Project Leader :Larry O. Hill

Sample ID Information :PCM 1.0-100%-FINAL
 Sample comments :CR-ERP MUSSEL QA
 Sample type/matrix :WATER
 Sample collected by :DJS
 Sample collection date :940917
 Sample login date :940920 Sample received by lab :940920
 Sample account number :0009687.LOHDSNH3
 Laboratory comments :TTL:PH=7.8;TEMP=24

```

-----
| Alt. IDC | Analysis Performed | result | units |
-----
00610      Ammonia Nitrogen      0.02    mg/L
00619      Calc Union NH3 in Water 0.001   mg NH3/L
NH3NH4'W   Calc NH3+NH4-NH3 Water  0.024   mg NH3/L
00630      Nitrate-Nitrite Nitrogen 0.36    mg/L

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Lab Sample Number :94/13215 Project Leader :Larry O. Hill

Sample ID Information :RO BLANK
 Sample comments :CR-ERP MUSSEL QA
 Sample type/matrix :WATER
 Sample collected by :DJS
 Sample collection date :940918
 Sample login date :940920 Sample received by lab :940920
 Sample account number :0009687.LOHDSNH3
 Laboratory comments :TTL:PH=6.0;TEMP=24

Alt. IDC	Analysis Performed	result	units
00610	Ammonia Nitrogen	< 0.01	mg/L
00619	Calc Union NH3 in Water	< 0.001	mg NH3/L
NH3NH4'W	Calc NH3+NH4-NH3 Water	< 0.012	mg NH3/L
00630	Nitrate-Nitrite Nitrogen	< 0.01	mg/L

Lab Sample Number :94/13216 Project Leader :Larry O. Hill

Sample ID Information :TAYLOR'S SILT-INITIAL
 Sample comments :CR-ERP MUSSEL QA
 Sample type/matrix :WATER
 Sample collected by :DJS
 Sample collection date :940918
 Sample login date :940920 Sample received by lab :940920
 Sample account number :0009687.LOHDSNH3
 Laboratory comments :TTL:PH=7.8;TEMP=24

Alt. IDC	Analysis Performed	result	units
00610	Ammonia Nitrogen	0.11	mg/L
00619	Calc Union NH3 in Water	0.005	mg NH3/L
NH3NH4'W	Calc NH3+NH4-NH3 Water	0.13	mg NH3/L
00630	Nitrate-Nitrite Nitrogen	< 0.01	mg/L

Lab Sample Number :94/13217 Project Leader :Larry O. Hill

Sample ID Information :T.SILT-INITIAL PRECISION
 Sample comments :CR-ERP MUSSEL QA
 Sample type/matrix :WATER
 Sample collected by :DJS
 Sample collection date :940918
 Sample login date :940920 Sample received by lab :940920
 Sample account number :0009687.LOHDSNH3
 Laboratory comments :TTL:PH=7.8;TEMP=24

Alt. IDC	Analysis Performed	result	units
00610	Ammonia Nitrogen	0.12	mg/L
00619	Calc Union NH3 in Water	0.006	mg NH3/L
NH3NH4'W	Calc NH3+NH4-NH3 Water	0.15	mg NH3/L
00630	Nitrate-Nitrite Nitrogen	< 0.01	mg/L

Lab Sample Number :94/13221 Project Leader :Larry O. Hill

Sample ID Information :TAYLOR'S SILT-FINAL
 Sample comments :CR-ERP MUSSEL QA
 Sample type/matrix :WATER
 Sample collected by :DJS
 Sample collection date :940918
 Sample login date :940920 Sample received by lab :940920
 Sample account number :0009687.LOHDSNH3
 Laboratory comments :TTL:PH=8.2;TEMP=24

Alt. IDC	Analysis Performed	result	units
00610	Ammonia Nitrogen	0.15	mg/L
00619	Calc Union NH3 in Water	0.016	mg NH3/L
NH3NH4'W	Calc NH3+NH4-NH3 Water	0.18	mg NH3/L
00630	Nitrate-Nitrite Nitrogen	0.05	mg/L

Lab Sample Number :94/13222 Project Leader :Larry O. Hill

Sample ID Information :PCM 6.0-FINAL
 Sample comments :CR-ERP MUSSEL QA
 Sample type/matrix :WATER
 Sample collected by :DJS
 Sample collection date :940918
 Sample login date :940920 Sample received by lab :940920
 Sample account number :0009687.LOHDSNH3
 Laboratory comments :TTL:PH=7.8;TEMP=24

```

-----
| Alt. IDC | Analysis Performed | result | units |
-----
00610      Ammonia Nitrogen      0.02    mg/L
00619      Calc Union NH3 in Water 0.001   mg NH3/L
NH3NH4'W   Calc NH3+NH4-NH3 Water  0.024   mg NH3/L
00630      Nitrate-Nitrite Nitrogen 0.27    mg/L

```

Lab Sample Number :94/13223 Project Leader :Larry O. Hill

Sample ID Information :PCM 1.0 50%-FINAL
 Sample comments :CR-ERP MUSSEL QA
 Sample type/matrix :WATER
 Sample collected by :DJS
 Sample collection date :940918
 Sample login date :940920 Sample received by lab :940920
 Sample account number :0009687.LOHDSNH3
 Laboratory comments :TTL:PH=7.8;TEMP=24

Alt. IDC	Analysis Performed	result	units
00610	Ammonia Nitrogen	0.02	mg/L
00619	Calc Union NH3 in Water	0.001	mg NH3/L
NH3NH4'W	Calc NH3+NH4-NH3 Water	0.024	mg NH3/L
00630	Nitrate-Nitrite Nitrogen	0.28	mg/L

Lab Sample Number :94/13224 Project Leader :Larry O. Hill

Sample ID Information :PCM 1.0 100%-FINAL
 Sample comments :CR-ERP MUSSEL QA
 Sample type/matrix :WATER
 Sample collected by :DJS
 Sample collection date :940918
 Sample login date :940920 Sample received by lab :940920
 Sample account number :0009687.LOHDSNH3
 Laboratory comments :TTL:PH=7.8;TEMP=24

Alt. IDC	Analysis Performed	result	units
00610	Ammonia Nitrogen	0.02	mg/L
00619	Calc Union NH3 in Water	0.001	mg NH3/L
NH3NH4'W	Calc NH3+NH4-NH3 Water	0.024	mg NH3/L
00630	Nitrate-Nitrite Nitrogen	0.34	mg/L

Lab Sample Number :94/13229 Project Leader :Larry O. Hill

Sample ID Information :RO BLANK
 Sample comments :CR-ERP MUSSEL QA
 Sample type/matrix :WATER
 Sample collected by :DJS
 Sample collection date :940919
 Sample login date :940920 Sample received by lab :940920
 Sample account number :0009687.LOHDSNH3
 Laboratory comments :TTL:PH=5.7;TEMP=24

Alt. IDC	Analysis Performed	result	units
00610	Ammonia Nitrogen	< 0.01	mg/L
00619	Calc Union NH3 in Water	< 0.001	mg NH3/L
NH3NH4'W	Calc NH3+NH4-NH3 Water	< 0.012	mg NH3/L
00630	Nitrate-Nitrite Nitrogen	< 0.01	mg/L

Lab Sample Number :94/13230 Project Leader :Larry O. Hill

Sample ID Information :TAYLOR'S SILT-INITIAL
 Sample comments :CR-ERP MUSSEL QA
 Sample type/matrix :WATER
 Sample collected by :DJS
 Sample collection date :940919
 Sample login date :940920 Sample received by lab :940920
 Sample account number :0009687.LOHDSNH3
 Laboratory comments :TTL:PH=7.9;TEMP=24

Alt. IDC	Analysis Performed	result	units
00610	Ammonia Nitrogen	0.11	mg/L
00619	Calc Union NH3 in Water	0.006	mg NH3/L
NH3NH4'W	Calc NH3+NH4-NH3 Water	0.13	mg NH3/L
00630	Nitrate-Nitrite Nitrogen	0.05	mg/L

Lab Sample Number :94/13235 Project Leader :Larry O. Hill

Sample ID Information :TAYLOR'S SILT-FINAL
 Sample comments :CR-ERP MUSSEL QA
 Sample type/matrix :WATER
 Sample collected by :DJS
 Sample collection date :940919
 Sample login date :940920 Sample received by lab :940920
 Sample account number :0009687.LOHDSNH3
 Laboratory comments :TTL:PH=8.2;TEMP=24

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| Alt. IDC | Analysis Performed | result | units |
-----
00610      Ammonia Nitrogen      0.13    mg/L
00619      Calc Union NH3 in Water 0.014   mg NH3/L
NH3NH4'W   Calc NH3+NH4-NH3 Water  0.16    mg NH3/L
00630      Nitrate-Nitrite Nitrogen 0.08    mg/L

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Lab Sample Number :94/13236 Project Leader :Larry O. Hill

Sample ID Information :PCM 6.0-FINAL
 Sample comments :CR-ERP MUSSEL QA
 Sample type/matrix :WATER
 Sample collected by :DJS
 Sample collection date :940919
 Sample login date :940920 Sample received by lab :940920
 Sample account number :0009687.LOHDSNH3
 Laboratory comments :TTL:PH=7.7;TEMP=24

Alt. IDC	Analysis Performed	result	units
00610	Ammonia Nitrogen	0.02	mg/L
00619	Calc Union NH3 in Water	0.001	mg NH3/L
NH3NH4'W	Calc NH3+NH4-NH3 Water	0.024	mg NH3/L
00630	Nitrate-Nitrite Nitrogen	0.25	mg/L

Lab Sample Number :94/13237 Project Leader :Larry O. Hill

Sample ID Information :PCM 1.0 50%-FINAL
 Sample comments :CR-ERP MUSSEL QA
 Sample type/matrix :WATER
 Sample collected by :DJS
 Sample collection date :940919
 Sample login date :940920 Sample received by lab :940920
 Sample account number :0009687.LOHDSNH3
 Laboratory comments :TTL:PH=7.8;TEMP=24

Alt. IDC	Analysis Performed	result	units
00610	Ammonia Nitrogen	0.02	mg/L
00619	Calc Union NH3 in Water	0.001	mg NH3/L
NH3NH4'W	Calc NH3+NH4-NH3 Water	0.024	mg NH3/L
00630	Nitrate-Nitrite Nitrogen	0.34	mg/L

Lab Sample Number :94/13238 Project Leader :Larry O. Hill

Sample ID Information :PCM 1.0 100%-FINAL
 Sample comments :CR-ERP MUSSEL QA
 Sample type/matrix :WATER
 Sample collected by :DJS
 Sample collection date :940919
 Sample login date :940920 Sample received by lab :940920
 Sample account number :0009687.LOHDSNH3
 Laboratory comments :TTL:PH=7.9;TEMP=24

Alt. IDC	Analysis Performed	result	units
00610	Ammonia Nitrogen	0.02	mg/L
00619	Calc Union NH3 in Water	0.001	mg NH3/L
NH3NH4'W	Calc NH3+NH4-NH3 Water	0.024	mg NH3/L
00630	Nitrate-Nitrite Nitrogen	0.39	mg/L

Lab Sample Number :94/13594 Project Leader :Larry O. Hill

Sample ID Information :RO BLANK
 Sample comments :CR-EPP MUSSEL QA
 Sample type/matrix :WATER
 Sample collected by :DJS
 Sample collection date :940920
 Sample login date :940923 Sample received by lab :940923
 Sample account number :0009687.LOHDSNH3
 Laboratory comments :TTL:PH=5.8;TEMP=24

Alt. IDC	Analysis Performed	result	units
00610	Ammonia Nitrogen	< 0.01	mg/L
00619	Calc Union NH3 in Water	< 0.001	mg NH3/L
NH3NH4'W	Calc NH3+NH4-NH3 Water	< 0.012	mg NH3/L
00630	Nitrate-Nitrite Nitrogen	< 0.01	mg/L

Lab Sample Number :94/13595 Project Leader :Larry O. Hill

Sample ID Information :TAYLOR'S SILT-INITIAL
 Sample comments :CR-EPP MUSSEL QA
 Sample type/matrix :WATER
 Sample collected by :DJS
 Sample collection date :940920
 Sample login date :940923 Sample received by lab :940923
 Sample account number :0009687.LOHDSNH3
 Laboratory comments :TTL:PH=7.8;TEMP=24

Alt. IDC	Analysis Performed	result	units
00610	Ammonia Nitrogen	0.11	mg/L
00619	Calc Union NH3 in Water	0.005	mg NH3/L
NH3NH4'W	Calc NH3+NH4-NH3 Water	0.13	mg NH3/L
00630	Nitrate-Nitrite Nitrogen	< 0.01	mg/L

Lab Sample Number :94/13600 Project Leader :Larry O. Hill

Sample ID Information :TAYLOR'S SILT-FINAL
 Sample comments :CR-EPP MUSSEL QA
 Sample type/matrix :WATER
 Sample collected by :DJS
 Sample collection date :940920
 Sample login date :940923 Sample received by lab :940923
 Sample account number :0009687.LOHDSNH3
 Laboratory comments :TTL:PH=8.2;TEMP=24

Alt. IDC	Analysis Performed	result	units
00610	Ammonia Nitrogen	0.07	mg/L
00619	Calc Union NH3 in Water	0.008	mg NH3/L
NH3NH4'W	Calc NH3+NH4-NH3 Water	0.085	mg NH3/L
00630	Nitrate-Nitrite Nitrogen	0.20	mg/L

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Lab Sample Number :94/13601 Project Leader :Larry O. Hill

Sample ID Information :PCM 6.0-FINAL
 Sample comments :CR-EPP MUSSEL QA
 Sample type/matrix :WATER
 Sample collected by :DJS
 Sample collection date :940920
 Sample login date :940923 Sample received by lab :940923
 Sample account number :0009687.LOHDSNH3
 Laboratory comments :TTL:PH=7.8;TEMP=24

Alt. IDC	Analysis Performed	result	units
00610	Ammonia Nitrogen	0.02	mg/L
00619	Calc Union NH3 in Water	0.001	mg NH3/L
NH3NH4'W	Calc NH3+NH4-NH3 Water	0.024	mg NH3/L
00630	Nitrate-Nitrite Nitrogen	0.37	mg/L

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Lab Sample Number :94/13602 Project Leader :Larry O. Hill

Sample ID Information :PCM 1.0 (50%)-FINAL
 Sample comments :CR-EPP MUSSEL QA
 Sample type/matrix :WATER
 Sample collected by :DJS
 Sample collection date :940920
 Sample login date :940923 Sample received by lab :940923
 Sample account number :0009687.LOHDSNH3
 Laboratory comments :TTL:PH=7.8;TEMP=24

Alt. IDC	Analysis Performed	result	units
00610	Ammonia Nitrogen	0.01	mg/L
00619	Calc Union NH3 in Water	< 0.001	mg NH3/L
NH3NH4'W	Calc NH3+NH4-NH3 Water	0.012	mg NH3/L
00630	Nitrate-Nitrite Nitrogen	0.31	mg/L

Lab Sample Number :94/13603 Project Leader :Larry O. Hill

Sample ID Information :PCM 1.0(100%)-FINAL
 Sample comments :CR-EPP MUSSEL QA
 Sample type/matrix :WATER
 Sample collected by :DJS
 Sample collection date :940920
 Sample login date :940923 Sample received by lab :940923
 Sample account number :0009687.LOHDSNH3
 Laboratory comments :TTL:PH=7.9;TEMP=24

Alt. IDC	Analysis Performed	result	units
00610	Ammonia Nitrogen	0.01	mg/L
00619	Calc Union NH3 in Water	0.001	mg NH3/L
NH3NH4'W	Calc NH3+NH4-NH3 Water	0.012	mg NH3/L
00630	Nitrate-Nitrite Nitrogen	0.36	mg/L

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Lab Sample Number :94/13608 Project Leader :Larry O. Hill

Sample ID Information :RO BLANK
 Sample comments :CR-EPP MUSSEL QA
 Sample type/matrix :WATER
 Sample collected by :DJS
 Sample collection date :940921
 Sample login date :940923 Sample received by lab :940923
 Sample account number :0009687.LOHDSNH3
 Laboratory comments :TTL:PH=5.8;TEMP=24

Alt. IDC	Analysis Performed	result	units
00610	Ammonia Nitrogen	< 0.01	mg/L
00619	Calc Union NH3 in Water	< 0.001	mg NH3/L
NH3NH4'W	Calc NH3+NH4-NH3 Water	< 0.012	mg NH3/L
00630	Nitrate-Nitrite Nitrogen	< 0.01	mg/L

```

=====
| TVA Environmental Chemistry          Chattanooga, Tennessee |
| 09/29/94                          FINAL DATA REPORT        07:36 |
===== Page 1 =====

```

Lab Sample Number :94/13609 Project Leader :Larry O. Hill

Sample ID Information :TAYLOR'S SILT-INITIAL
 Sample comments :CR-EPP MUSSEL QA
 Sample type/matrix :WATER
 Sample collected by :DJS
 Sample collection date :940921
 Sample login date :940923 Sample received by lab :940923
 Sample account number :0009687.LOHDSNH3
 Laboratory comments :TTL:PH=7.9;TEMP=24

Alt. IDC	Analysis Performed	result	units
00610	Ammonia Nitrogen	0.16	mg/L
00619	Calc Union NH3 in Water	0.009	mg NH3/L
NH3NH4'W	Calc NH3+NH4-NH3 Water	0.20	mg NH3/L
00630	Nitrate-Nitrite Nitrogen	0.06	mg/L

```

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| TVA Environmental Chemistry          Chattanooga, Tennessee |
| 09/29/94                          FINAL DATA REPORT        07:36 |
===== Page 1 =====

```

Lab Sample Number :94/13613 Project Leader :Larry O. Hill

Sample ID Information :TAYLOR'S SILT-FINAL
 Sample comments :CR-EPP MUSSEL QA
 Sample type/matrix :WATER
 Sample collected by :DJS
 Sample collection date :940921
 Sample login date :940923 Sample received by lab :940923
 Sample account number :0009687.LOHDSNH3
 Laboratory comments :TTL:PH=8.1;TEMP=24

Alt. IDC	Analysis Performed	result	units
00610	Ammonia Nitrogen	0.03	mg/L
00619	Calc Union NH3 in Water	0.003	mg NH3/L
NH3NH4'W	Calc NH3+NH4-NH3 Water	0.037	mg NH3/L
00630	Nitrate-Nitrite Nitrogen	0.16	mg/L

Lab Sample Number :94/13614 Project Leader :Larry O. Hill

Sample ID Information :T.SILT-FINAL PRECISION
 Sample comments :CR-EPP MUSSEL QA
 Sample type/matrix :WATER
 Sample collected by :DJS
 Sample collection date :940921
 Sample login date :940923 Sample received by lab :940923
 Sample account number :0009687.LOHDSNH3
 Laboratory comments :TTL:PH=8.1;TEMP=24

```

-----
| Alt. IDC | Analysis Performed | result | units |
-----
00610      Ammonia Nitrogen      0.03    mg/L
00619      Calc Union NH3 in Water 0.003   mg NH3/L
NH3NH4'W   Calc NH3+NH4-NH3 Water  0.037   mg NH3/L
00630      Nitrate-Nitrite Nitrogen 0.17    mg/L

```

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| TVA Environmental Chemistry          Chattanooga, Tennessee |
| 09/29/94                          FINAL DATA REPORT        07:36 |
===== Page 1 =====

```

Lab Sample Number :94/13615 Project Leader :Larry O. Hill

Sample ID Information :PCM 6.0-FINAL
 Sample comments :CR-EPP MUSSEL QA
 Sample type/matrix :WATER
 Sample collected by :DJS
 Sample collection date :940921
 Sample login date :940923 Sample received by lab :940923
 Sample account number :0009687.LOHDSNH3
 Laboratory comments :TTL:PH=7.8;TEMP=24

```

-----
| Alt. IDC | Analysis Performed | result | units |
-----
00610      Ammonia Nitrogen      0.01    mg/L
00619      Calc Union NH3 in Water < 0.001  mg NH3/L
NH3NH4'W   Calc NH3+NH4-NH3 Water  0.012   mg NH3/L
00630      Nitrate-Nitrite Nitrogen 0.34    mg/L

```

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| TVA Environmental Chemistry          Chattanooga, Tennessee |
| 09/29/94          FINAL DATA REPORT          07:36 |
===== Page 1 =====

```

Lab Sample Number :94/13616 Project Leader :Larry O. Hill

Sample ID Information :PCM 1.0 (50%)-FINAL
 Sample comments :CR-EPP MUSSEL QA
 Sample type/matrix :WATER
 Sample collected by :DJS
 Sample collection date :940921
 Sample login date :940923 Sample received by lab :940923
 Sample account number :0009687.LOHDSNH3
 Laboratory comments :TTL:PH=7.8;TEMP=24

```

-----
| Alt. IDC | Analysis Performed | result | units |
-----
00610      Ammonia Nitrogen      0.02    mg/L
00619      Calc Union NH3 in Water 0.001   mg NH3/L
NH3NH4'W   Calc NH3+NH4-NH3 Water 0.024   mg NH3/L
00630      Nitrate-Nitrite Nitrogen 0.35    mg/L

```

```

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| TVA Environmental Chemistry          Chattanooga, Tennessee |
| 09/29/94                          FINAL DATA REPORT        07:36 |
===== Page 1 =====

```

Lab Sample Number :94/13617 Project Leader :Larry O. Hill

Sample ID Information :PCM 1.0 (100%)-FINAL
 Sample comments :CR-EPP MUSSEL QA
 Sample type/matrix :WATER
 Sample collected by :DJS
 Sample collection date :940921
 Sample login date :940923 Sample received by lab :940923
 Sample account number :0009687.LOHDSNH3
 Laboratory comments :TTL:PH=7.9;TEMP=24

Alt. IDC	Analysis Performed	result	units
00610	Ammonia Nitrogen	0.01	mg/L
00619	Calc Union NH3 in Water	0.001	mg NH3/L
NH3NH4'W	Calc NH3+NH4-NH3 Water	0.012	mg NH3/L
00630	Nitrate-Nitrite Nitrogen	0.38	mg/L

```

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| TVA Environmental Chemistry          Chattanooga, Tennessee |
| 09/29/94                          FINAL DATA REPORT       07:36 |
===== Page 1 =====

```

Lab Sample Number :94/13621 Project Leader :Larry O. Hill

Sample ID Information :TAYLOR'S SILT-FINAL
 Sample comments :CR-EPP MUSSEL QA
 Sample type/matrix :WATER
 Sample collected by :DJS
 Sample collection date :940922
 Sample login date :940923 Sample received by lab :940923
 Sample account number :0009687.LOHDSNH3
 Laboratory comments :TTL:PH=8.2;TEMP=24

Alt. IDC	Analysis Performed	result	units
00610	Ammonia Nitrogen	0.03	mg/L
00619	Calc Union NH3 in Water	0.003	mg NH3/L
NH3NH4'W	Calc NH3+NH4-NH3 Water	0.037	mg NH3/L
00630	Nitrate-Nitrite Nitrogen	0.17	mg/L

```

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| TVA Environmental Chemistry           Chattanooga, Tennessee |
| 09/29/94                           FINAL DATA REPORT         07:36 |
===== Page 1 =====

```

Lab Sample Number :94/13622 Project Leader :Larry O. Hill

Sample ID Information :PCM 6.0-FINAL
 Sample comments :CR-EPP MUSSEL QA
 Sample type/matrix :WATER
 Sample collected by :DJS
 Sample collection date :940922
 Sample login date :940923 Sample received by lab :940923
 Sample account number :0009687.LOHDSNH3
 Laboratory comments :TTL:PH=7.8;TEMP=24

Alt. IDC	Analysis Performed	result	units
00610	Ammonia Nitrogen	0.01	mg/L
00619	Calc Union NH3 in Water	< 0.001	mg NH3/L
NH3NH4'W	Calc NH3+NH4-NH3 Water	0.012	mg NH3/L
00630	Nitrate-Nitrite Nitrogen	0.39	mg/L

```

=====
| TVA Environmental Chemistry          Chattanooga, Tennessee |
| 09/29/94              FINAL DATA REPORT          07:37 |
===== Page 1 =====

```

Lab Sample Number : 94/13623 Project Leader : Larry O. Hill

Sample ID Information : PCM 1.0 (50%)-FINAL
 Sample comments : CR-EPP MUSSEL QA
 Sample type/matrix : WATER
 Sample collected by : DJS
 Sample collection date : 940922
 Sample login date : 940923 Sample received by lab : 940923
 Sample account number : 0009687.LOHDSNH3
 Laboratory comments : TTL:PH=7.7;TEMP=24

```

-----
| Alt. IDC | Analysis Performed | result | units |
-----
00610      Ammonia Nitrogen      0.21    mg/L
00619      Calc Union NH3 in Water 0.009   mg NH3/L
NH3NH4'W   Calc NH3+NH4-NH3 Water  0.26    mg NH3/L
00630      Nitrate-Nitrite Nitrogen 0.33    mg/L

```

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| TVA Environmental Chemistry          Chattanooga, Tennessee |
| 09/29/94                          FINAL DATA REPORT        07:37 |
===== Page 1 =====

```

Lab Sample Number :94/13624 Project Leader :Larry O. Hill

Sample ID Information :PCM 1.0-FINAL PRECISION
 Sample comments :CR-EPP MUSSEL QA
 Sample type/matrix :WATER
 Sample collected by :DJS
 Sample collection date :940922
 Sample login date :940923 Sample received by lab :940923
 Sample account number :0009687.LOHDSNH3
 Laboratory comments :TTL:PH=7.7;TEMP=24

Alt. IDC	Analysis Performed	result	units
00610	Ammonia Nitrogen	0.20	mg/L
00619	Calc Union NH3 in Water	0.008	mg NH3/L
NH3NH4'W	Calc NH3+NH4-NH3 Water	0.24	mg NH3/L
00630	Nitrate-Nitrite Nitrogen	0.33	mg/L

```

=====
| TVA Environmental Chemistry          Chattanooga, Tennessee |
| 09/29/94          FINAL DATA REPORT          07:37 |
===== Page 1 =====

```

Lab Sample Number :94/13625 Project Leader :Larry O. Hill

Sample ID Information :PCM 1.0 (100%)-FINAL
 Sample comments :CR-EPP MUSSEL QA
 Sample type/matrix :WATER
 Sample collected by :DJS
 Sample collection date :940922
 Sample login date :940923 Sample received by lab :940923
 Sample account number :0009687.LOHDSNH3
 Laboratory comments :TTL:PH=7.9;TEMP=24

Alt. IDC	Analysis Performed	result	units
00610	Ammonia Nitrogen	< 0.01	mg/L
00619	Calc Union NH3 in Water	< 0.001	mg NH3/L
NH3NH4'W	Calc NH3+NH4-NH3 Water	< 0.012	mg NH3/L
00630	Nitrate-Nitrite Nitrogen	0.37	mg/L

REQUEST FOR AND REPORT OF ANALYSIS

Date submitted 9-15-94 Laboratory No. _____Date wanted ASAP _____Date reported _____ Charge to account No. 000 9687GENERAL DESCRIPTION: CR-ERP Mussel QA Samples - NH₄ 9-13-94

Consignor's Number	Specific Description for Each Sample		
	Sample	pH	all @ 24°C
1	Taylor's S.H. Initial	7.9	
2	Control Initial	6.9	
3	0.312 Initial	6.9	
4	5.000 Initial	6.6	
Remarks, method, etc.: <u>Ammonia Analyses</u>			

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GENERAL DESCRIPTION: CR-ERP Mussel QA Samples - NH₄ 9-14-94

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Date submitted 9-15-94

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Date wanted ASAP

Date reported _____

Charge to account No. 0009687GENERAL DESCRIPTION: CR-FRP Mussel QA Samples NH₄ 9-15-94

Consignor's Number	Specific Description for Each Sample		
	Sample	pH	all @ 24°C
1	Taylor's S.H. Initial	7.9	
2	Control Initial	6.8	
3	0.312 Initial	6.8	
4	5.000 Initial	6.4	
5	Taylor's S.H. Final	8.1	
6	PCM 6.0 Final	7.9	
7	PCM 1.0 50% Final	7.8	
Remarks, method, etc.: <u>Ammonia Analysis</u>			

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GENERAL DESCRIPTION: CR-ERP Mussel QA Samples - NH₃ 9-15-94

Consignor's Number	Specific Description for Each Sample	
	Sample	pH all @ 24°C
8	PCM 10 100% Final	7.9
9	Control Final	7.9
10	D.312 Final	7.9
11	5.000 Final	7.8
12	RD Blank	5.4
Remarks, method, etc.: <u>Ammonia Analysis</u>		

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GENERAL DESCRIPTION: CR-ERP Mussel RA NH₄ Samples 9-16-94

Consignor's Number	Specific Description for Each Sample		
	Sample	pH	all @ 24°C
1	Taylor's S.I. Initial	7.9	
2	Control Initial	7.0	
3	0.312 Initial	7.0	
4	2.500 Initial	6.7	
5	Taylor's S.I. Final	8.1	
6	PCW 1.0 Final	7.7	
7	PCW 1.0 50% Final	7.7	
Remarks, method, etc.: <u>Ammonia Analysis</u>			

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Date submitted 9-19-94 Laboratory No. _____Date wanted ASAP _____Date reported _____ Charge to account No. 2009687GENERAL DESCRIPTION: CR-ERP Mussel QA NH₄ Samples 9-16-94

Consignor's Number	Specific Description for Each Sample		
	<i>Sample</i>	<i>pH</i>	<i>all @ 24°C</i>
<i>8</i>	<i>PCM 1.0 100% Final</i>	<i>7.8</i>	
<i>9</i>	<i>Control Final</i>	<i>7.8</i>	
<i>10</i>	<i>0.312 Final</i>	<i>7.9</i>	
<i>11</i>	<i>2.500 Final</i>	<i>7.9</i>	
Remarks, method, etc.: <u>Ammonia Analysis</u>			

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Date wanted ASAP

Date reported _____

Charge to account No. 0009687GENERAL DESCRIPTION: CR-ERP Mussel RA NH₄ - 9-17-94

Consignor's Number	Specific Description for Each Sample		
	Sample	pH	all @ 24°C
1	Taylor's S.H. Initial	8.0	
2	Control Initial	7.2	
3	0.312 Initial	7.1	
4	1.250 Initial	6.9	
5	Taylor's S.H. Final	8.2	
6	PCM 6.0 Final	7.8	
7	PCM 1.0 50% Final	7.8	
Remarks, method, etc.: <u>Ammonia Analysis</u>			

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Date submitted 9-19-94 Laboratory No. _____Date wanted ASAP _____Date reported _____ Charge to account No. 2009687GENERAL DESCRIPTION: CR-ERP Mussel QA NH₄ Samples 9-17-94

Consignor's Number	Specific Description for Each Sample		
	Sample	pH	all @ 24C
8	ARM 1.0 100% Final	7.8	
9	Control Final	7.8	
10	D.312 Final	8.0	
11	1250 Final	8.0	
Remarks, method, etc.: <u>Ammonia Analysis</u>			

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REQUEST FOR AND REPORT OF ANALYSIS

Date submitted 9-19-94 Laboratory No. _____Date wanted ASAP _____Date reported _____ Charge to account No. 0009687GENERAL DESCRIPTION: CR-ERP Mussel QA NHy Englos 9-18-94

Consignor's Number	Specific Description for Each Sample		
	Sample	pH	all @ 24°C
1	R.O. Blank	6.0	
2	Taylor's S.H. In. 7.1	7.8	
3	Control Initial	7.0	
4	0.312 Initial	7.0	
5	1.250 Initial	6.8	
6	Taylor's S.H. Final	8.2	
7	PCAM 6.0 Final	7.8	
Remarks, method, etc.: <u>Ammonia Analysis</u>			

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Date submitted 9-19-94 Laboratory No. _____Date wanted ASAP _____Date reported _____ Charge to account No. 0009637GENERAL DESCRIPTION: CR-EXP Mussel QA WH, Samples 9-18-94

Consignor's Number	Specific Description for Each Sample		
	<u>Sample</u>	<u>pH</u>	<u>all @ 24C</u>
<u>8</u>	<u>PCM 10 50% Final</u>	<u>7.8</u>	
<u>9</u>	<u>PCM 10 100% Final</u>	<u>7.8</u>	
<u>10</u>	<u>Control Final</u>	<u>7.9</u>	
<u>11</u>	<u>0.312 Final</u>	<u>7.9</u>	
<u>12</u>	<u>1.250 Final</u>	<u>7.9</u>	
Remarks, method, etc.: <u>Ammonia Analysis</u>			

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Date submitted 9-19-94 Laboratory No. _____Date wanted ASAP _____Date reported _____ Charge to account No. 000 9687GENERAL DESCRIPTION: CR-ERP Mussel QA NH₄ Samples - 9-19-94

Consignor's Number	Specific Description for Each Sample		
	Sample	pH	all @ 24°C
1	R.O. Blank	5.7	
2	Taylor's S.H. Initial	7.9	
3	Control Initial	7.0	
4	0.312 Initial	7.0	
5	1.250 Initial	6.8	
6	Taylor's S.H. Final	8.2	
7	PPM 6.0 Final	7.7	
Remarks, method, etc.: <u>Ammonia Analysis</u>			

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Consignor's Number	Specific Description for Each Sample	
	Sample	H all @ 24°C
8	PCM 1.0 50% Final	7.8
9	PCM 1.0 100% Final	7.9
10	Control Final	8.0
11	0.312 Final	8.0
12	1.250 Final	8.0
Remarks, method, etc.: <u>Ammonia Analysis</u>		

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GENERAL DESCRIPTION: CR-ERP Mussel QA NH₄ Samples 9-20-94

Consignor's Number	Specific Description for Each Sample		
	Sample	pH	all @ 24C
1	RO Blank	5.8	
2	Taylor's S.14 Initial	7.8	
3	Control Initial	7.0	
4	D.312 Initial	6.9	
5	1.250 Initial	6.7	
6	Taylor's S.14 Final	8.2	
7	PCM 6.0 Final	7.8	
Remarks, method, etc.: Ammonia Analysis			

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Laboratory No. _____

Charge to account No. 0009687

GENERAL DESCRIPTION: CR-ERP Mussel QA WHy Sampler - 9-20-14

Consignor's Number	Specific Description for Each Sample		
	Sample	pH	at 24°C
8	PCM 10 50% Final	7.8	
9	PCM 10 100% Final	7.9	
10	Control Final	7.9	
11	0.312 Final	7.9	
12	1.250 Final	7.9	
Remarks, method, etc.: Ammonia Analysis			

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Charge to account No. 0009687

GENERAL DESCRIPTION: CA-CRP Mussel QA NH₄ Samples - 9-21-24

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Date submitted 9-22-94

Laboratory No. _____

Date wanted ASAP

Date reported _____

Charge to account No. 0009687GENERAL DESCRIPTION: CR-ERP Mussel QA NH₄ Samples - 9-21-94

Consignor's Number	Specific Description for Each Sample		
	Sample	pH	all @ 24°C
8	PCM LD 50% Final	7.8	
9	PCM LD 100% Final	7.9	
10	Control Final	7.9	
11	0.312 Final	7.9	
12	1.250 Final	8.0	
Remarks, method, etc.: <u>Ammonia Analysis</u>			

ANALYZE FOR

Lab. No.	Consignor's Number									

Requested by Daniel J. Sinkovick

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REQUEST FOR AND REPORT OF ANALYSIS

Date submitted 9-22-94

Laboratory No. _____

Date wanted ASAP

Date reported _____

Charge to account No. 0009687GENERAL DESCRIPTION: CP-ERP Mussel QA NH₄ Samples - 9-22-94

Consignor's Number	Specific Description for Each Sample		
	Sample	pH	all @ 24°C
1	Taylor's S.H. Final	8.2	
2	PCM 6.0 Final	7.8	
3	PCM 1.0 50% Final	7.7	
4	PCM 1.0 100% Final	7.9	
5	Control Final	8.0	
6	0.312 Final	7.9	
7	0.625 Final	7.9	
Remarks, method, etc.: <u>Ammonia Analysis</u>			

ANALYZE FOR

Lab. No.	Consignor's Number									

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ATTACHMENT IV

METER CALIBRATION LOG SHEETS

DO METER STANDARDIZATION

29

METER ID:

4- 543348

DATE: 9/2/94 TIME: 0745 BY: TS
INITIAL READING: 76
WATER TEMP: 21.8
WINKLER #1: 7.5 #2: 7.6
X: 7.55
CORRECTED READING: 76

DATE: 9/2/94 TIME: 1320 BY: JPS
INITIAL READING: 7.6
WATER TEMP: 22.0
WINKLER #1: 7.6 #2: 7.6
X: 7.6
CORRECTED READING: 7.6

NOTES:

DATE: 9/12/94 TIME: 1145 BY: MJB
INITIAL READING: 8.1
WATER TEMP: 21.8
WINKLER #1: 8.2 #2: 8.2
X: 8.2
CORRECTED READING: 8.2

DATE: 9/13/94 TIME: 0800 BY: DJL
INITIAL READING: 8.2
WATER TEMP: 22.0
WINKLER #1: 8.3 #2: 8.2
X: 8.25
CORRECTED READING: 8.2

NOTES: used within one hour

used in one hour

DATE: 9/14/94 TIME: 0750 BY: DJS
INITIAL READING: 8.1
WATER TEMP: 22.0
WINKLER #1: 8.1 #2: 8.2
X: 8.15
CORRECTED READING: 8.1

DATE: 9/15/94 TIME: 0710 BY: MJB
INITIAL READING: 8.3
WATER TEMP: 21.5
WINKLER #1: 8.3 #2: 8.2
X: 8.25
CORRECTED READING: 8.3

NOTES: used within one hour

used in one hour

DATE: 9-16-94 TIME: 0745 BY: MJB
INITIAL READING: 8.1
WATER TEMP: 21.5
WINKLER #1: 8.1 #2: 8.15
X: 8.1
CORRECTED READING: 8.1

DATE: 9-17-94 TIME: 0720 BY: MJB
INITIAL READING: 7.7
WATER TEMP: 21.5
WINKLER #1: 7.7 #2: 7.75
X: 7.7
CORRECTED READING: 7.7

NOTES: used in one hour

used in one hour

DATE: 9-18-94 TIME: 0730 BY: DJS
INITIAL READING: 7.9
WATER TEMP: 21.4
WINKLER #1: 7.9 #2: 7.9
X: 7.9
CORRECTED READING: 7.9

DATE: 9/19/94 TIME: 0750 BY: MJB
INITIAL READING: 8.0
WATER TEMP: 21.1
WINKLER #1: 8.0 #2: 8.1
X: 8.05
CORRECTED READING: 8.0

NOTES: used in one hour

used in one hour

DO METER STANDARDIZATION

30

METER ID: 4 543348

DATE: 9-20-94 TIME: 0730 BY: MZS
INITIAL READING: 8.0
WATER TEMP: 21.6
WINKLER #1: 8.0 #2: 8.2
X: 8.1
CORRECTED READING: 8.1

NOTES: used in one hour

DATE: 9-21-94 TIME: 0750 BY: MZS
INITIAL READING: 8.0
WATER TEMP: 21.2
WINKLER #1: 8.0 #2: 8.0
X: 8.0
CORRECTED READING: 8.0

NOTES: used in one hour

DATE: 9-22-94 TIME: 0820 BY: MZS
INITIAL READING: 8.0
WATER TEMP: 21.3
WINKLER #1: 8.0 #2: 7.95
X: 8.0
CORRECTED READING: 8.0

NOTES: used in one hour

DATE: _____ TIME: _____ BY: _____
INITIAL READING: _____
WATER TEMP: _____
WINKLER #1: _____ #2: _____
X: _____
CORRECTED READING: _____

DATE: _____ TIME: _____ BY: _____
INITIAL READING: _____
WATER TEMP: _____
WINKLER #1: _____ #2: _____
X: _____
CORRECTED READING: _____

NOTES: _____

DATE: _____ TIME: _____ BY: _____
INITIAL READING: _____
WATER TEMP: _____
WINKLER #1: _____ #2: _____
X: _____
CORRECTED READING: _____

DATE: _____ TIME: _____ BY: _____
INITIAL READING: _____
WATER TEMP: _____
WINKLER #1: _____ #2: _____
X: _____
CORRECTED READING: _____

NOTES: _____

DATE: _____ TIME: _____ BY: _____
INITIAL READING: _____
WATER TEMP: _____
WINKLER #1: _____ #2: _____
X: _____
CORRECTED READING: _____

DATE: _____ TIME: _____ BY: _____
INITIAL READING: _____
WATER TEMP: _____
WINKLER #1: _____ #2: _____
X: _____
CORRECTED READING: _____

NOTES: _____

DATE: _____ TIME: _____ BY: _____
INITIAL READING: _____
WATER TEMP: _____
WINKLER #1: _____ #2: _____
X: _____
CORRECTED READING: _____

pH METER STANDARDIZATION

20

METER ID: #6 SN = 7413

DATE: <u>8-17-94</u> TIME: <u>6:06</u> BY: <u>DK</u> Buffer Temp: <u>21.3</u> pH 7.0 BUFFER Initial Reading: <u>6.99</u> Corrected Reading: <u>7.00</u> pH 4.0/10.0 BUFFER Initial Reading: <u>9.98</u> Corrected Reading: <u>10.00</u> % Slope: <u>99.0%</u> ADDITIONAL Reading -15 Sec: <u>7.67</u> STANDARD Reading -1 Min: <u>7.69</u> NOTES: <u>used within one hr.</u>	DATE: <u>8-30-94</u> TIME: <u>1045</u> BY: <u>JPP</u> Buffer Temp: _____ pH 7.0 BUFFER Initial Reading: <u>7.0</u> Corrected Reading: <u>7.0</u> pH 4.0/10.0 BUFFER Initial Reading: <u>9.66</u> Corrected Reading: _____ % Slope: _____ ADDITIONAL Reading -15 Sec: _____ STANDARD Reading -1 Min: _____
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DATE: <u>8-31-94</u> TIME: <u>0915</u> BY: <u>Cur</u> Buffer Temp: <u>22.5</u> pH 7.0 BUFFER Initial Reading: <u>6.97</u> Corrected Reading: <u>7.00</u> pH 4.0/10.0 BUFFER Initial Reading: <u>10.00</u> Corrected Reading: <u>10.00</u> % Slope: <u>100.6%</u> ADDITIONAL Reading -15 Sec: <u>7.42</u> STANDARD Reading -1 Min: <u>7.48</u> NOTES: _____	DATE: <u>7/31/94</u> TIME: <u>1130</u> BY: <u>TS</u> Buffer Temp: <u>22.8</u> pH 7.0 BUFFER Initial Reading: <u>7.61</u> Corrected Reading: <u>7.6</u> pH 4.0/10.0 BUFFER Initial Reading: <u>9.97</u> Corrected Reading: <u>10.0</u> % Slope: <u>99.9</u> ADDITIONAL Reading -15 Sec: <u>7.62</u> STANDARD Reading -1 Min: <u>7.59</u> NOTES: _____
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DATE: <u>9-1-94</u> TIME: <u>1115</u> BY: <u>DS</u> Buffer Temp: <u>21.2</u> pH 7.0 BUFFER Initial Reading: <u>6.99</u> Corrected Reading: <u>7.00</u> pH 4.0/10.0 BUFFER Initial Reading: <u>9.95</u> Corrected Reading: <u>10.00</u> % Slope: <u>99.2</u> ADDITIONAL Reading -15 Sec: <u>7.65</u> STANDARD Reading -1 Min: <u>7.73</u> NOTES: <u>used within one hr. probe cleaned used within one hour</u>	DATE: <u>9/12/94</u> TIME: <u>1155</u> BY: <u>MDS</u> Buffer Temp: <u>22.3</u> pH 7.0 BUFFER Initial Reading: <u>6.91</u> Corrected Reading: <u>7.00</u> pH 4.0/10.0 BUFFER Initial Reading: <u>9.72</u> Corrected Reading: <u>10.00</u> % Slope: <u>100%</u> ADDITIONAL Reading -15 Sec: <u>8.40</u> STANDARD Reading -1 Min: <u>8.38</u> NOTES: _____
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DATE: <u>9/13/94</u> TIME: <u>0803</u> BY: <u>MDS</u> Buffer Temp: <u>22.2</u> pH 7.0 BUFFER Initial Reading: <u>6.99</u> Corrected Reading: <u>7.00</u> pH 4.0/10.0 BUFFER Initial Reading: <u>9.99</u> Corrected Reading: <u>10.00</u> % Slope: <u>100.00%</u> ADDITIONAL Reading -15 Sec: <u>8.31</u> STANDARD Reading -1 Min: <u>8.30</u> NOTES: <u>used in one hour</u>	DATE: <u>9/14/94</u> TIME: <u>0750</u> BY: <u>MDS</u> Buffer Temp: <u>22.2</u> pH 7.0 BUFFER Initial Reading: <u>7.02</u> Corrected Reading: <u>7.00</u> pH 4.0/10.0 BUFFER Initial Reading: <u>10.01</u> Corrected Reading: <u>10.00</u> % Slope: <u>100.7</u> ADDITIONAL Reading -15 Sec: <u>8.40</u> STANDARD Reading -1 Min: <u>8.40</u> NOTES: <u>used with one hour</u>
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DATE: <u>9/15/94</u> TIME: <u>0730</u> BY: <u>MDS</u> Buffer Temp: <u>21.0</u> pH 7.0 BUFFER Initial Reading: <u>7.08</u> Corrected Reading: <u>7.00</u> pH 4.0/10.0 BUFFER Initial Reading: <u>9.97</u> Corrected Reading: <u>10.00</u> % Slope: <u>100.1%</u> ADDITIONAL Reading -15 Sec: <u>8.28</u> STANDARD Reading -1 Min: <u>8.28</u> NOTES: <u>used in one hour</u>	DATE: <u>9-16-94</u> TIME: <u>0750</u> BY: <u>DS</u> Buffer Temp: <u>22.0</u> pH 7.0 BUFFER Initial Reading: <u>7.04</u> Corrected Reading: <u>7.00</u> pH 4.0/10.0 BUFFER Initial Reading: <u>8.99</u> Corrected Reading: <u>10.00</u> % Slope: <u>99.1%</u> ADDITIONAL Reading -15 Sec: <u>7.57</u> STANDARD Reading -1 Min: <u>7.61</u> NOTES: <u>used in one hour</u>
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pH METER STANDARDIZATION

21

METER ID: 6 SN: 7413

DATE: <u>9-17-94</u>	TIME: <u>0730</u>	BY: <u>ML</u>	DATE: <u>9/18/94</u>	TIME: <u>0730</u>	BY: <u>ML</u>
Buffer Temp: <u>21.8</u>			Buffer Temp: <u>21.4</u>		
pH 7.0 BUFFER Initial Reading: <u>7.00</u>			pH 7.0 BUFFER Initial Reading: <u>7.05</u>		
Corrected Reading: <u>7.00</u>			Corrected Reading: <u>7.00</u>		
pH 4.0/10.0 BUFFER Initial Reading: <u>10.00</u>			pH 4.0/10.0 BUFFER Initial Reading: <u>9.99</u>		
Corrected Reading: <u>10.00</u>			Corrected Reading: <u>10.00</u>		
% Slope: <u>100.0%</u>			% Slope: <u>99.7</u>		
ADDITIONAL Reading -15 Sec: <u>7.58</u>			ADDITIONAL Reading -15 Sec: <u>8.35</u>		
STANDARD Reading - 1 Min: <u>7.66</u>			STANDARD Reading - 1 Min: <u>8.36</u>		
NOTES: <u>used in one hour / cleaned probe</u>			NOTES: <u>used in one hour</u>		

DATE: <u>9-19-94</u>	TIME: <u>0740</u>	BY: <u>ML</u>	DATE: <u>9-20-94</u>	TIME: <u>0730</u>	BY: <u>ML</u>
Buffer Temp: <u>21.3</u>			Buffer Temp: <u>22.4</u>		
pH 7.0 BUFFER Initial Reading: <u>6.98</u>			pH 7.0 BUFFER Initial Reading: <u>6.99</u>		
Corrected Reading: <u>7.00</u>			Corrected Reading: <u>7.00</u>		
pH 4.0/10.0 BUFFER Initial Reading: <u>10.01</u>			pH 4.0/10.0 BUFFER Initial Reading: <u>10.01</u>		
Corrected Reading: <u>10.00</u>			Corrected Reading: <u>10.00</u>		
% Slope: <u>100.1%</u>			% Slope: <u>100.6</u>		
ADDITIONAL Reading -15 Sec: <u>7.60</u>			ADDITIONAL Reading -15 Sec: <u>7.48</u>		
STANDARD Reading - 1 Min: <u>7.66</u>			STANDARD Reading - 1 Min: <u>7.56</u>		
NOTES: <u>used in one hour</u>					

DATE: <u>9-21-94</u>	TIME: <u>0800</u>	BY: <u>ML</u>	DATE: <u>9-22-94</u>	TIME: <u>0810</u>	BY: <u>ML</u>
Buffer Temp: <u>21.6</u>			Buffer Temp: <u>21.6</u>		
pH 7.0 BUFFER Initial Reading: <u>7.01</u>			pH 7.0 BUFFER Initial Reading: <u>6.99</u>		
Corrected Reading: <u>7.00</u>			Corrected Reading: <u>7.00</u>		
pH 4.0/10.0 BUFFER Initial Reading: <u>9.97</u>			pH 4.0/10.0 BUFFER Initial Reading: <u>10.01</u>		
Corrected Reading: <u>10.00</u>			Corrected Reading: <u>10.00</u>		
% Slope: <u>99.8%</u>			% Slope: <u>100.2%</u>		
ADDITIONAL Reading -15 Sec: <u>7.40</u>			ADDITIONAL Reading -15 Sec: <u>7.43</u>		
STANDARD Reading - 1 Min: <u>7.52</u>			STANDARD Reading - 1 Min: <u>7.49</u>		
NOTES: <u>used in one hour</u>					

DATE: <u>9-22-94</u>	TIME: <u>0945</u>	BY: <u>ML</u>	DATE: <u>09-24-94</u>	TIME: <u>1207</u>	BY: <u>ML</u>
Buffer Temp: <u>21.9</u>			Buffer Temp: <u>21.6 °C</u>		
pH 7.0 BUFFER Initial Reading: <u>7.01</u>			pH 7.0 BUFFER Initial Reading: <u>7.00</u>		
Corrected Reading: <u>7.00</u>			Corrected Reading: <u>7.00</u>		
pH 4.0/10.0 BUFFER Initial Reading: <u>9.99</u>			pH 4.0/10.0 BUFFER Initial Reading: <u>9.99</u>		
Corrected Reading: <u>10.00</u>			Corrected Reading: <u>10.00</u>		
% Slope: <u>100.2</u>			% Slope: <u>99.9%</u>		
ADDITIONAL Reading -15 Sec: <u>7.77</u>			ADDITIONAL Reading -15 Sec: <u>7.44</u>		
STANDARD Reading - 1 Min: <u>7.71</u>			STANDARD Reading - 1 Min: <u>7.50</u>		
NOTES:					

DATE: <u>09-27-94</u>	TIME: <u>1245</u>	BY: <u>ML</u>	DATE: <u>9-28-94</u>	TIME: <u>7:44</u>	BY: <u>ML</u>
Buffer Temp: <u>21.4 °C</u>			Buffer Temp: <u>20.5 °C</u>		
pH 7.0 BUFFER Initial Reading: <u>6.97</u>			pH 7.0 BUFFER Initial Reading: <u>7.0</u>		
Corrected Reading: <u>7.00</u>			Corrected Reading: <u>7.0</u>		
pH 4.0/10.0 BUFFER Initial Reading: <u>10.00</u>			pH 4.0/10.0 BUFFER Initial Reading: <u>10.0</u>		
Corrected Reading: <u>10.00</u>			Corrected Reading: <u>10.0</u>		
% Slope: <u>100.6%</u>			% Slope: <u>100.1%</u>		
ADDITIONAL Reading -15 Sec: <u>7.54</u>			ADDITIONAL Reading -15 Sec: <u>7.80</u>		
STANDARD Reading - 1 Min: <u>7.58</u>			STANDARD Reading - 1 Min: <u>7.82</u>		
NOTES:					

pH METER STANDARDIZATION

39

METER ID: 4 472857

DATE: <u>9/12/94</u>	TIME: <u>1205</u>	BY: <u>MAB</u>	DATE: <u>9/13/94</u>	TIME: <u>0950</u>	BY: <u>MAB</u>
Buffer Temp: <u>22.4</u>			Buffer Temp: <u>23.2</u>		
pH 7.0 BUFFER Initial Reading: <u>7.1</u>			pH 7.0 BUFFER Initial Reading: <u>7.0</u>		
Corrected Reading: <u>7.0</u>			Corrected Reading: <u>7.0</u>		
pH 4.0/10.0 BUFFER Initial Reading: <u>4.0</u>			pH 4.0/10.0 BUFFER Initial Reading: <u>4.0</u>		
Corrected Reading: <u>4.0</u>			Corrected Reading: <u>4.0</u>		
% Slope: <u>100%</u>			% Slope: <u>100.00</u>		
ADDITIONAL Reading -15 Sec: <u>6.5</u>			ADDITIONAL Reading -15 Sec: <u>7.5</u>		
STANDARD Reading - 1 Min: <u>6.7</u>			STANDARD Reading - 1 Min: <u>7.6</u>		
NOTES: <u>used within 1 hour</u>			<u>cleaned at 1000</u>		

DATE: <u>9/13/94</u>	TIME: <u>1130</u>	BY: <u>MAB</u>	DATE: <u>9/14/94</u>	TIME: <u>1025</u>	BY: <u>MAB</u>
Buffer Temp: <u>23.3</u>			Buffer Temp: <u>23.5</u>		
pH 7.0 BUFFER Initial Reading: <u>7.0</u>			pH 7.0 BUFFER Initial Reading: <u>7.0</u>		
Corrected Reading: <u>7.0</u>			Corrected Reading: <u>7.0</u>		
pH 4.0/10.0 BUFFER Initial Reading: <u>4.0</u>			pH 4.0/10.0 BUFFER Initial Reading: <u>4.0</u>		
Corrected Reading: <u>4.0</u>			Corrected Reading: <u>4.0</u>		
% Slope: <u>100.00</u>			% Slope: <u>100.00%</u>		
ADDITIONAL Reading -15 Sec: <u>7.9</u>			ADDITIONAL Reading -15 Sec: <u>8.0</u>		
STANDARD Reading - 1 Min: <u>7.9</u>			STANDARD Reading - 1 Min: <u>8.1</u>		
NOTES: <u>used within one hour</u>			<u>used within one hour</u>		

DATE: <u>9/15/94</u>	TIME: <u>0948</u>	BY: <u>MAB</u>	DATE: <u>9/16/94</u>	TIME: <u>1140</u>	BY: <u>DJS</u>
Buffer Temp: <u>22.8</u>			Buffer Temp: <u>23.6</u>		
pH 7.0 BUFFER Initial Reading: <u>7.0</u>			pH 7.0 BUFFER Initial Reading: <u>7.0</u>		
Corrected Reading: <u>7.0</u>			Corrected Reading: <u>7.0</u>		
pH 4.0/10.0 BUFFER Initial Reading: <u>3.9</u>			pH 4.0/10.0 BUFFER Initial Reading: <u>4.0</u>		
Corrected Reading: <u>4.0</u>			Corrected Reading: <u>4.0</u>		
% Slope: <u>102</u>			% Slope: <u>100.4 101.9% 214.9 7.17.94</u>		
ADDITIONAL Reading -15 Sec: <u>8.1</u>			ADDITIONAL Reading -15 Sec: <u>7.5</u>		
STANDARD Reading - 1 Min: <u>8.1</u>			STANDARD Reading - 1 Min: <u>7.9</u>		
NOTES: <u>used in one hour</u>			<u>used in one hour</u>		

DATE: <u>9/17/94</u>	TIME: <u>0930</u>	BY: <u>MAB</u>	DATE: <u>9/18/94</u>	TIME: <u>0930</u>	BY: <u>MAB</u>
Buffer Temp: <u>23.3</u>			Buffer Temp: <u>22.7</u>		
pH 7.0 BUFFER Initial Reading: <u>7.0</u>			pH 7.0 BUFFER Initial Reading: <u>7.0</u>		
Corrected Reading: <u>7.0</u>			Corrected Reading: <u>7.0</u>		
pH 4.0/10.0 BUFFER Initial Reading: <u>4.0</u>			pH 4.0/10.0 BUFFER Initial Reading: <u>4.0</u>		
Corrected Reading: <u>4.0</u>			Corrected Reading: <u>4.0</u>		
% Slope: <u>101</u>			% Slope: <u>101</u>		
ADDITIONAL Reading -15 Sec: <u>8.1</u>			ADDITIONAL Reading -15 Sec: <u>8.0</u>		
STANDARD Reading - 1 Min: <u>8.2</u>			STANDARD Reading - 1 Min: <u>8.1</u>		
NOTES: <u>used in one hour</u>			<u>used in one hour</u>		

DATE: <u>9-19-94</u>	TIME: <u>1015</u>	BY: <u>DJS</u>	DATE: <u>9-20-94</u>	TIME: <u>0750</u>	BY: <u>MAB</u>
Buffer Temp: <u>22.5</u>			Buffer Temp: <u>22.0</u>		
pH 7.0 BUFFER Initial Reading: <u>7.0</u>			pH 7.0 BUFFER Initial Reading: <u>7.0</u>		
Corrected Reading: <u>7.0</u>			Corrected Reading: <u>7.0</u>		
pH 4.0/10.0 BUFFER Initial Reading: <u>4.05</u>			pH 4.0/10.0 BUFFER Initial Reading: <u>4.0</u>		
Corrected Reading: <u>4.0</u>			Corrected Reading: <u>4.0</u>		
% Slope: <u>99.5%</u>			% Slope: <u>99.9%</u>		
ADDITIONAL Reading -15 Sec: <u>7.5</u>			ADDITIONAL Reading -15 Sec: <u>7.5</u>		
STANDARD Reading - 1 Min: <u>7.6</u>			STANDARD Reading - 1 Min: <u>7.7</u>		
NOTES: <u>used in one hour</u>			<u>used in one hour</u>		

PH METER STANDARDIZATION

METER ID: HY 472857

DATE: <u>9-21-94</u>	TIME: <u>1010</u>	BY: <u>ojs</u>	DATE: <u>9-22-94</u>	TIME: <u>0945</u>	BY: <u>ojs</u>
Buffer Temp: <u>23.0</u>	Buffer Temp: <u>23.0</u>		Buffer Temp: <u>22.2</u>		
pH 7.0 BUFFER Initial Reading: <u>7.0</u>	pH 7.0 BUFFER Initial Reading: <u>7.0</u>		pH 7.0 BUFFER Initial Reading: <u>7.0</u>		
Corrected Reading: <u>7.0</u>	Corrected Reading: <u>7.0</u>		Corrected Reading: <u>7.0</u>		
pH 4.0/10.0 BUFFER Initial Reading: <u>4.0</u>	pH 4.0/10.0 BUFFER Initial Reading: <u>4.0</u>		pH 4.0/10.0 BUFFER Initial Reading: <u>4.0</u>		
Corrected Reading: <u>4.0</u>	Corrected Reading: <u>4.0</u>		Corrected Reading: <u>4.0</u>		
% Slope: <u>99%</u>	% Slope: <u>100%</u>		% Slope: <u>100%</u>		
ADDITIONAL Reading -15 Sec: <u>7.4</u>	ADDITIONAL Reading -15 Sec: <u>7.4</u>		ADDITIONAL Reading -15 Sec: <u>7.4</u>		
STANDARD Reading - 1 Min: <u>7.4</u>	STANDARD Reading - 1 Min: <u>7.4</u>		STANDARD Reading - 1 Min: <u>7.4</u>		
NOTES: <u>used in one hour</u>	NOTES: <u>used in one hour</u>		NOTES: <u>used in one hour</u>		
DATE: <u>9-30-94</u>	TIME: <u>9:56</u>	BY: <u>DK</u>	DATE: <u>10-1-94</u>	TIME: <u>0855</u>	BY: <u>ojs</u>
Buffer Temp: <u>21.5</u>	Buffer Temp: <u>22.3</u>		Buffer Temp: <u>22.3</u>		
pH 7.0 BUFFER Initial Reading: <u>7.0</u>	pH 7.0 BUFFER Initial Reading: <u>6.95</u>		pH 7.0 BUFFER Initial Reading: <u>6.95</u>		
Corrected Reading: <u>7.0</u>	Corrected Reading: <u>7.0</u>		Corrected Reading: <u>7.0</u>		
pH 4.0/10.0 BUFFER Initial Reading: <u>4.0</u>	pH 4.0/10.0 BUFFER Initial Reading: <u>3.95</u>		pH 4.0/10.0 BUFFER Initial Reading: <u>3.95</u>		
Corrected Reading: <u>4.0</u>	Corrected Reading: <u>4.0</u>		Corrected Reading: <u>4.0</u>		
% Slope: <u>99.5%</u>	% Slope: <u>99.5%</u>		% Slope: <u>99.5%</u>		
ADDITIONAL Reading -15 Sec: <u>7.70</u>	ADDITIONAL Reading -15 Sec: <u>7.1</u>		ADDITIONAL Reading -15 Sec: <u>7.1</u>		
STANDARD Reading - 1 Min: <u>7.3</u>	STANDARD Reading - 1 Min: <u>7.2</u>		STANDARD Reading - 1 Min: <u>7.2</u>		
NOTES: <u>used within one hour</u>	NOTES: <u>used within one hour</u>		NOTES: <u>used within one hour</u>		
DATE: <u>10-2-94</u>	TIME: <u>0922</u>	BY: <u>ojs</u>	DATE: <u>10-3-94</u>	TIME: <u>0907</u>	BY: <u>ojs</u>
Buffer Temp: <u>21.6</u>	Buffer Temp: <u>22.7</u>		Buffer Temp: <u>22.7</u>		
pH 7.0 BUFFER Initial Reading: <u>7.0</u>	pH 7.0 BUFFER Initial Reading: <u>7.0</u>		pH 7.0 BUFFER Initial Reading: <u>7.0</u>		
Corrected Reading: <u>7.0</u>	Corrected Reading: <u>7.0</u>		Corrected Reading: <u>7.0</u>		
pH 4.0/10.0 BUFFER Initial Reading: <u>3.95</u>	pH 4.0/10.0 BUFFER Initial Reading: <u>4.0</u>		pH 4.0/10.0 BUFFER Initial Reading: <u>4.0</u>		
Corrected Reading: <u>4.0</u>	Corrected Reading: <u>4.0</u>		Corrected Reading: <u>4.0</u>		
% Slope: <u>100%</u>	% Slope: <u>100%</u>		% Slope: <u>100%</u>		
ADDITIONAL Reading -15 Sec: <u>6.9</u>	ADDITIONAL Reading -15 Sec: <u>7.4</u>		ADDITIONAL Reading -15 Sec: <u>7.4</u>		
STANDARD Reading - 1 Min: <u>7.1</u>	STANDARD Reading - 1 Min: <u>7.5</u>		STANDARD Reading - 1 Min: <u>7.5</u>		
NOTES: <u>used within one hour</u>	NOTES: <u>used within one hour</u>		NOTES: <u>used within one hour</u>		
DATE: <u>10-04-94</u>	TIME: <u>0935</u>	BY: <u>GKK</u>	DATE: <u>10-5-94</u>	TIME: <u>10:40</u>	BY: <u>DK</u>
Buffer Temp: <u>21.9</u>	Buffer Temp: <u>22.0</u>		Buffer Temp: <u>22.0</u>		
pH 7.0 BUFFER Initial Reading: <u>7.0</u>	pH 7.0 BUFFER Initial Reading: <u>7.0</u>		pH 7.0 BUFFER Initial Reading: <u>7.0</u>		
Corrected Reading: <u>7.0</u>	Corrected Reading: <u>7.0</u>		Corrected Reading: <u>7.0</u>		
pH 4.0/10.0 BUFFER Initial Reading: <u>4.0</u>	pH 4.0/10.0 BUFFER Initial Reading: <u>4.0</u>		pH 4.0/10.0 BUFFER Initial Reading: <u>4.0</u>		
Corrected Reading: <u>4.0</u>	Corrected Reading: <u>4.0</u>		Corrected Reading: <u>4.0</u>		
% Slope: <u>100%</u>	% Slope: <u>99.5%</u>		% Slope: <u>99.5%</u>		
ADDITIONAL Reading -15 Sec: <u>7.1</u>	ADDITIONAL Reading -15 Sec: <u>7.65</u>		ADDITIONAL Reading -15 Sec: <u>7.65</u>		
STANDARD Reading - 1 Min: <u>7.3</u>	STANDARD Reading - 1 Min: <u>7.70</u>		STANDARD Reading - 1 Min: <u>7.70</u>		
NOTES: <u>Used within 1 hr</u>	NOTES: <u>Used within 1 hr</u>		NOTES: <u>Used within 1 hr</u>		
DATE: <u>10-06-94</u>	TIME: <u>1100</u>	BY: <u>GKK</u>	DATE: <u>10-07-94</u>	TIME: <u>0720</u>	BY: <u>UAB</u>
Buffer Temp: <u>22.8</u>	Buffer Temp: <u>22.4</u>		Buffer Temp: <u>22.4</u>		
pH 7.0 BUFFER Initial Reading: <u>7.0</u>	pH 7.0 BUFFER Initial Reading: <u>7.00</u>		pH 7.0 BUFFER Initial Reading: <u>7.00</u>		
Corrected Reading: <u>7.0</u>	Corrected Reading: <u>7.0</u>		Corrected Reading: <u>7.0</u>		
pH 4.0/10.0 BUFFER Initial Reading: <u>4.0</u>	pH 4.0/10.0 BUFFER Initial Reading: <u>4.0</u>		pH 4.0/10.0 BUFFER Initial Reading: <u>4.0</u>		
Corrected Reading: <u>4.0</u>	Corrected Reading: <u>4.0</u>		Corrected Reading: <u>4.0</u>		
% Slope: <u>99%</u>	% Slope: <u>99%</u>		% Slope: <u>99%</u>		
ADDITIONAL Reading -15 Sec: <u>7.3</u>	ADDITIONAL Reading -15 Sec: <u>8.1</u>		ADDITIONAL Reading -15 Sec: <u>8.1</u>		
STANDARD Reading - 1 Min: <u>7.5</u>	STANDARD Reading - 1 Min: <u>8.2</u>		STANDARD Reading - 1 Min: <u>8.2</u>		
NOTES: <u>used within 1 hr</u>	NOTES: <u>used within 1 hr</u>		NOTES: <u>used within 1 hr</u>		

CONDUCTIVITY METER STANDARDIZATION

METER ID: #1 SN=2341DATE: 8/31 TIME: 1139 BY: TS DATE: 9/1/94 TIME: 0700 BY: TS

75 μ MHo STD. TEMP _____
 METER READING _____
 200 μ MHo STD. TEMP 22.0
 METER READING 197
 720 μ MHo STD. TEMP 22.1
 METER READING 727

75 μ MHo STD. TEMP _____
 METER READING _____
 200 μ MHo STD. TEMP 22.2
 METER READING 195
 720 μ MHo STD. TEMP 22.4
 METER READING 718

NOTES: _____

DATE: 9/1/94 TIME: 1300 BY: DS DATE: 9/2/94 TIME: 0735 BY: TS

75 μ MHo STD. TEMP _____
 METER READING _____
 200 μ MHo STD. TEMP 21.2
 METER READING 195
 720 μ MHo STD. TEMP 21.9
 METER READING 724

75 μ MHo STD. TEMP _____
 METER READING _____
 200 μ MHo STD. TEMP 21.6
 METER READING 193
 720 μ MHo STD. TEMP 21.7
 METER READING 719

NOTES: _____

DATE: 9/2/94 TIME: 1300 BY: DS DATE: 9/12/94 TIME: 1203 BY: MAB

75 μ MHo STD. TEMP _____
 METER READING _____
 200 μ MHo STD. TEMP 21.1
 METER READING 193
 720 μ MHo STD. TEMP 21.1
 METER READING 718

75 μ MHo STD. TEMP _____
 METER READING _____
 200 μ MHo STD. TEMP 22.3
 METER READING 193 *
 720 μ MHo STD. TEMP 22.3
 METER READING 714

NOTES: _____

* bad standard 9/14/94 used within one hour

DATE: 9/13/94 TIME: 0800 BY: 4XB DATE: 9/14/94 TIME: 0858 BY: MAB

75 μ MHo STD. TEMP _____
 METER READING _____
 200 μ MHo STD. TEMP 23.1
 METER READING 195
 720 μ MHo STD. TEMP 23.1
 METER READING 716

75 μ MHo STD. TEMP _____
 METER READING _____
 200 μ MHo STD. TEMP 23.1
 METER READING 197
 720 μ MHo STD. TEMP 23.1
 METER READING 714

NOTES: _____

used in one hour

DATE: 9-14-94 TIME: 1045 BY: DS DATE: 9/15/94 TIME: 0735 BY: 4XB

75 μ MHo STD. TEMP _____
 METER READING _____
 200 μ MHo STD. TEMP 22.8
 METER READING 196
 720 μ MHo STD. TEMP 22.9
 METER READING 719

75 μ MHo STD. TEMP _____
 METER READING _____
 200 μ MHo STD. TEMP 22.4
 METER READING 197
 720 μ MHo STD. TEMP 22.4
 METER READING 718

NOTES: _____

CONDUCTIVITY METER STANDARDIZATION

57

METER ID: 1

SN= 2341

DATE: 9/15/94 TIME: 6950 BY: MAH DATE: 9-16-94 TIME: 0745 BY: DJS

75 μ MHo STD. TEMP _____
METER READING _____
200 μ MHo STD. TEMP 22.3
METER READING 198
720 μ MHo STD. TEMP 22.3
METER READING 718

75 μ MHo STD. TEMP _____
METER READING _____
200 μ MHo STD. TEMP 22.5
METER READING 197
720 μ MHo STD. TEMP 22.6
METER READING 723

NOTES: Used in one hourDATE: 9-16-94 TIME: 1050 BY: MAH DATE: 9-17-94 TIME: 0725 BY: DJS

75 μ MHo STD. TEMP _____
METER READING _____
200 μ MHo STD. TEMP 23.0
METER READING 197
720 μ MHo STD. TEMP 23.0
METER READING 713

75 μ MHo STD. TEMP _____
METER READING _____
200 μ MHo STD. TEMP 22.5
METER READING 198
720 μ MHo STD. TEMP 22.7
METER READING 720

NOTES: _____

DATE: 9/17/94 TIME: 1000 BY: MAH DATE: 9/18/94 TIME: 0730 BY: MAH

75 μ MHo STD. TEMP _____
METER READING _____
200 μ MHo STD. TEMP 22.5
METER READING 197
720 μ MHo STD. TEMP 22.5
METER READING 718

75 μ MHo STD. TEMP _____
METER READING _____
200 μ MHo STD. TEMP 22.1
METER READING 198
720 μ MHo STD. TEMP 22.1
METER READING 707

NOTES: _____

DATE: 9/18/94 TIME: 1000 BY: DJS DATE: 9/19/94 TIME: 0745 BY: DJS

75 μ MHo STD. TEMP _____
METER READING _____
200 μ MHo STD. TEMP 22.2
METER READING 198
720 μ MHo STD. TEMP 22.2
METER READING 706

75 μ MHo STD. TEMP _____
METER READING _____
200 μ MHo STD. TEMP 22.2
METER READING 196
720 μ MHo STD. TEMP 22.2
METER READING 706

NOTES: _____

DATE: 9/19/94 TIME: 1040 BY: MAH DATE: 9-20-94 TIME: 0735 BY: DJS

75 μ MHo STD. TEMP _____
METER READING _____
200 μ MHo STD. TEMP 22.3
METER READING 196
720 μ MHo STD. TEMP 22.3
METER READING 706

75 μ MHo STD. TEMP _____
METER READING _____
200 μ MHo STD. TEMP 22.9
METER READING 198
720 μ MHo STD. TEMP 23.0
METER READING 713

NOTES: _____

CONDUCTIVITY METER STANDARDIZATION

METER ID: 1 SN = 2341DATE: 9-20-94 TIME: 1015 BY: DJL DATE: 9-21-94 TIME: 0805 BY: DJL

75 μ MHo STD. TEMP _____
 METER READING _____
 200 μ MHo STD. TEMP 22.4
 METER READING 198
 720 μ MHo STD. TEMP 22.6
 METER READING 713

75 μ MHo STD. TEMP _____
 METER READING _____
 200 μ MHo STD. TEMP 23.3
 METER READING 198
 720 μ MHo STD. TEMP 22.6
 METER READING 709

NOTES: _____

DATE: 9-21-94 TIME: 1000 BY: MFB DATE: 9-22-94 TIME: 0945 BY: DJL

75 μ MHo STD. TEMP _____
 METER READING _____
 200 μ MHo STD. TEMP 22.4
 METER READING 198
 720 μ MHo STD. TEMP 22.4
 METER READING 711

75 μ MHo STD. TEMP _____
 METER READING _____
 200 μ MHo STD. TEMP 22.6
 METER READING 198
 720 μ MHo STD. TEMP 22.6
 METER READING 714

NOTES: _____

used within one hour

DATE: _____ TIME: _____ BY: _____ DATE: _____ TIME: _____ BY: _____

75 μ MHo STD. TEMP _____
 METER READING _____
 200 μ MHo STD. TEMP _____
 METER READING _____
 720 μ MHo STD. TEMP _____
 METER READING _____

75 μ MHo STD. TEMP _____
 METER READING _____
 200 μ MHo STD. TEMP _____
 METER READING _____
 720 μ MHo STD. TEMP _____
 METER READING _____

NOTES: _____

DATE: _____ TIME: _____ BY: _____ DATE: _____ TIME: _____ BY: _____

75 μ MHo STD. TEMP _____
 METER READING _____
 200 μ MHo STD. TEMP _____
 METER READING _____
 720 μ MHo STD. TEMP _____
 METER READING _____

75 μ MHo STD. TEMP _____
 METER READING _____
 200 μ MHo STD. TEMP _____
 METER READING _____
 720 μ MHo STD. TEMP _____
 METER READING _____

NOTES: _____

DATE: _____ TIME: _____ BY: _____ DATE: _____ TIME: _____ BY: _____

75 μ MHo STD. TEMP _____
 METER READING _____
 200 μ MHo STD. TEMP _____
 METER READING _____
 720 μ MHo STD. TEMP _____
 METER READING _____

75 μ MHo STD. TEMP _____
 METER READING _____
 200 μ MHo STD. TEMP _____
 METER READING _____
 720 μ MHo STD. TEMP _____
 METER READING _____

NOTES: _____