February 09, 2011

State of Tennessee
Department of Environment and Conservation
Division of Water Pollution Control
Enforcement & Compliance Section
6th Floor, L & C Annex
401 Church Street
Nashville, Tennessee 37243-1534

Dear Mr. Patrick Cromer:

SEQUOYAH NUCLEAR PLANT - DISCHARGE MONITORING REPORT FOR JANUARY 2011

Enclosed is the January 2011 Discharge Monitoring Report for Sequoyah Nuclear Plant. Sample collection continues at the Diffuser Pond Inlet of the Yard Drainage Pond effluent because of a transformer oil spill that reached the Yard Drainage Pond. Samples collected from 9/23/2010 through 1/29/2011 have all yielded results below detection limits for oil and grease. If you have any questions or need additional information, please contact Brad Love at (423) 843-6714 or Stephanie Howard at (423) 843-6700 of Sequoyah's Environmental staff.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Sincerely,

M Sk.

Michael D. Skaggs
Site Vice President
Sequoyah Nuclear Plant

Enclosure
cc (Enclosure):
Chattanooga Environmental Field Office
Division of Water Pollution Control
State Office Building, Suite 550
540 McCallie Avenue
Chattanooga, Tennessee 37402-2013

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

cc:
B. E. Brickhouse, LP 5U-C
D. A. Day, POB 2A-SQN
S. A. Howard, OPS 5N-SQN
K. Langdon, POB 2B-SQN
D. B. Nida, LP 5U-C
A. A. Ray, WT 11A-K
G. R. Signer, WT 6A-K
M. D. Skaggs, OPS 4A-SQN
B. A. Wetzel, OPS 4A-SQN
K. M. Hodges (EDMS), LP 2V-C

Tennessee Valley Authority, Post Office Box 2000, Soddy Daisy, Tennessee 37384-2000

February 09, 2011

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Department of Environment and Conservation
Division of Water Pollution Control
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Site Vice President
Sequoyah Nuclear Plant

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cc (Enclosure):
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540 McCallie Avenue
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U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if Different)*

Name TVA - SEQUOYAH NUCLEAR PLANT
Address P.O. BOX 2000
(INTEROFFICE SB-2A-SQN)
SODDY - DAISY, TN 37384
Facility TVA - SEQUOYAH NUCLEAR PLANT
Location HAMILTON COUNTY

ATTN: Stephanie A. Howard

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*

TN0026450	101 G
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
From	11	01	01	To	11	01	31

MAJOR
(SUBR 01)
F - FINAL
DIFFUSER DISCHARGE
EFFLUENT

*** NO DISCHARGE [ ] ***

Form Approved.
OMB No. 2040-0004

NOTE: Read instructions before completing this form.

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM	UNITS			
TEMPERATURE, WATER DEG. CENTIGRADE	SAMPLE MEASUREMENT	********	********	**	********	********	9.4	04	0	31 / 31	MODELD
00010 Z 0 0 INSTREAM MONITORING	PERMIT REQUIREMENT	********	********	****	********	********	**30.5 DAILY MX**	DEG. C.		SEE PERMIT	CK REQ
TEMPERATURE, WATER DEG. CENTIGRADE	SAMPLE MEASUREMENT	********	********	**	********	********	24.3	04	0	31 / 31	RCORDR
00010 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	****	********	********	**REPORT DAILY MX**	DEG. C.		SEE PERMIT	CK REQ
TEMP. DIFF. BETWEEN SAMP. & UPSTRM DEG.C	SAMPLE MEASUREMENT	********	********	**	********	********	3.9	04	0	31 / 31	CALCTD
00016 1 W 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	****	********	********	**5.0 DAILY MX**	DEG. C.		CONTIN UOUS	CALCTD
PH	SAMPLE MEASUREMENT	********	********	**	7.8	********	8.2	12	0	6 / 31	GRAB
00400 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	****	**6.0 MINIMUM**	********	**9.0 MAXIMUM**	SU		WEEKLY	GRAB
SOLIDS, TOTAL SUSPENDED	SAMPLE MEASUREMENT	********	********	**	********	13	13	19	0	1 / 31	GRAB
00530 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	****	********	**30 MO AVG**	**100 DAILY MX**	MG/L		MONTHLY	GRAB
OIL AND GREASE	SAMPLE MEASUREMENT	********	********	**	********	<6	<6	19	0	1 / 31	GRAB
00556 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	****	********	**15 MO AVG**	**20 DAILY MX**	MG/L		MONTHLY	GRAB
FLOW, IN CONDUIT OR THRU TREATMENT PLANT	SAMPLE MEASUREMENT	********	1649	03	********	********	********	**	0	31 / 31	RCORDR
50050 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	**REPORT DAILY MX**	MGD	********	********	********	****		CONTIN UOUS	RCORDR

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
Michael D. Skaggs Sequoyah Site Vice President	I Certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is , to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	MSk Sequoyah Site Vice President SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	423	843-7001	11	02	07
TYPED OR PRINTED			AREA CODE	NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

No closed mode operation. The following information is included in an attachment: 1. CCW data 2. veliger monitoring data

DMR Attachment

CCW Data

CCW TRENCH				
Date/Time Collected	**Extractable Petroleum Hydrocarbons**	**Analysis Date/Time**	**Analyst**	**Method**
No water would come out of the pump. No sample could be obtained.				
CCW CHANNEL				
Date/Time Collected	**Extractable Petroleum Hydrocarbons**	**Analysis Date/Time**	**Analyst**	**Method**
1/19/2011 @ 1110	<0.10 mg/l	1/21/2011 @ 1244	ND	EPH

Sample Date	Mean # of ZM/m3	% Settlers	Water Temp. (˚C)	Sample Date	Mean# of Asiatic Clams/m3	Water Temp. (˚C)	LOCATION	SUB LOCATION	NOTES: % Gravid Asiatic Clam	COLLECTED BY
12/07/2010	6	100	23	12/07/2010	0	23	1-25-545			PB
12/14/2010	0	0	10	12/14/2010	0	10	1-25-545			RS
12/22/2010	0	0	10.5	12/22/2010	0	10.5	1-ISV-24-1234			WE
12/29/2010	0	0	26	12/29/2010	0	26	1-25-545			WDT
01/04/2011	0	0	13	01/04/2010	0	13	1-25-545			PB
01/11/2011	0	0	22	01/11/2010	0	22	1-25-545			RS
01/18/2011	0	0	9.5	01/18/2010	0	9.5	1-ISV-24-1234			CR
01/25/2011	0	0	23	01/25/2011	0	23	1-25-545			WDT
02/02/2011	0	0	10	02/02/2011	0	10	1-25-545			PB

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if Different)*

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Address P.O. BOX 2000
(INTEROFFICE SB-2A-SQN)
SODDY - DAISY, TN 37384
Facility TVA - SEQUOYAH NUCLEAR PLANT
Location HAMILTON COUNTY

ATTN: Stephanie A. Howard

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*

TN0026450	101 G
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
From	11	01	01	To	11	01	31

MAJOR
(SUBR 01)
F - FINAL
DIFFUSER DISCHARGE
EFFLUENT

*** NO DISCHARGE [ ] ***

Form Approved.
OMB No. 2040-0004

NOTE: Read instructions before completing this form.

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM	UNITS			
CHLORINE, TOTAL RESIDUAL	SAMPLE MEASUREMENT	********	********	**	********	0.019	0.038	19	0	10 / 31	GRAB
50060 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	****	********	**0.10 MO AVG**	**0.10 INST MAX**	MG/L		WEEK-DAYS	CALCTD
TEMPERATURE - C, RATE OF CHANGE	SAMPLE MEASUREMENT	********	0	62	********	********		**	0	31 / 31	CALCTD
82234 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	**2 DAILY MX**	DEG C/HR	********	********	*******	****		CONTINUOUS	CALCTD
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
Michael D. Skaggs Sequoyah Site Vice President	I Certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is , to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	Sequoyah Site Vice President SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	423	843-7001	11	02	07
TYPED OR PRINTED			AREA CODE	NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

The only B/CTP chemical injection this period was Towerbrom 960.

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if Different)*

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SODDY - DAISY, TN 37384
Facility TVA - SEQUOYAH NUCLEAR PLANT
Location HAMILTON COUNTY

ATTN: Stephanie A. Howard

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*

TN0026450	101 T
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
From	11	01	01	To	11	01	31

MAJOR
(SUBR 01)
F - FINAL
BIOMONITORING FOR OUTFALL 101
EFFLUENT

*** NO DISCHARGE [ ] ***

Form Approved.
OMB No. 2040-0004

NOTE: Read instructions before completing this form.

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM	UNITS			
IC25 STATRE 7DAY CHR CERIODAPHNIA	SAMPLE MEASUREMENT	********	********	**	Monitoring Not Required	********	********	23			
TRP3B 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	****	**45.2 MINIMUM**	********	********	PERCENT		SEE PERMIT	COMPOS
IC25 STATRE 7DAY CHR PIMEPHALES	SAMPLE MEASUREMENT	********	********	**	Monitoring Not Required	********	********	23			
TRP6C 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	****	**45.2 MIMINUM**	********	********	PERCENT		SEE PERMIT	COMPOS
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
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TYPED OR PRINTED			AREA CODE	NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

Toxicity was not sampled in January 2011.

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if Different)*

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SODDY - DAISY, TN 37384
Facility TVA - SEQUOYAH NUCLEAR PLANT
Location HAMILTON COUNTY

ATTN: Stephanie A. Howard

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*

TN0026450	103 G
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
From	11	01	01	To	11	01	31

MAJOR
(SUBR 01)
F - FINAL
LOW VOL. WASTE TREATMENT POND
EFFLUENT

*** NO DISCHARGE [ ] ***

Form Approved.
OMB No. 2040-0004

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PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM	UNITS			
PH	SAMPLE MEASUREMENT	********	********	**	6.8	********	7.8	12	0	15 / 31	GRAB
00400 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	**	6.0 MINIMUM	********	9.0 MAXIMUM	SU		THREE/ WEEK	GRAB
SOLIDS, TOTAL SUSPENDED	SAMPLE MEASUREMENT	124	298	26	********	13	30	19	0	4 / 31	GRAB
00530 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	380 MO AVG	1250 DAILY MX	LBS/DY	********	30 MO AVG	100 DAILY MX	MG/L		WEEKLY	GRAB
OIL AND GREASE	SAMPLE MEASUREMENT	<60	66	26	********	<6	<6	19	0	4 / 31	GRAB
00556 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	190 MO AVG	250 DAILY MX	LBS/DY	********	15 MO AVG	20 DAILY MX	MG/L		WEEKLY	GRAB
FLOW, IN CONDUIT OR THRU TREATMENT PLANT	SAMPLE MEASUREMENT	1.110	1.355	03	********	********	********	**	0	31 / 31	TOTALZ
50050 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	REPORT MO AVG	REPORT DAILY MX	MGD	********	********	********	**		SEE PERMIT	TOTALZ
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
Michael D. Skaggs Sequoyah Site Vice President	I Certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is , to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	Sequoyah Site Vice President SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	423	843-7001	11	02	07
TYPED OR PRINTED			AREA CODE	NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if Different)*

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Address P.O. BOX 2000
(INTEROFFICE SB-2A-SQN)
SODDY - DAISY, TN 37384
Facility TVA - SEQUOYAH NUCLEAR PLANT
Location HAMILTON COUNTY

ATTN: Stephanie A. Howard

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*

TN0026450	107 G
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
From	11	01	01	To	11	01	31

MAJOR
(SUBR 01)
F - FINAL
METAL CLEANING WASTE POND
EFFLUENT

*** NO DISCHARGE XX ***

Form Approved.
OMB No. 2040-0004

NOTE: Read instructions before completing this form.

PARAMETER		QUANTITY OR LOADING AVERAGE	QUANTITY OR LOADING MAXIMUM	QUANTITY OR LOADING UNITS	QUALITY OR CONCENTRATION MINIMUM	QUALITY OR CONCENTRATION AVERAGE	QUALITY OR CONCENTRATION MAXIMUM	QUALITY OR CONCENTRATION UNITS	NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
PH	SAMPLE MEASUREMENT	********	********	**		********		12			
00400 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	****	6.0 MINIMUM	********	9.0 MAXIMUM	SU		DAILY	GRAB
SOLIDS, TOTAL SUSPENDED	SAMPLE MEASUREMENT	********	********	**	********	********		19			
00530 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	****	********	********	30 DAILY MX	MG/L		DAILY	COMPOS
OIL AND GREASE	SAMPLE MEASUREMENT	********	********	**	********	********		19			
00556 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	****	********	********	15 DAILY MX	MG/L		DAILY	GRAB
PHOSPHORUS, TOTAL (AS P)	SAMPLE MEASUREMENT	********	********	**	********	********		19			
00665 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	****	********	********	1.0 DAILY MX	MG/L		DAILY	COMPOS
COPPER, TOTAL (AS CU)	SAMPLE MEASUREMENT	********	********	**	********	********		19			
01042 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	****	********	********	1.0 DAILY MX	MG/L		DAILY	COMPOS
IRON, TOTAL (AS FE)	SAMPLE MEASUREMENT	********	********	**	********	********		19			
01045 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	****	********	********	1.0 DAILY MX	MG/L		DAILY	COMPOS
FLOW, IN CONDUIT OR THRU TREATMENT PLANT	SAMPLE MEASUREMENT			03	********	********	********	**			
50050 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	REPORT MO AVG	REPORT DAILY MX	MGD	********	********	********	****		DAILY	CALCTD

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
Michael D. Skaggs Sequoyah Site Vice President	I Certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is , to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	Sequoyah Site Vice President SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	423	843-7001	11	02	07
TYPED OR PRINTED			AREA CODE	NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

No Discharge this Period

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if Different)*

Name TVA - SEQUOYAH NUCLEAR PLANT
Address P.O. BOX 2000
(INTEROFFICE SB-2A-SQN)
SODDY - DAISY, TN 37384
Facility TVA - SEQUOYAH NUCLEAR PLANT
Location HAMILTON COUNTY

ATTN: Stephanie A. Howard

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*

TN0026450	110 G
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
From	11	01	01	To	11	01	31

MAJOR
(SUBR 01)
F - FINAL
RECYCLED COOLING WATER
EFFLUENT

*** NO DISCHARGE XX ***

Form Approved.
OMB No. 2040-0004

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PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM	UNITS			
TEMPERATURE, WATER DEG. CENTIGRADE	SAMPLE MEASUREMENT	********	********	04	********	********		04			
00010 Z 0 0 INSTREAM MONITORING	PERMIT REQUIREMENT	********	********	DEG C	********	********	38.3 DAILY MX	DEG C		DAILY	GRAB-4
PH	SAMPLE MEASUREMENT	********	********	**		********		12			
00400 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	****	6.0 MINIMUM	********	9.0 MAXIMUM	SU		WEEKLY	GRAB
SOLIDS, TOTAL SUSPENDED	SAMPLE MEASUREMENT	********	********	**	********	********		19			
00530 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	****	********	********	30 DAILY MX	MG/L		DAILY	COMPOS
OIL AND GREASE	SAMPLE MEASUREMENT	********	********	**	********	********		19			
00556 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	****	********	********	15 DAILY MX	MG/L		DAILY	GRAB
FLOW, IN CONDUIT OR THRU TREATMENT PLANT	SAMPLE MEASUREMENT			03	********	********	********	**			
50050 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	REPORT MO AVG	REPORT DAILY MX	MGD	********	********	********	****		DAILY	CALCTD
CHLORINE, TOTAL RESIDUAL	SAMPLE MEASUREMENT	********	********	**	********	********		19			
50060 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	****	********	********	0.10 DAILY MX	MG/L		WEEKLY	GRAB-4
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
Michael D. Skaggs Sequoyah Site Vice President TYPED OR PRINTED	I Certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is , to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	Sequoyah Site Vice President SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	423	843-7001	11	02	07
			AREA CODE	NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

No Discharge this Period

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if Different)*

Name TVA - SEQUOYAH NUCLEAR PLANT
Address P.O. BOX 2000
(INTEROFFICE SB-2A-SQN)
SODDY - DAISY, TN 37384
Facility TVA - SEQUOYAH NUCLEAR PLANT
Location HAMILTON COUNTY

ATTN: Stephanie A. Howard

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*

TN0026450	110 T
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
From	11	01	01	To	11	01	31

MAJOR
(SUBR 01)
F - FINAL
RECYCLED COOLING WATER
EFFLUENT

*** NO DISCHARGE XX ***

Form Approved.
OMB No. 2040-0004

NOTE: Read instructions before completing this form.

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM	UNITS			
IC25 STATRE 7DAY CHR CERIODAPHNIA	SAMPLE MEASUREMENT	********	********	**		********	********	23			
TRP3B 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	****	**45.2 MINIMUM**	********	********	PERCENT		SEMI ANNUAL	COMPOS
IC25 STATRE 7DAY CHR PIMEPHALES	SAMPLE MEASUREMENT	********	********	**		********	********	23			
TRP6C 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	****	**45.2 MINIMUM**	********	********	PERCENT		SEMI ANNUAL	COMPOS
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
Michael D. Skaggs Sequoyah Site Vice President	I Certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is , to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	MSk-88 Sequoyah Site Vice President SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	423	843-7001	11	02	07
TYPED OR PRINTED			AREA CODE	NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

No Discharge this Period

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if Different)*

Name: **TVA - SEQUOYAH NUCLEAR PLANT**
Address: P.O. BOX 2000
(INTEROFFICE SB-2A-SQN)
SODDY - DAISY, TN 37384
Facility: TVA - SEQUOYAH NUCLEAR PLANT
Location: HAMILTON COUNTY

ATTN: Stephanie A. Howard

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*

TN0026450	116 G
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
From	11	01	01	To	11	01	31

MAJOR
(SUBR 01)
F - FINAL
BACKWASH
EFFLUENT

*** NO DISCHARGE [ ] ***

Form Approved.
OMB No. 2040-0004

NOTE: Read instructions before completing this form.

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM	UNITS			
DEBRIS, FLOATING (SEVERITY)	SAMPLE MEASUREMENT	********	********	**	********	********	0	9A	0	1 / 31	VISUAL
01345 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	****	********	********	REPORT MO TOTAL	PASS=0 FAIL=1		SEE PERMIT	VISUAL
OIL AND GREASE VISUAL	SAMPLE MEASUREMENT	********	0	94	********	********	********	**	0	1 / 31	VISUAL
84066 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	REPORT MO TOTAL	YES=1 NO=0	********	********	********	****		SEE PERMIT	VISUAL
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
Michael D. Skaggs Sequoyah Site Vice President	I Certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is , to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	MSkaggs Sequoyah Site Vice President SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	423	843-7001	11	02	07
TYPED OR PRINTED			AREA CODE	NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

Operations performs visual inspections for floating debris and oil and grease during all backwashes.

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if Different)*

Name TVA - SEQUOYAH NUCLEAR PLANT
Address P.O. BOX 2000
(INTEROFFICE SB-2A-SQN)
SODDY - DAISY, TN 37384
Facility TVA - SEQUOYAH NUCLEAR PLANT
Location HAMILTON COUNTY

ATTN: Stephanie A. Howard

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*

TN0026450	117 G
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
From	11	01	01	To	11	01	31

MAJOR
(SUBR 01)
F - FINAL
BACKWASH
EFFLUENT

*** NO DISCHARGE [ ] ***

Form Approved.
OMB No. 2040-0004

NOTE: Read instructions before completing this form.

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM	UNITS			
DEBRIS, FLOATING (SEVERITY)	SAMPLE MEASUREMENT	********	********	**	********	********	0	9A	0	1 / 31	VISUAL
01345 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	****	********	********	REPORT MO TOTAL	PASS=0 FAIL=1		SEE PERMIT	VISUAL
OIL AND GREASE VISUAL	SAMPLE MEASUREMENT	********	0	94	********	********	********	**	0	1 / 31	VISUAL
84066 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	REPORT MO TOTAL	YES=1 NO=0	********	********	********	****		SEE PERMIT	VISUAL
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
Michael D. Skaggs Sequoyah Site Vice President	I Certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is , to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	Sequoyah Site Vice President SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	423	843-7001	11	02	07
TYPED OR PRINTED			AREA CODE	NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

Operations performs visual inspections for floating debris and oil and grease during all backwashes.

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if Different)*

Name TVA - SEQUOYAH NUCLEAR PLANT
Address P.O. BOX 2000
(INTEROFFICE SB-2A-SQN)
SODDY - DAISY, TN 37384
Facility TVA - SEQUOYAH NUCLEAR PLANT
Location HAMILTON COUNTY

ATTN: Stephanie A. Howard

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*

TN0026450	118 G
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
From	11	01	01	To	11	01	31

MAJOR
(SUBR 01)
F - FINAL
WASTEWATER & STORM WATER
EFFLUENT

*** NO DISCHARGE XX ***

Form Approved.
OMB No. 2040-0004

NOTE: Read instructions before completing this form.

PARAMETER		QUANTITY OR LOADING AVERAGE	QUANTITY OR LOADING MAXIMUM	QUANTITY OR LOADING UNITS	QUALITY OR CONCENTRATION MINIMUM	QUALITY OR CONCENTRATION AVERAGE	QUALITY OR CONCENTRATION MAXIMUM	QUALITY OR CONCENTRATION UNITS	NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
OXYGEN, DISSOLVED (DO)	SAMPLE MEASUREMENT	********	********	**		********	********	19			
00300 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	****	2.0 DAILY MN	********	********	MG/L		TWICE/ WEEK	GRAB
SOLIDS, TOTAL SUSPENDED	SAMPLE MEASUREMENT	********	********	**	********	********		19			
00530 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	****	********	********	100 DAILY MX	MG/L		TWICE/ WEEK	GRAB
SOLIDS, SETTLEABLE	SAMPLE MEASUREMENT	********	********	**	********	********		25			
00545 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	****	********	********	1.0 DAILY MX	ML/L		ONCE/ MONTH	GRAB
FLOW, IN CONDUIT OR THRU TREATMENT PLANT	SAMPLE MEASUREMENT			03	********	********	********	**			
50050 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	REPORT MO AVG	REPORT DAILY MX	MGD	********	********	********	*		ONCE/ BATCH	ESTIMA
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
Michael D. Skaggs Sequoyah Site Vice President	I Certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is , to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	MSk Sequoyah Site Vice President SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	423	843-7001	11	02	07
TYPED OR PRINTED			AREA CODE	NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

During this reporting period, there has been no flow from the Dredge Pond other than that resulting from rainfall.

REVIEW/CONCURRENCE SHEET

DOCUMENT NAME: SEQUOYAH NUCLEAR PLANT – January 2011 DMR

ORGANIZATION: Environmental

DOCUMENT PREPARED BY: Brad Love

DATE: 02/07/2011

CONCURRENCES				
Name	RV	CN	Signature - Comment	Date
B.M. Love	X			2/7/2011
S. A. Howard	X		Stephanie A. Howard	2/7/11
D.A. Day		X		2/8/11
M.D. Skaggs		X	M Skaggs	2/9/11

INSTRUCTIONS: Originator will determine the review/concurrence assignment.

REVIEW: Examine technical content and commitments made. A review (RV) should confirm the truth and accuracy of factual statements and indicate agreement with commitments made which are applicable to the reviewer's organization.

CONCURRENCE: Indication of agreement with the document as a whole. Concurrence (CN) signifies that the document is responsive to the intended purpose, logical in construction, and clear in meaning in the eyes of the recipient. A concurrence signature indicates that the individual would be willing to sign the document for the agency.

March 8, 2011

State of Tennessee
Department of Environment and Conservation
Division of Water Pollution Control
Enforcement & Compliance Section
6th Floor, L & C Annex
401 Church Street
Nashville, Tennessee 37243-1534

Dear Mr. Patrick Cromer:

SEQUOYAH NUCLEAR PLANT - DISCHARGE MONITORING REPORT FOR FEBRUARY 2011

Enclosed is the February 2011 Discharge Monitoring Report for Sequoyah Nuclear Plant. Sample collection continues at the Diffuser Pond Inlet of the Yard Drainage Pond effluent because of a transformer oil spill that reached the Yard Drainage Pond. Samples collected from 9/23/2010 through 2/26/2011 have all yielded results below detection limits for oil and grease. If you have any questions or need additional information, please contact Brad Love at (423) 843-6714 or Stephanie Howard at (423) 843-6700 of Sequoyah's Environmental staff.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Sincerely,

MSkaggs

Michael D. Skaggs
Site Vice President
Sequoyah Nuclear Plant

Enclosure
cc (Enclosure):
Chattanooga Environmental Field Office
Division of Water Pollution Control
State Office Building, Suite 550
540 McCallie Avenue
Chattanooga, Tennessee 37402-2013

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

cc:
B. E. Brickhouse, LP 5U-C
G. M. Cook, OPS 4A-SQN
D. A. Day, POB 2A-SQN
S. A. Howard, OPS 5N-SQN
K. Langdon, POB 2B-SQN
D. B. Nida, LP 5U-C
A. A. Ray, WT 11A-K
G. R. Signer, WT 6A-K
M. D. Skaggs, OPS 4A-SQN
K. M. Hodges (EDMS), LP 2V-C

Tennessee Valley Authority, Post Office Box 2000, Soddy Daisy, Tennessee 37384-2000

March 8, 2011

State of Tennessee
Department of Environment and Conservation
Division of Water Pollution Control
Enforcement & Compliance Section
6th Floor, L & C Annex
401 Church Street
Nashville, Tennessee 37243-1534

Dear Mr. Patrick Cromer:

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Sincerely,

MSK.DD

Michael D. Skaggs
Site Vice President
Sequoyah Nuclear Plant

Enclosure
cc (Enclosure):
Chattanooga Environmental Field Office
Division of Water Pollution Control
State Office Building, Suite 550
540 McCallie Avenue
Chattanooga, Tennessee 37402-2013

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if Different)*

Name TVA - SEQUOYAH NUCLEAR PLANT
Address P.O. BOX 2000
(INTEROFFICE SB-2A-SQN)
SODDY - DAISY, TN 37384
Facility TVA - SEQUOYAH NUCLEAR PLANT
Locatio HAMILTON COUNTY

ATTN: Stephanie A. Howard

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*

TN0026450	101 G
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
From	11	02	01	TO	11	02	28

MAJOR
(SUBR 01)
F - FINAL
DIFFUSER DISCHARGE
EFFLUENT

*** NO DISCHARGE [ ] ***

Form Approved.
OMB No. 2040-0004

NOTE: Read instructions before completing this form.

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM	UNITS			
TEMPERATURE, WATER DEG. CENTIGRADE	SAMPLE MEASUREMENT	********	********	**	********	********	12.8	04	0	28 / 28	MODELD
00010 Z 0 0 INSTREAM MONITORING	PERMIT REQUIREMENT	********	********	****	********	********	30.5 DAILY MX	DEG. C.		SEE PERMIT	CK REQ
TEMPERATURE, WATER DEG. CENTIGRADE	SAMPLE MEASUREMENT	********	********	**	********	********	25.3	04	0	28 / 28	RCORDR
00010 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	****	********	********	REPORT DAILY MX	DEG. C.		SEE PERMIT	CK REQ
TEMP. DIFF. BETWEEN SAMP. & UPSTRM DEG.C	SAMPLE MEASUREMENT	********	********	**	********	********	3.5	04	0	28 / 28	CALCTD
00016 1 W 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	****.	********	********	5.0 DAILY MX	DEG. C.		CONTIN UOUS	CALCTD
PH	SAMPLE MEASUREMENT	********	********	**	8.4	********	8.6	12	0	4 / 28	GRAB
00400 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	****	6.0 MINIMUM	********	9.0 MAXIMUM	SU		WEEKLY	GRAB
SOLIDS, TOTAL SUSPENDED	SAMPLE MEASUREMENT	********	********	**	********	7	7	19	0	1 / 28	GRAB
00530 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	****	********	30 MO AVG	100 DAILY MX	MG/L		MONTHLY	GRAB
OIL AND GREASE	SAMPLE MEASUREMENT	********	********	**	********	<6	<6	19	0	1 / 28	GRAB
00556 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	****	********	15 MO AVG	20 DAILY MX	MG/L		MONTHLY	GRAB
FLOW, IN CONDUIT OR THRU TREATMENT PLANT	SAMPLE MEASUREMENT	********	1641	03	********	********	********	**	0	28 / 28	RCORDR
50050 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	REPORT DAILY MX	MGD	********	********	********	****		CONTIN UOUS	RCORDR

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
Michael D. Skaggs Sequoyah Site Vice President	I Certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is , to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	M Skaggs Sequoyah Site Vice President SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	423	843-7001	11	03	05
TYPED OR PRINTED			AREA CODE	NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here*

No closed mode operation. The following information is included in an attachment: 1. CCW data 2. Veliger monitoring data

DMR Attachment

CCW Data

CCW TRENCH				
Date/Time Collected	**Extractable Petroleum Hydrocarbons**	**Analysis Date/Time**	**Analyst**	**Method**
No water would come out of the pump. No sample could be obtained.				
CCW CHANNEL				
Date/Time Collected	**Extractable Petroleum Hydrocarbons**	**Analysis Date/Time**	**Analyst**	**Method**
2/9/2011 @ 1120	<0.10 mg/l	2/11/2011 @ 1214	ND	EPH

Sample Date	Mean # of ZM/m3	% Settlers	Water Temp. (°C)	Sample Date	Mean# of Asiatic Clams/m3	Water Temp. (°C)	LOCATION	SUB LOCATION	NOTES: % Gravid Asiatic Clam	COLLECTED BY
12/07/2010	6	100	23	12/07/2010	0	23	1-25-545			PB
12/14/2010	0	0	10	12/14/2010	0	10	1-25-545			RS
12/22/2010	0	0	10.5	12/22/2010	0	10.5	1-ISV-24-1234			WE
12/29/2010	0	0	26	12/29/2010	0	26	1-25-545			WDT
01/04/2011	0	0	13	01/04/2010	0	13	1-25-545			PB
01/11/2011	0	0	22	01/11/2010	0	22	1-25-545			RS
01/18/2011	0	0	9.5	01/18/2010	0	9.5	1-ISV-24-1234			CR
01/25/2011	0	0	23	01/25/2011	0	23	1-25-545			WDT
02/02/2011	0	0	10	02/02/2011	0	10	1-25-545			PB
02/08/2011	0	0	9	02/08/2011	0	9	1-25-545			MJW
02/15/2011	0	0	23	02/15/2011	0	23	1-25-545			MLW

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if Different)*

Name TVA - SEQUOYAH NUCLEAR PLANT
Address P.O. BOX 2000
(INTEROFFICE SB-2A-SQN)
SODDY - DAISY, TN 37384
Facility TVA - SEQUOYAH NUCLEAR PLANT
Locatio HAMILTON COUNTY

ATTN: Stephanie A. Howard

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*

TN0026450	101 G
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
From	11	02	01	To	11	02	28

MAJOR
(SUBR 01)
F - FINAL
DIFFUSER DISCHARGE
EFFLUENT

*** NO DISCHARGE [ ] ***

Form Approved.
OMB No. 2040-0004

NOTE: Read instructions before completing this form.

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM	UNITS			
CHLORINE, TOTAL RESIDUAL	SAMPLE MEASUREMENT	********	********	**	********	0.026	0.042	19	0	11 / 28	GRAB
50060 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	****	********	0.10 MO AVG	0.10 INST MAX	MG/L		WEEK-DAYS	CALCTD
TEMPERATURE - C, RATE OF CHANGE	SAMPLE MEASUREMENT	********	0	62	********	********		**	0	28 / 28	CALCTD
82234 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	2 DAILY MX	DEG C/HR	********	********	*******	****		CONTINUOUS	CALCTD
BORON, TOTAL	SAMPLE MEASUREMENT	********	********	**	********	<0.20	********	19	0	~~1 / 28~~ 1/90 3/5/11	GRAB
01022 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	****	********	REPORT	********	MG/L		~~ONCE/MONTH~~ QTRLY 3/5/11	GRAB
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
Michael D. Skaggs Sequoyah Site Vice President	I Certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is , to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	Sequoyah Site Vice President SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	423	843-7001	11	03	05
TYPED OR PRINTED			AREA CODE	NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here*

The following B/CTP injections occurred this period: Biodetergent 73551 (max. calc. conc. was 0.02mg/L--limit 2.0mg/L)

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if Different)*

Name TVA - SEQUOYAH NUCLEAR PLANT
Address P.O. BOX 2000
(INTEROFFICE SB-2A-SQN)
SODDY - DAISY, TN 37384
Facility TVA - SEQUOYAH NUCLEAR PLANT
Locatio HAMILTON COUNTY

ATTN: Stephanie A. Howard

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*

TN0026450	101 T
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
From	11	02	01	To	11	02	28

MAJOR
(SUBR 01)
F - FINAL
BIOMONITORING FOR OUTFALL 101
EFFLUENT

*** NO DISCHARGE [ ] ***

Form Approved.
OMB No. 2040-0004

NOTE: Read instructions before completing this form.

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM	UNITS			
IC25 STATRE 7DAY CHR CERIODAPHNIA	SAMPLE MEASUREMENT	********	********	**	Monitoring Not Required	********	********	23			
TRP3B 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	****	45.2 MINIMUM	********	********	PERCENT		SEE PERMIT	COMPOS
IC25 STATRE 7DAY CHR PIMEPHALES	SAMPLE MEASUREMENT	********	********	**	Monitoring Not Required	********	********	23			
TRP6C 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	****	45.2 MIMINUM	********	********	PERCENT		SEE PERMIT	COMPOS
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
Michael D. Skaggs Sequoyah Site Vice President	I Certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is , to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	MSk. Sequoyah Site Vice President SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	423	843-7001	11	03	05
TYPED OR PRINTED			AREA CODE	NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here*

Toxicity was not sampled in February 2011.

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if Different)*

Name TVA - SEQUOYAH NUCLEAR PLANT
Address P.O. BOX 2000
(INTEROFFICE SB-2A-SQN)
SODDY - DAISY, TN 37384
Facility TVA - SEQUOYAH NUCLEAR PLANT
Locatio HAMILTON COUNTY

ATTN: Stephanie A. Howard

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*

TN0026450	103 G
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
From	11	02	01	To	11	02	28

MAJOR
(SUBR 01)
F - FINAL
LOW VOL. WASTE TREATMENT POND
EFFLUENT
*** NO DISCHARGE ☐ ***

Form Approved.
OMB No. 2040-0004

NOTE: Read instructions before completing this form.

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM	UNITS			
PH	SAMPLE MEASUREMENT	********	********	**	7.0	********	7.8	12	0	12 / 28	GRAB
00400 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	**	6.0 MINIMUM	********	9.0 MAXIMUM	SU		THREE/ WEEK	GRAB
SOLIDS, TOTAL SUSPENDED	SAMPLE MEASUREMENT	75	84	26	********	9	11	19	0	4 / 28	GRAB
00530 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	380 MO AVG	1250 DAILY MX	LBS/DY	********	30 MO AVG	100 DAILY MX	MG/L		WEEKLY	GRAB
OIL AND GREASE	SAMPLE MEASUREMENT	<52	<57	26	********	<6	<6	19	0	4 / 28	GRAB
00556 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	190 MO AVG	250 DAILY MX	LBS/DY	********	15 MO AVG	20 DAILY MX	MG/L		WEEKLY	GRAB
FLOW, IN CONDUIT OR THRU TREATMENT PLANT	SAMPLE MEASUREMENT	0.960	1.110	03	********	********	********	**	0	28 / 28	TOTALZ
50050 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	REPORT MO AVG	REPORT DAILY MX	MGD	********	********	********	**		SEE PERMIT	TOTALZ
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
Michael D. Skaggs Sequoyah Site Vice President	I Certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is , to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	M Skaggs Sequoyah Site Vice President SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	423	843-7001	11	03	05
TYPED OR PRINTED			AREA CODE	NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here*

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if Different)*

Name TVA - SEQUOYAH NUCLEAR PLANT
Address P.O. BOX 2000
(INTEROFFICE SB-2A-SQN)
SODDY - DAISY, TN 37384
Facility TVA - SEQUOYAH NUCLEAR PLANT
Locatio HAMILTON COUNTY

ATTN: Stephanie A. Howard

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*

TN0026450	107 G
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
From	11	02	01	To	11	02	28

MAJOR
(SUBR 01)
F - FINAL
METAL CLEANING WASTE POND
EFFLUENT

*** NO DISCHARGE XX ***

Form Approved.
OMB No. 2040-0004

NOTE: Read instructions before completing this form.

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM	UNITS			
PH	SAMPLE MEASUREMENT	********	********	**		********		12			
00400 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	****	6.0 MINIMUM	********	9.0 MAXIMUM	SU		DAILY	GRAB
SOLIDS, TOTAL SUSPENDED	SAMPLE MEASUREMENT	********	********	**	********	********		19			
00530 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	****	********	********	30 DAILY MX	MG/L		DAILY	COMPOS
OIL AND GREASE	SAMPLE MEASUREMENT	********	********	**	********	********		19			
00556 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	****	********	********	15 DAILY MX	MG/L		DAILY	GRAB
PHOSPHORUS, TOTAL (AS P)	SAMPLE MEASUREMENT	********	********	**	********	********		19			
00665 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	****	********	********	1.0 DAILY MX	MG/L		DAILY	COMPOS
COPPER, TOTAL (AS CU)	SAMPLE MEASUREMENT	********	********	**	********	********		19			
01042 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	****	********	********	1.0 DAILY MX	MG/L		DAILY	COMPOS
IRON, TOTAL (AS FE)	SAMPLE MEASUREMENT	********	********	**	********	********		19			
01045 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	****	********	********	1.0 DAILY MX	MG/L		DAILY	COMPOS
FLOW, IN CONDUIT OR THRU TREATMENT PLANT	SAMPLE MEASUREMENT			03	********	********	********	**			
50050 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	REPORT MO AVG	REPORT DAILY MX	MGD	********	********	********	****		DAILY	CALCTD

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
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TYPED OR PRINTED			AREA CODE	NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here*

No Discharge this Period

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if Different)*

Name TVA - SEQUOYAH NUCLEAR PLANT
Address P.O. BOX 2000
(INTEROFFICE SB-2A-SQN)
SODDY - DAISY, TN 37384
Facility TVA - SEQUOYAH NUCLEAR PLANT
Locatio HAMILTON COUNTY

ATTN: Stephanie A. Howard

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*

TN0026450	110 G
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
From	11	02	01	To	11	02	28

MAJOR
(SUBR 01)
F - FINAL
RECYCLED COOLING WATER
EFFLUENT

*** NO DISCHARGE XX ***

Form Approved.
OMB No. 2040-0004

NOTE: Read instructions before completing this form.

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM	UNITS			
TEMPERATURE, WATER DEG. CENTIGRADE	SAMPLE MEASUREMENT	********	********	04	********	********		04			
00010 Z 0 0 INSTREAM MONITORING	PERMIT REQUIREMENT	********	********	DEG C	********	********	38.3 DAILY MX	DEG C		DAILY	GRAB-4
PH	SAMPLE MEASUREMENT	********	********	**		********		12			
00400 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	****	6.0 MINIMUM	********	9.0 MAXIMUM	SU		WEEKLY	GRAB
SOLIDS, TOTAL SUSPENDED	SAMPLE MEASUREMENT	********	********	**	********	********		19			
00530 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	****	********	********	30 DAILY MX	MG/L		DAILY	COMPOS
OIL AND GREASE	SAMPLE MEASUREMENT	********	********	**	********	********		19			
00556 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	****	********	********	15 DAILY MX	MG/L		DAILY	GRAB
FLOW, IN CONDUIT OR THRU TREATMENT PLANT	SAMPLE MEASUREMENT			03	********	********	********	**			
50050 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	REPORT MO AVG	REPORT DAILY MX	MGD	********	********	********	****		DAILY	CALCTD
CHLORINE, TOTAL RESIDUAL	SAMPLE MEASUREMENT	********	********	**	********	********		19			
50060 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	****	********	********	0.10 DAILY MX	MG/L		WEEKLY	GRAB-4
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
Michael D. Skaggs Sequoyah Site Vice President	I Certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is , to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	M Skaggs Sequoyah Site Vice President SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	423	843-7001	11	03	05
TYPED OR PRINTED			AREA CODE	NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here*

No Discharge this Period

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if Different)*

Name TVA - SEQUOYAH NUCLEAR PLANT
Address P.O. BOX 2000
(INTEROFFICE SB-2A-SQN)
SODDY - DAISY, TN 37384
Facility TVA - SEQUOYAH NUCLEAR PLANT
Locatio HAMILTON COUNTY

ATTN: Stephanie A. Howard

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*

TN0026450	110 T
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
From	11	02	01	To	11	02	28

MAJOR
(SUBR 01)
F - FINAL
RECYCLED COOLING WATER
EFFLUENT

*** NO DISCHARGE XX ***

Form Approved.
OMB No. 2040-0004

NOTE: Read instructions before completing this form.

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM	UNITS			
IC25 STATRE 7DAY CHR CERIODAPHNIA	SAMPLE MEASUREMENT	********	********	**		********	********	23			
TRP3B 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	****	45.2 MINIMUM	********	********	PERCENT		SEMI ANNUAL	COMPOS
IC25 STATRE 7DAY CHR PIMEPHALES	SAMPLE MEASUREMENT	********	********	**		********	********	23			
TRP6C 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	****	45.2 MINIMUM	********	********	PERCENT		SEMI ANNUAL	COMPOS
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

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TYPED OR PRINTED			AREA CODE	NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here*

No Discharge this Period

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if Different)*

Name TVA - SEQUOYAH NUCLEAR PLANT
Address P.O. BOX 2000
(INTEROFFICE SB-2A-SQN)
SODDY - DAISY, TN 37384
Facility TVA - SEQUOYAH NUCLEAR PLANT
Locatio HAMILTON COUNTY

ATTN: Stephanie A. Howard

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*

TN0026450	116 G
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
From	11	02	01	To	11	02	28

MAJOR
(SUBR 01)
F - FINAL
BACKWASH
EFFLUENT

*** NO DISCHARGE [ ] ***

Form Approved.
OMB No. 2040-0004

NOTE: Read instructions before completing this form.

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM	UNITS			
DEBRIS, FLOATING (SEVERITY)	SAMPLE MEASUREMENT	********	********	**	********	********	0	9A	0	1 / 28	VISUAL
01345 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	****	********	********	REPORT MO TOTAL	PASS=0 FAIL=1		SEE PERMIT	VISUAL
OIL AND GREASE VISUAL	SAMPLE MEASUREMENT	********	0	94	********	********	********	**	0	1 / 28	VISUAL
84066 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	REPORT MO TOTAL	YES=1 NO=0	********	********	********	****		SEE PERMIT	VISUAL
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
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TYPED OR PRINTED		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA CODE	NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here*

Operations performs visual inspections for floating debris and oil and grease during all backwashes.

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if Different)*

Name TVA - SEQUOYAH NUCLEAR PLANT
Address P.O. BOX 2000
(INTEROFFICE SB-2A-SQN)
SODDY - DAISY, TN 37384
Facility TVA - SEQUOYAH NUCLEAR PLANT
Locatio HAMILTON COUNTY

ATTN: Stephanie A. Howard

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*

TN0026450	117 G
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
From	11	02	01	To	11	02	28

MAJOR
(SUBR 01)
F - FINAL
BACKWASH
EFFLUENT

*** NO DISCHARGE [ ] ***

Form Approved.
OMB No. 2040-0004

NOTE: Read instructions before completing this form.

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM	UNITS			
DEBRIS, FLOATING (SEVERITY)	SAMPLE MEASUREMENT	********	********	**	********	********	0	9A	0	1 / 28	VISUAL
01345 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	****	********	********	REPORT MO TOTAL	PASS=0 FAIL=1		SEE PERMIT	VISUAL
OIL AND GREASE VISUAL	SAMPLE MEASUREMENT	********	0	94	********	********	********	**	0	1 / 28	VISUAL
84066 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	REPORT MO TOTAL	YES=1 NO=0	********	********	********	****		SEE PERMIT	VISUAL
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
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	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
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TYPED OR PRINTED		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA CODE	NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here*

Operations performs visual inspections for floating debris and oil and grease during all backwashes.

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if Different)*

Name TVA - SEQUOYAH NUCLEAR PLANT
Address P.O. BOX 2000
(INTEROFFICE SB-2A-SQN)
SODDY - DAISY, TN 37384
Facility TVA - SEQUOYAH NUCLEAR PLANT
Locatio HAMILTON COUNTY

ATTN: Stephanie A. Howard

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*

TN0026450	118 G
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
From	11	02	01	TO	11	02	28

MAJOR
(SUBR 01)
F - FINAL
WASTEWATER & STORM WATER
EFFLUENT

*** NO DISCHARGE XX ***

Form Approved.
OMB No. 2040-0004

NOTE: Read instructions before completing this form.

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM	UNITS			
OXYGEN, DISSOLVED (DO)	SAMPLE MEASUREMENT	********	********	**		********	********	19			
00300 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	****	2.0 DAILY MN	********	********	MG/L		TWICE/ WEEK	GRAB
SOLIDS, TOTAL SUSPENDED	SAMPLE MEASUREMENT	********	********	**	********	********		19			
00530 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	****	********	********	100 DAILY MX	MG/L		TWICE/ WEEK	GRAB
SOLIDS, SETTLEABLE	SAMPLE MEASUREMENT	********	********	**	********	********		25			
00545 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	****	********	********	1.0 DAILY MX	ML/L		ONCE/ MONTH	GRAB
FLOW, IN CONDUIT OR THRU TREATMENT PLANT	SAMPLE MEASUREMENT			03	********	********	********	**			
50050 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	REPORT MO AVG	REPORT DAILY MX	MGD	********	********	********	*		ONCE/ BATCH	ESTIMA
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
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TYPED OR PRINTED			AREA CODE	NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here*

During this reporting period, there has been no flow from the Dredge Pond other than that resulting from rainfall.

REVIEW/CONCURRENCE SHEET

DOCUMENT NAME: SEQUOYAH NUCLEAR PLANT – February 2011 DMR

ORGANIZATION: Environmental

DOCUMENT PREPARED BY: Brad Love

DATE: 03/5/2011

CONCURRENCES				
Name	RV	CN	Signature - Comment	Date
B.M. Love	X			3/05/2011
S. A. Howard	X		Stephanie A. Howard	3/5/11
D.A. Day		X		3/7/11
M.D. Skaggs		X		3/7/11

INSTRUCTIONS: Originator will determine the review/concurrence assignment.

REVIEW: Examine technical content and commitments made. A review (RV) should confirm the truth and accuracy of factual statements and indicate agreement with commitments made which are applicable to the reviewer's organization.

CONCURRENCE: Indication of agreement with the document as a whole. Concurrence (CN) signifies that the document is responsive to the intended purpose, logical in construction, and clear in meaning in the eyes of the recipient. A concurrence signature indicates that the individual would be willing to sign the document for the agency.

April 12, 2011

State of Tennessee
Department of Environment and Conservation
Division of Water Pollution Control
Enforcement & Compliance Section
6th Floor, L & C Annex
401 Church Street
Nashville, Tennessee 37243-1534

Dear Mr. Patrick Cromer:

SEQUOYAH NUCLEAR PLANT - DISCHARGE MONITORING REPORT FOR MARCH 2011

Enclosed is the March 2011 Discharge Monitoring Report for Sequoyah Nuclear Plant. Sample collection continues at the Diffuser Pond Inlet of the Yard Drainage Pond effluent because of a transformer oil spill that reached the Yard Drainage Pond. Samples collected from 9/23/2010 through 3/19/2011 have all yielded results below detection limits for oil and grease. If you have any questions or need additional information, please contact Brad Love at (423) 843-6714 or Stephanie Howard at (423) 843-6700 of Sequoyah's Environmental staff.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Sincerely,

Michael D. Skaggs
Site Vice President
Sequoyah Nuclear Plant

Enclosure
cc (Enclosure):

Chattanooga Environmental Field Office
Division of Water Pollution Control
State Office Building, Suite 550
540 McCallie Avenue
Chattanooga, Tennessee 37402-2013

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

B. E. Brickhouse, LP 5U-C
G. M. Cook, OPS 4A-SQN
D. A. Day, POB 2A-SQN
S. A. Howard, OPS 5N-SQN
K. Langdon, POB 2B-SQN

D. B. Nida, LP 5U-C
A. A. Ray, WT 11A-K
G. R. Signer, WT 6A-K
M. D. Skaggs, OPS 4A-SQN
K. M. Hodges (EDMS), LP 2V-C

Tennessee Valley Authority, Post Office Box 2000, Soddy Daisy, Tennessee 37384-2000

April 12, 2011

State of Tennessee
Department of Environment and Conservation
Division of Water Pollution Control
Enforcement & Compliance Section
6th Floor, L & C Annex
401 Church Street
Nashville, Tennessee 37243-1534

Dear Mr. Patrick Cromer:

SEQUOYAH NUCLEAR PLANT - DISCHARGE MONITORING REPORT FOR MARCH 2011

Enclosed is the March 2011 Discharge Monitoring Report for Sequoyah Nuclear Plant. Sample collection continues at the Diffuser Pond Inlet of the Yard Drainage Pond effluent because of a transformer oil spill that reached the Yard Drainage Pond. Samples collected from 9/23/2010 through 3/19/2011 have all yielded results below detection limits for oil and grease. If you have any questions or need additional information, please contact Brad Love at (423) 843-6714 or Stephanie Howard at (423) 843-6700 of Sequoyah's Environmental staff.

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U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if Different)*

Name TVA - SEQUOYAH NUCLEAR PLANT
Address P.O. BOX 2000
(INTEROFFICE SB-2A-SQN)
SODDY - DAISY, TN 37384
Facility TVA - SEQUOYAH NUCLEAR PLANT
Locatio HAMILTON COUNTY

ATTN: Stephanie A. Howard

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*

TN0026450	101 G
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
From	11	03	01	To	11	03	31

MAJOR
(SUBR 01)
F - FINAL
DIFFUSER DISCHARGE
EFFLUENT

*** NO DISCHARGE [ ] ***

Form Approved.
OMB No. 2040-0004

NOTE: Read instructions before completing this form.

PARAMETER		QUANTITY OR LOADING AVERAGE	QUANTITY OR LOADING MAXIMUM	QUANTITY OR LOADING UNITS	QUALITY OR CONCENTRATION MINIMUM	QUALITY OR CONCENTRATION AVERAGE	QUALITY OR CONCENTRATION MAXIMUM	QUALITY OR CONCENTRATION UNITS	NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
TEMPERATURE, WATER DEG. CENTIGRADE	SAMPLE MEASUREMENT	********	********	**	********	********	28.6	04	0	31 / 31	RCORDR
00010 1 0 EFFLUENT GROSS	PERMIT REQUIREMENT	********	********	****	********	********	Req. Mon. DAILY MAX	DEG. C.		CONTI NUOUS	CALCTD
TEMPERATURE, WATER DEG. CENTIGRADE	SAMPLE MEASUREMENT	********	********	**	********	********	14.0	04	0	31 / 31	MODELD
00010 Z 0 INSTREAM MONITORING	PERMIT REQUIREMENT	********	********	****	********	********	30.5 DAILY MX	DEG. C.		CONTI NUOUS	CALCTD
TEMP. DIFF. BETWEEN SAMP. & UPSTRM DEG.C	SAMPLE MEASUREMENT	********	********	**	********	********	1	04	0	31 / 31	CALCTD
00016 1 1 EFFLUENT GROSS	PERMIT REQUIREMENT	********	********	****	********	********	5 DAILY MX	DEG. C.		CONTI NUOUS	CALCTD
FLOW, IN CONDUIT OR THRU TREATMENT PLANT	SAMPLE MEASUREMENT	********	1642	03	********	********	********	**	0	31 / 31	RCORDR
50050 1 0 EFFLUENT GROSS	PERMIT REQUIREMENT	********	Req. Mon. DAILY MAX	MGD	********	********	********	****		CONTI NUOUS	RCORDR
CHLORINE, TOTAL RESIDUAL	SAMPLE MEASUREMENT	********	********	**	********	0.011	0.024	19	0	16 / 31	GRAB
50060 1 0 EFFLUENT GROSS	PERMIT REQUIREMENT	********	********	****	********	0.1 MO AVG	0.1 DAILY MAX	MG/L		FIVE PER WEEK	CALCTD
TEMPERATURE - C, RATE OF CHANGE	SAMPLE MEASUREMENT	********	0	62	********	********		**	0	31 / 31	CALCTD
82234 1 0 EFFLUENT GROSS	PERMIT REQUIREMENT	********	2 DAILY MX	DEG C/HR	********	********	*******	****		CONTI NUOUS	CALCTD
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
Michael D. Skaggs Sequoyah Site Vice President	I Certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is , to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	M Skaggs Sequoyah Site Vice President	423	843-7001	11	04	12
TYPED OR PRINTED		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA CODE	NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here*

No closed mode operation. Veliger monitoring data is included as an attachment. The following injections occurred: Biodetergent 73551 (max. calc. conc. was 0.02mg/L--limit 2.0mg/L)

Sample Date	Mean # of ZM/m3	% Settlers	Water Temp. (°C)	Sample Date	Mean# of Asiatic Clams/m3	Water Temp. (°C)	LOCATION	SUB LOCATION	NOTES: % Gravid Asiatic Clam	COLLECTED BY
12/07/2010	6	100	23	12/07/2010	0	23	1-25-545			PB
12/14/2010	0	0	10	12/14/2010	0	10	1-25-545			RS
12/22/2010	0	0	10.5	12/22/2010	0	10.5	1-ISV-24-1234			WE
12/29/2010	0	0	26	12/29/2010	0	26	1-25-545			WDT
01/04/2011	0	0	13	01/04/2010	0	13	1-25-545			PB
01/11/2011	0	0	22	01/11/2010	0	22	1-25-545			RS
01/18/2011	0	0	9.5	01/18/2010	0	9.5	1-ISV-24-1234			CR
01/25/2011	0	0	23	01/25/2011	0	23	1-25-545			WDT
02/02/2011	0	0	10	02/02/2011	0	10	1-25-545			PB
02/08/2011	0	0	9	02/08/2011	0	9	1-25-545			MJW
02/15/2011	0	0	23	02/15/2011	0	23	1-25-545			MLW
02/22/2011	20	100	10	02/22/2011	0	10	1-25-545			PB
03/01/2011	0	0	11	03/01/2011	0	11	1-ISV-24-1236			PB
03/08/2011	0	0	11	03/08/2011	0	11	1-ISV-24-1236			WE
03/16/2011	22	0	11	03/16/2011	0	11	1-ISV-24-1234			MLW
03/23/2011	0	0	11	03/23/2011	0	11	1-ISV-24-1234			MLW
03/30/2011	0	0	12	03/30/2011	0	12	1-15v-24-1236			MLW

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if Different)*

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Address P.O. BOX 2000
(INTEROFFICE SB-2A-SQN)
SODDY - DAISY, TN 37384
Facility TVA - SEQUOYAH NUCLEAR PLANT
Locatio HAMILTON COUNTY

ATTN: Stephanie A. Howard

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*

TN0026450	101 T
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
From	11	03	01	To	11	03	31

MAJOR
(SUBR 01)
F - FINAL
BIOMONITORING FOR OUTFALL 101
EFFLUENT

*** NO DISCHARGE [ ] ***

Form Approved.
OMB No. 2040-0004

NOTE: Read instructions before completing this form.

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM	UNITS			
IC25 STATRE 7DAY CHR CERIODAPHNIA	SAMPLE MEASUREMENT	********	********	**	Monitoring Not Required	********	********	23			
TRP3B 1 0 EFFLUENT GROSS	PERMIT REQUIREMENT	********	********	****	43.2 MINIMUM	********	********	PERCENT		SEMI ANNUAL	COMPOS
IC25 STATRE 7DAY CHR PIMEPHALES	SAMPLE MEASUREMENT	********	********	**	Monitoring Not Required	********	********	23			
TRP6C 1 0 EFFLUENT GROSS	PERMIT REQUIREMENT	********	********	****	43.2 MIMINUM	********	********	PERCENT		SEMI ANNUAL	COMPOS
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
Michael D. Skaggs Sequoyah Site Vice President	I Certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is , to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	M Sk-88 Sequoyah Site Vice President SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	423	843-7001	11	04	12
TYPED OR PRINTED			AREA CODE	NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here*

Toxicity was not sampled in March 2011.

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if Different)*

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Address P.O. BOX 2000
(INTEROFFICE SB-2A-SQN)
SODDY - DAISY, TN 37384
Facility TVA - SEQUOYAH NUCLEAR PLANT
Locatio HAMILTON COUNTY

ATTN: Stephanie A. Howard

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*

TN0026450	103 G
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
From	11	03	01	To	11	03	31

MAJOR
(SUBR 01)
F - FINAL
LOW VOL. WASTE TREATMENT POND
EFFLUENT

*** NO DISCHARGE ☐ ***

Form Approved.
OMB No. 2040-0004

NOTE: Read instructions before completing this form.

PARAMETER		QUANTITY OR LOADING AVERAGE	QUANTITY OR LOADING MAXIMUM	QUANTITY OR LOADING UNITS	QUALITY OR CONCENTRATION MINIMUM	QUALITY OR CONCENTRATION AVERAGE	QUALITY OR CONCENTRATION MAXIMUM	QUALITY OR CONCENTRATION UNITS	NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
PH	SAMPLE MEASUREMENT	********	********	**	7	********	8	12	0	15 / 31	GRAB
00400 1 0 EFFLUENT GROSS	PERMIT REQUIREMENT	********	********	**	6 MINIMUM	********	9 MAXIMUM	SU		THREE/ WEEK	GRAB
SOLIDS, TOTAL SUSPENDED	SAMPLE MEASUREMENT	********	********	**	********	14	16	19	0	2 / 31	GRAB
00530 1 0 EFFLUENT GROSS	PERMIT REQUIREMENT	********	********	**	********	30 MO AVG	100 DAILY MX	MG/L		TWICE/ MONTH	GRAB
OIL AND GREASE	SAMPLE MEASUREMENT	********	********	**	********	<5	<6	19	0	2 / 31	GRAB
00556 1 0 EFFLUENT GROSS	PERMIT REQUIREMENT	********	********	**	********	15 MO AVG	20 DAILY MX	MG/L		TWICE/ MONTH	GRAB
FLOW, IN CONDUIT OR THRU TREATMENT PLANT	SAMPLE MEASUREMENT	0.964	1.089	03	********	********	********	**	0	31 / 31	RCORDR
50050 1 0 EFFLUENT GROSS	PERMIT REQUIREMENT	Req. Mon. MO AVG	Req. Mon DAILY MX	MGD	********	********	********	**		SEE PERMIT	RCORDR
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

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TYPED OR PRINTED			AREA CODE	NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here*

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if Different)*

Name TVA - SEQUOYAH NUCLEAR PLANT
Address P.O. BOX 2000
(INTEROFFICE SB-2A-SQN)
SODDY - DAISY, TN 37384
Facility TVA - SEQUOYAH NUCLEAR PLANT
Locatio HAMILTON COUNTY

ATTN: Stephanie A. Howard

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*

TN0026450	110 G
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
From	11	03	01	To	11	03	31

MAJOR
(SUBR 01)
F - FINAL
RECYCLED COOLING WATER
EFFLUENT

*** NO DISCHARGE XX ***

Form Approved.
OMB No. 2040-0004

NOTE: Read instructions before completing this form.

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM	UNITS			
TEMPERATURE, WATER DEG. CENTIGRADE	SAMPLE MEASUREMENT	********	********	**	********	********		04			
00010 1 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	**	********	********	REPORT DAILY MX	DEG C		CONTIN UOUS	CALCTD
TEMPERATURE, WATER DEG. CENTIGRADE	SAMPLE MEASUREMENT	********	********	**	********	********		04			
00010 Z 0 INSTREAM MONITORING	PERMIT REQUIREMENT	********	********	**	********	********	30.5 DAILY MX	DEG C		CONTIN UOUS	CALCTD
TEMP. DIFF. BETWEEN SAMP. & UPSTRM DEG.C	SAMPLE MEASUREMENT	********	********	**	********	********		04			
00016 1 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	**	********	********	5 DAILY MX	DEG C		CONTIN UOUS	CALCTD
FLOW, IN CONDUIT OR THRU TREATMENT PLANT	SAMPLE MEASUREMENT	********		03	********	********	********	**			
50050 1 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	Req. Mon. DAILY MX	MGD	********	********	********	**		CONTIN UOUS	RCORDR
CHLORINE, TOTAL RESIDUAL	SAMPLE MEASUREMENT	********	********	**	********			19			
50060 1 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	**	********	0.1 MO AVG	0.1 DAILY MX	MG/L		Five per Week	CALCTD
TEMPERATURE - C, RATE OF CHANGE	SAMPLE MEASUREMENT	********		04	********	********	********	**			
82234 1 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	2 DAILY MX	DEG C	********	********	********	**		CONTIN UOUS	CALCTD
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
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TYPED OR PRINTED		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA CODE	NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here*

No Discharge this Period.

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if Different)*

Name TVA - SEQUOYAH NUCLEAR PLANT
Address P.O. BOX 2000
(INTEROFFICE SB-2A-SQN)
SODDY - DAISY, TN 37384
Facility TVA - SEQUOYAH NUCLEAR PLANT
Locatio HAMILTON COUNTY

ATTN: Stephanie A. Howard

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*

TN0026450	110 T
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
From	11	03	01	To	11	03	31

MAJOR
(SUBR 01)
F - FINAL
RECYCLED COOLING WATER
EFFLUENT

*** NO DISCHARGE XX ***

Form Approved.
OMB No. 2040-0004

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PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM	UNITS			
IC25 STATRE 7DAY CHR CERIODAPHNIA	SAMPLE MEASUREMENT	********	********	**		********	********	23			
TRP3B 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	****	43.2 MINIMUM	********	********	PERCENT		SEMI ANNUAL	COMPOS
IC25 STATRE 7DAY CHR PIMEPHALES	SAMPLE MEASUREMENT	********	********	**		********	********	23			
TRP6C 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	****	43.2 MINIMUM	********	********	PERCENT		SEMI ANNUAL	COMPOS
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

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TYPED OR PRINTED		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA CODE	NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here*

No Discharge this Period

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if Different)*

Name TVA - SEQUOYAH NUCLEAR PLANT
Address P.O. BOX 2000
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SODDY - DAISY, TN 37384
Facility TVA - SEQUOYAH NUCLEAR PLANT
Locatio HAMILTON COUNTY

ATTN: Stephanie A. Howard

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*

TN0026450	118 G
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
From	11	03	01	To	11	03	31

MAJOR
(SUBR 01)
F - FINAL
WASTEWATER & STORM WATER
EFFLUENT

*** NO DISCHARGE XX ***

Form Approved.
OMB No. 2040-0004

NOTE: Read instructions before completing this form.

PARAMETER		QUANTITY OR LOADING AVERAGE	QUANTITY OR LOADING MAXIMUM	QUANTITY OR LOADING UNITS	QUALITY OR CONCENTRATION MINIMUM	QUALITY OR CONCENTRATION AVERAGE	QUALITY OR CONCENTRATION MAXIMUM	QUALITY OR CONCENTRATION UNITS	NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
OXYGEN, DISSOLVED (DO)	SAMPLE MEASUREMENT	********	********	**		********	********	19			
00300 1 0 EFFLUENT GROSS	PERMIT REQUIREMENT	********	********	****	2 MINIMUM	********	********	MG/L		TWICE/ WEEK	GRAB
SOLIDS, TOTAL SUSPENDED	SAMPLE MEASUREMENT	********	********	**	********	********		19			
00530 1 0 EFFLUENT GROSS	PERMIT REQUIREMENT	********	********	****	********	********	100 DAILY MX	MG/L		TWICE/ WEEK	GRAB
SOLIDS, SETTLEABLE	SAMPLE MEASUREMENT	********	********	**	********	********		25			
00545 1 0 EFFLUENT GROSS	PERMIT REQUIREMENT	********	********	****	********	********	1 DAILY MX	ML/L		ONCE/ MONTH	GRAB
FLOW, IN CONDUIT OR THRU TREATMENT PLANT	SAMPLE MEASUREMENT			03	********	********	********	**			
50050 1 0 EFFLUENT GROSS	PERMIT REQUIREMENT	Req. Mon. MO AVG	Req. Mon. DAILY MX	MGD	********	********	********	*		ONCE/ BATCH	ESTIMA
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
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TYPED OR PRINTED			AREA CODE	NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here*

During this reporting period, there has been no flow from the Dredge Pond other than that resulting from rainfall.

REVIEW/CONCURRENCE SHEET

DOCUMENT NAME: SEQUOYAH NUCLEAR PLANT – March 2011 DMR

ORGANIZATION: Environmental

DOCUMENT PREPARED BY: Brad Love

DATE: 04/11/2011

CONCURRENCES				
Name	RV	CN	Signature - Comment	Date
B.M. Love	X			4/11/11
S. A. Howard	X		Stephanie A. Howard	4/12/11
D.A. Day		X	D. Day	4/12/11
M.D. Skaggs		X	M Skaggs	4/12/11

INSTRUCTIONS: Originator will determine the review/concurrence assignment.

REVIEW: Examine technical content and commitments made. A review (RV) should confirm the truth and accuracy of factual statements and indicate agreement with commitments made which are applicable to the reviewer's organization.

CONCURRENCE: Indication of agreement with the document as a whole. Concurrence (CN) signifies that the document is responsive to the intended purpose, logical in construction, and clear in meaning in the eyes of the recipient. A concurrence signature indicates that the individual would be willing to sign the document for the agency.

S58 120201 802 – NPDES CORRESPONDENCE

February 1, 2012

Ms. Dana Waits
State of Tennessee
Department of Environment and Conservation
Division of Water Pollution Control
Enforcement & Compliance Section
6th Floor, L & C Annex
401 Church Street
Nashville, Tennessee 37243-1534

Dear Ms. Waits:

SEQUOYAH NUCLEAR PLANT (SQN) - NPDES PERMIT NO. TN0026450 - CORRECTION TO DISCHARGE MONITORING REPORT FOR MARCH AND APRIL 2011.

During the review of the Biocide/Corrosion Treatment Plan (B/CTP) Annual Report it was noted that there was an error reported for Frequency of Analysis in the March and April 2011 Discharge Monitoring Reports (DMR). Please see the attached corrected DMR pages.

It should be noted that the chlorine, total residual maximum value and the chlorine, total residual average did not change as a result of the correction to the Frequency of Analysis for each month.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Sincerely,

John T. Carlin
Site Vice President
Sequoyah Nuclear Plant

Enclosures
cc (Enclosures):

Chattanooga Environmental Field Office
Division of Water Pollution Control
State Office Building, Suite 550
540 McCallie Avenue
Chattanooga, Tennessee 37402-2013

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

B. E. Brickhouse, LP 5U-C
J. T. Carlin, OPS 4A-SQN
G. M. Cook, OPS 4A-SQN
J. A. Cross, POB 2A-SQN
S. W. Hixson, BR 4A-C
D. B. Nida, LP 5U-C
A. A. Ray, WT 11A-K
G. R. Signer, WT 6A-K
P.R. Simmons, POB 2B-SQN
B. N. Smith (EDMS), MPB 1E-M

Tennessee Valley Authority, Post Office Box 2000, Soddy Daisy, Tennessee 37384-2000

February 1, 2012

Ms. Dana Waits
State of Tennessee
Department of Environment and Conservation
Division of Water Pollution Control
Enforcement & Compliance Section
6th Floor, L & C Annex
401 Church Street
Nashville, Tennessee 37243-1534

Dear Ms. Waits:

SEQUOYAH NUCLEAR PLANT (SQN) - NPDES PERMIT NO. TN0026450 - CORRECTION TO DISCHARGE MONITORING REPORT FOR MARCH AND APRIL 2011.

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It should be noted that the chlorine, total residual maximum value and the chlorine, total residual average did not change as a result of the correction to the Frequency of Analysis for each month.

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Sincerely,

John T. Carlin
Site Vice President
Sequoyah Nuclear Plant

Enclosures
cc (Enclosures):
Chattanooga Environmental Field Office
Division of Water Pollution Control
State Office Building, Suite 550
540 McCallie Avenue
Chattanooga, Tennessee 37402-2013

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if Different)*

Name TVA - SEQUOYAH NUCLEAR PLANT
Address P.O. BOX 2000
(INTEROFFICE OPS-5N-SQN)
SODDY - DAISY, TN 37384
Facility TVA - SEQUOYAH NUCLEAR PLANT
Location HAMILTON COUNTY

ATTN: Brad Love

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*

TN0026450	101 G
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
From	11	03	01	To	11	03	31

MAJOR
(SUBR 01)
F - FINAL
DIFFUSER DISCHARGE
EFFLUENT

*** NO DISCHARGE [ ] ***

Form Approved.
OMB No. 2040-0004

NOTE: Read instructions before completing this form.

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM	UNITS			
TEMPERATURE, WATER DEG. CENTIGRADE	SAMPLE MEASUREMENT	********	********	**	********	********	28.6	04	0	31 / 31	RCORDR
00010 1 0 EFFLUENT GROSS	PERMIT REQUIREMENT	********	********	****	********	********	Req. Mon. DAILY MAX	DEG. C.		CONTI NUOUS	CALCTD
TEMPERATURE, WATER DEG. CENTIGRADE	SAMPLE MEASUREMENT	********	********	**	********	********	14.0	04	0	31 / 31	MODELD
00010 Z 0 INSTREAM MONITORING	PERMIT REQUIREMENT	********	********	****	********	********	30.5 DAILY MX	DEG. C.		CONTI NUOUS	CALCTD
TEMP. DIFF. BETWEEN SAMP. & UPSTRM DEG.C	SAMPLE MEASUREMENT	********	********	**	********	********	1	04	0	31 / 31	CALCTD
00016 1 1 EFFLUENT GROSS	PERMIT REQUIREMENT	********	********	****	********	********	5 DAILY MX	DEG. C.		CONTI NUOUS	CALCTD
FLOW, IN CONDUIT OR THRU TREATMENT PLANT	SAMPLE MEASUREMENT	********	1642	03	********	********	********	**	0	31 / 31	RCORDR
50050 1 0 EFFLUENT GROSS	PERMIT REQUIREMENT	********	Req. Mon. DAILY MAX	MGD	********	********	********	****		CONTI NUOUS	RCORDR
CHLORINE, TOTAL RESIDUAL	SAMPLE MEASUREMENT	********	********	**	********	0.011	0.024	19	0	15 / 31	GRAB
50060 1 0 EFFLUENT GROSS	PERMIT REQUIREMENT	********	********	****	********	0.1 MO AVG	0.1 DAILY MAX	MG/L		FIVE PER WEEK	CALCTD
TEMPERATURE - C, RATE OF CHANGE	SAMPLE MEASUREMENT	********	0	62	********	********		**	0	31 / 31	CALCTD
82234 1 0 EFFLUENT GROSS	PERMIT REQUIREMENT	********	2 DAILY MX	DEG C/HR	********	********	********	****		CONTI NUOUS	CALCTD
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
John T. Carlin Sequoyah Site Vice President	I Certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is , to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	Sequoyah Site Vice President SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	423	843-7001	12	01	17
TYPED OR PRINTED			AREA CODE	NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

No closed mode operation. Veliger monitoring data is included as an attachment. The following injections occurred: Biodetergent 73551 (max. calc. conc. was 0.02mg/L--limit 2.0mg/L)

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if Different)*

Name TVA - SEQUOYAH NUCLEAR PLANT
Address P.O. BOX 2000
(INTEROFFICE OPS-5N-SQN)
SODDY - DAISY, TN 37384
Facility TVA - SEQUOYAH NUCLEAR PLANT
Location HAMILTON COUNTY

ATTN: Brad Love

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*

TN0026450	101 G
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
From	11	04	01	To	11	04	30

MAJOR
(SUBR 01)
F - FINAL
DIFFUSER DISCHARGE
EFFLUENT

*** NO DISCHARGE [ ] ***

Form Approved.
OMB No. 2040-0004

NOTE: Read instructions before completing this form.

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM	UNITS			
TEMPERATURE, WATER DEG. CENTIGRADE	SAMPLE MEASUREMENT	********	********	**	********	********	34.4	04	0	30 / 30	RCORDR
00010 1 0 EFFLUENT GROSS	PERMIT REQUIREMENT	********	********	****	********	********	Req. Mon. DAILY MAX	DEG. C.		CONTI NUOUS	CALCTD
TEMPERATURE, WATER DEG. CENTIGRADE	SAMPLE MEASUREMENT	********	********	**	********	********	19.7	04	0	30 / 30	MODELD
00010 Z 0 INSTREAM MONITORING	PERMIT REQUIREMENT	********	********	****	********	********	30.5 DAILY MX	DEG. C.		CONTI NUOUS	CALCTD
TEMP. DIFF. BETWEEN SAMP. & UPSTRM DEG.C	SAMPLE MEASUREMENT	********	********	**	********	********	3	04	0	30 / 30	CALCTD
00016 1 S EFFLUENT GROSS	PERMIT REQUIREMENT	********	********	****	********	********	3 DAILY MX	DEG. C.		CONTI NUOUS	CALCTD
FLOW, IN CONDUIT OR THRU TREATMENT PLANT	SAMPLE MEASUREMENT	********	1642	03	********	********	********	**	0	30 / 30	RCORDR
50050 1 0 EFFLUENT GROSS	PERMIT REQUIREMENT	********	Req. Mon. DAILY MAX	MGD	********	********	********	****		CONTI NUOUS	RCORDR
CHLORINE, TOTAL RESIDUAL	SAMPLE MEASUREMENT	********	********	**	********	0.017	0.026	19	0	25 / 30	GRAB
50060 1 0 EFFLUENT GROSS	PERMIT REQUIREMENT	********	********	****	********	0.1 MO AVG	0.1 DAILY MAX	MG/L		FIVE PER WEEK	CALCTD
TEMPERATURE - C, RATE OF CHANGE	SAMPLE MEASUREMENT	********	1	62	********	********		**	0	30 / 30	CALCTD
82234 1 0 EFFLUENT GROSS	PERMIT REQUIREMENT	********	2 DAILY MX	DEG C/HR	********	********	*******	****		CONTI NUOUS	CALCTD
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
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TYPED OR PRINTED			AREA CODE	NUMBER.	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

No closed mode operation. Veliger Monitoring Data is includes as an attachment. The following injections occurred: 1. Towerbrom 960 2. Spectrus CT1300 (max. calc. conc. was 0.039mg/L--limit 0.050mg/L)

REVIEW/CONCURRENCE SHEET

DOCUMENT NAME: SEQUOYAH NUCLEAR PLANT – March / April 2011 DMR Corrections

ORGANIZATION: Environmental

DOCUMENT PREPARED BY: Brad Love

DATE: 1/19/2012

CONCURRENCES				
Name	RV	CN	Signature - Comment	Date
B.M. Love	X			1/19/12
J.L. Grubb	X			1/26/12
J.A. Cross		X		1/26/12

INSTRUCTIONS: Originator will determine the review/concurrence assignment.

REVIEW: Examine technical content and commitments made. A review (RV) should confirm the truth and accuracy of factual statements and indicate agreement with commitments made which are applicable to the reviewer's organization.

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May 10, 2011

State of Tennessee
Department of Environment and Conservation
Division of Water Pollution Control
Enforcement & Compliance Section
6th Floor, L & C Annex
401 Church Street
Nashville, Tennessee 37243-1534

Dear Mr. Patrick Cromer:

SEQUOYAH NUCLEAR PLANT - DISCHARGE MONITORING REPORT FOR APRIL 2011

Enclosed is the April 2011 Discharge Monitoring Report for Sequoyah Nuclear Plant. Sample collection continues at the Diffuser Pond Inlet of the Yard Drainage Pond effluent because of a transformer oil spill that reached the Yard Drainage Pond. Samples collected from 9/23/2010 through 4/30/2011 have all yielded results below detection limits for oil and grease. If you have any questions or need additional information, please contact Brad Love at (423) 843-6714 or Stephanie Howard at (423) 843-6700 of Sequoyah's Environmental staff.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Sincerely,

M Sk.

Michael D. Skaggs
Site Vice President
Sequoyah Nuclear Plant

Enclosure
cc (Enclosure):

Chattanooga Environmental Field Office
Division of Water Pollution Control
State Office Building, Suite 550
540 McCallie Avenue
Chattanooga, Tennessee 37402-2013

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

B. E. Brickhouse, LP 5U-C
G. M. Cook, OPS 4A-SQN
D. A. Day, POB 2A-SQN
S. A. Howard, OPS 5N-SQN
K. Langdon, POB 2B-SQN

D. B. Nida, LP 5U-C
A. A. Ray, WT 11A-K
G. R. Signer, WT 6A-K
M. D. Skaggs, OPS 4A-SQN
K. M. Hodges (EDMS), LP 2V-C

Tennessee Valley Authority, Post Office Box 2000, Soddy Daisy, Tennessee 37384-2000

May 10, 2011

State of Tennessee
Department of Environment and Conservation
Division of Water Pollution Control
Enforcement & Compliance Section
6th Floor, L & C Annex
401 Church Street
Nashville, Tennessee 37243-1534

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Sincerely,

M Skaggs

Michael D. Skaggs
Site Vice President
Sequoyah Nuclear Plant

Enclosure
cc (Enclosure):

Chattanooga Environmental Field Office
Division of Water Pollution Control
State Office Building, Suite 550
540 McCallie Avenue
Chattanooga, Tennessee 37402-2013

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if Different)*

Name TVA - SEQUOYAH NUCLEAR PLANT
Address P.O. BOX 2000
(INTEROFFICE SB-2A-SQN)
SODDY - DAISY, TN 37384
Facility TVA - SEQUOYAH NUCLEAR PLANT
Locatio HAMILTON COUNTY

ATTN: Stephanie A. Howard

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*

TN0026450	101 G
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
From	11	04	01	To	11	04	30

MAJOR
(SUBR 01)
F - FINAL
DIFFUSER DISCHARGE
EFFLUENT

*** NO DISCHARGE ☐ ***

Form Approved.
OMB No. 2040-0004

NOTE: Read instructions before completing this form.

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM	UNITS			
TEMPERATURE, WATER DEG. CENTIGRADE	SAMPLE MEASUREMENT	********	********	**	********	********	34.4	04	0	30 / 30	RCORDR
00010 1 0 EFFLUENT GROSS	PERMIT REQUIREMENT	********	********	****	********	********	Req. Mon. DAILY MAX	DEG. C.		CONTI NUOUS	CALCTD
TEMPERATURE, WATER DEG. CENTIGRADE	SAMPLE MEASUREMENT	********	********	**	********	********	19.7	04	0	30 / 30	MODELD
00010 Z 0 INSTREAM MONITORING	PERMIT REQUIREMENT	********	********	****	********	********	30.5 DAILY MX	DEG. C.		CONTI NUOUS	CALCTD
TEMP. DIFF. BETWEEN SAMP. & UPSTRM DEG.C	SAMPLE MEASUREMENT	********	********	**	********	********	3	04	0	30 / 30	CALCTD
00016 1 S EFFLUENT GROSS	PERMIT REQUIREMENT	********	********	****.	********	********	3 DAILY MX	DEG. C.		CONTI NUOUS	CALCTD
FLOW, IN CONDUIT OR THRU TREATMENT PLANT	SAMPLE MEASUREMENT	********	1642	03	********	********	********	**	0	30 / 30	RCORDR
50050 1 0 EFFLUENT GROSS	PERMIT REQUIREMENT	********	Req. Mon. DAILY MAX	MGD	********	********	********	****		CONTI NUOUS	RCORDR
CHLORINE, TOTAL RESIDUAL	SAMPLE MEASUREMENT	********	********	**	********	0.017	0.026	19	0	28 / 30	GRAB
50060 1 0 EFFLUENT GROSS	PERMIT REQUIREMENT	********	********	****	********	0.1 MO AVG	0.1 DAILY MAX	MG/L		FIVE PER WEEK	CALCTD
TEMPERATURE - C, RATE OF CHANGE	SAMPLE MEASUREMENT	********	1	62	********	********		**	0	30 / 30	CALCTD
82234 1 0 EFFLUENT GROSS	PERMIT REQUIREMENT	********	2 DAILY MX	DEG C/HR	********	********	*******	****		CONTI NUOUS	CALCTD
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
Michael D. Skaggs Sequoyah Site Vice President	I Certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is , to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	M Sk-00 Sequoyah Site Vice President	423	843-7001	11	05	09
TYPED OR PRINTED		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA CODE	NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here*

No closed mode operation. Veliger Monitoring Data is includes as an attachment. The following injections occurred: 1. Towerbrom 960 2. Spectrus CT1300 (max. calc. conc. was 0.039mg/L--limit 0.050mg/L)

Sample Date	Mean # of ZM/m3	% Settlers	Water Temp. (°C)	Sample Date	Mean# of Asiatic Clams/m3	Water Temp. (°C)	LOCATION	SUB LOCATION	NOTES: % Gravid Asiatic Clam	COLLECTED BY
12/07/2010	6	100	23	12/07/2010	0	23	1-25-545			PB
12/14/2010	0	0	10	12/14/2010	0	10	1-25-545			RS
12/22/2010	0	0	10.5	12/22/2010	0	10.5	1-ISV-24-1234			WE
12/29/2010	0	0	26	12/29/2010	0	26	1-25-545			WDT
01/04/2011	0	0	13	01/04/2010	0	13	1-25-545			PB
01/11/2011	0	0	22	01/11/2010	0	22	1-25-545			RS
01/18/2011	0	0	9.5	01/18/2010	0	9.5	1-ISV-24-1234			CR
01/25/2011	0	0	23	01/25/2011	0	23	1-25-545			WDT
02/02/2011	0	0	10	02/02/2011	0	10	1-25-545			PB
02/08/2011	0	0	9	02/08/2011	0	9	1-25-545			MJW
02/15/2011	0	0	23	02/15/2011	0	23	1-25-545			MLW
02/22/2011	20	100	10	02/22/2011	0	10	1-25-545			PB
03/01/2011	0	0	11	03/01/2011	0	11	1-ISV-24-1236			PB
03/08/2011	0	0	11	03/08/2011	0	11	1-ISV-24-1236			WE
03/16/2011	22	0	11	03/16/2011	0	11	1-ISV-24-1234			MLW
03/23/2011	0	0	11	03/23/2011	0	11	1-ISV-24-1234			MLW
03/30/2011	0	0	12	03/30/2011	0	12	1-15v-24-1236			MLW
04/06/2011	18	100	15	04/06/2011	0	15	1-ISV-24-1234			HMW
04/08/2011	45	100	15.5	04/08/2011	0	15.5	1-1SV-24-1236			WAW/PB
04/20/2011	21	100	16	04/20/2011	0	16	1-1SV-24-1236			PB

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if Different)*

Name TVA - SEQUOYAH NUCLEAR PLANT
Address P.O. BOX 2000
(INTEROFFICE SB-2A-SQN)
SODDY - DAISY, TN 37384
Facility TVA - SEQUOYAH NUCLEAR PLANT
Locatio HAMILTON COUNTY

ATTN: Stephanie A. Howard

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*

TN0026450	101 T
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
From	11	04	01	To	11	04	30

MAJOR
(SUBR 01)
F - FINAL
BIOMONITORING FOR OUTFALL 101
EFFLUENT

*** NO DISCHARGE ☐ ***

Form Approved.
OMB No. 2040-0004

NOTE: Read instructions before completing this form.

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM	UNITS			
IC25 STATRE 7DAY CHR CERIODAPHNIA	SAMPLE MEASUREMENT	********	********	**	Monitoring Not Required	********	********	23			
TRP3B 1 0 EFFLUENT GROSS	PERMIT REQUIREMENT	********	********	****	43.2 MINIMUM	********	********	PERCENT		SEMI ANNUAL	COMPOS
IC25 STATRE 7DAY CHR PIMEPHALES	SAMPLE MEASUREMENT	********	********	**	Monitoring Not Required	********	********	23			
TRP6C 1 0 EFFLUENT GROSS	PERMIT REQUIREMENT	********	********	****	43.2 MIMINUM	********	********	PERCENT		SEMI ANNUAL	COMPOS
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
Michael D. Skaggs Sequoyah Site Vice President	I Certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is , to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	M Sk. 88 Sequoyah Site Vice President	423	843-7001	11	05	09
TYPED OR PRINTED		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA CODE	NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here*

Toxicity was not sampled in April 2011.

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if Different)*

Name TVA - SEQUOYAH NUCLEAR PLANT
Address P.O. BOX 2000
(INTEROFFICE SB-2A-SQN)
SODDY - DAISY, TN 37384
Facility TVA - SEQUOYAH NUCLEAR PLANT
Locatio HAMILTON COUNTY

ATTN: Stephanie A. Howard

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*

TN0026450	103 G
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
From	11	04	01	To	11	04	30

MAJOR
(SUBR 01)
F - FINAL
LOW VOL. WASTE TREATMENT POND
EFFLUENT

*** NO DISCHARGE [ ] ***

Form Approved.
OMB No. 2040-0004

NOTE: Read instructions before completing this form.

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM	UNITS			
PH	SAMPLE MEASUREMENT	********	********	**	7	********	8	12	0	15 / 30	GRAB
00400 1 0 EFFLUENT GROSS	PERMIT REQUIREMENT	********	********	**	6 MINIMUM	********	9 MAXIMUM	SU		THREE/ WEEK	GRAB
SOLIDS, TOTAL SUSPENDED	SAMPLE MEASUREMENT	********	********	**	********	16	16	19	0	2 / 30	GRAB
00530 1 0 EFFLUENT GROSS	PERMIT REQUIREMENT	********	********	**	********	30 MO AVG	100 DAILY MX	MG/L		TWICE/ MONTH	GRAB
OIL AND GREASE	SAMPLE MEASUREMENT	********	********	**	********	<6	<6	19	0	2 / 30	GRAB
00556 1 0 EFFLUENT GROSS	PERMIT REQUIREMENT	********	********	**	********	15 MO AVG	20 DAILY MX	MG/L		TWICE/ MONTH	GRAB
FLOW, IN CONDUIT OR THRU TREATMENT PLANT	SAMPLE MEASUREMENT	0.853	1.540	03	********	********	********	**	0	30 / 30	RCORDR
50050 1 0 EFFLUENT GROSS	PERMIT REQUIREMENT	Req. Mon. MO AVG	Req. Mon DAILY MX	MGD	********	********	********	**		SEE PERMIT	RCORDR
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
Michael D. Skaggs Sequoyah Site Vice President	I Certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is , to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	M Sk-ggs Sequoyah Site Vice President SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	423	843-7001	11	05	09
TYPED OR PRINTED			AREA CODE	NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here*

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if Different)*

Name TVA - SEQUOYAH NUCLEAR PLANT
Address P.O. BOX 2000
(INTEROFFICE SB-2A-SQN)
SODDY - DAISY, TN 37384
Facility TVA - SEQUOYAH NUCLEAR PLANT
Locatio HAMILTON COUNTY

ATTN: Stephanie A. Howard

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*

TN0026450	110 G
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
From	11	04	01	To	11	04	30

MAJOR
(SUBR 01)
F - FINAL
RECYCLED COOLING WATER
EFFLUENT

*** NO DISCHARGE XX ***

Form Approved.
OMB No. 2040-0004

NOTE: Read instructions before completing this form.

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM	UNITS			
TEMPERATURE, WATER DEG. CENTIGRADE	SAMPLE MEASUREMENT	********	********	**	********	********		04			
00010 1 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	**	********	********	REPORT DAILY MX	DEG C		CONTIN UOUS	CALCTD
TEMPERATURE, WATER DEG. CENTIGRADE	SAMPLE MEASUREMENT	********	********	**	********	********		04			
00010 Z 0 INSTREAM MONITORING	PERMIT REQUIREMENT	********	********	**	********	********	30.5 DAILY MX	DEG C		CONTIN UOUS	CALCTD
TEMP. DIFF. BETWEEN SAMP. & UPSTRM DEG.C	SAMPLE MEASUREMENT	********	********	**	********	********		04			
00016 1 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	**	********	********	5 DAILY MX	DEG C		CONTIN UOUS	CALCTD
FLOW, IN CONDUIT OR THRU TREATMENT PLANT	SAMPLE MEASUREMENT	********		03	********	********	********	**			
50050 1 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	Req. Mon. DAILY MX	MGD	********	********	********	**		CONTIN UOUS	RCORDR
CHLORINE, TOTAL RESIDUAL	SAMPLE MEASUREMENT	********	********	**	********			19			
50060 1 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	**	********	0.1 MO AVG	0.1 DAILY MX	MG/L		Five per Week	CALCTD
TEMPERATURE - C, RATE OF CHANGE	SAMPLE MEASUREMENT	********		04	********	********	********	**			
82234 1 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	2 DAILY MX	DEG C	********	********	********	**		CONTIN UOUS	CALCTD
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
Michael D. Skaggs Sequoyah Site Vice President	I Certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	M Sk. 88 Sequoyah Site Vice President	423	843-7001	11	05	09
TYPED OR PRINTED		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA CODE	NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here*

No Discharge this Period

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if Different)*

Name TVA - SEQUOYAH NUCLEAR PLANT
Address P.O. BOX 2000
(INTEROFFICE SB-2A-SQN)
SODDY - DAISY, TN 37384
Facility TVA - SEQUOYAH NUCLEAR PLANT
Locatio HAMILTON COUNTY

ATTN: Stephanie A. Howard

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*

TN0026450	110 T
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
From	11	04	01	To	11	04	30

MAJOR
(SUBR 01)
F - FINAL
RECYCLED COOLING WATER
EFFLUENT

*** NO DISCHARGE XX ***

Form Approved.
OMB No. 2040-0004

NOTE: Read instructions before completing this form.

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM	UNITS			
IC25 STATRE 7DAY CHR CERIODAPHNIA	SAMPLE MEASUREMENT	********	********	**		********	********	23			
TRP3B 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	****	43.2 MINIMUM	********	********	PERCENT		SEMI ANNUAL	COMPOS
IC25 STATRE 7DAY CHR PIMEPHALES	SAMPLE MEASUREMENT	********	********	**		********	********	23			
TRP6C 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	****	43.2 MINIMUM	********	********	PERCENT		SEMI ANNUAL	COMPOS
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
Michael D. Skaggs Sequoyah Site Vice President	I Certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is , to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	M Sk.	423	843-7001	11	05	09
TYPED OR PRINTED		Sequoyah Site Vice President SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA CODE	NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here*

No Discharge this Period

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if Different)*

Name TVA - SEQUOYAH NUCLEAR PLANT
Address P.O. BOX 2000
(INTEROFFICE SB-2A-SQN)
SODDY - DAISY, TN 37384
Facility TVA - SEQUOYAH NUCLEAR PLANT
Locatio HAMILTON COUNTY

ATTN: Stephanie A. Howard

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*

TN0026450	118 G
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
From	11	04	01	To	11	04	30

MAJOR
(SUBR 01)
F - FINAL
WASTEWATER & STORM WATER
EFFLUENT

*** NO DISCHARGE XX ***

Form Approved.
OMB No. 2040-0004

NOTE: Read instructions before completing this form.

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM	UNITS			
OXYGEN, DISSOLVED (DO)	SAMPLE MEASUREMENT	********	********	**		********	********	19			
00300 1 0 EFFLUENT GROSS	PERMIT REQUIREMENT	********	********	****	2 MINIMUM	********	********	MG/L		TWICE/ WEEK	GRAB
SOLIDS, TOTAL SUSPENDED	SAMPLE MEASUREMENT	********	********	**	********	********		19			
00530 1 0 EFFLUENT GROSS	PERMIT REQUIREMENT	********	********	****	********	********	100 DAILY MX	MG/L		TWICE/ WEEK	GRAB
SOLIDS, SETTLEABLE	SAMPLE MEASUREMENT	********	********	**	********	********		25			
00545 1 0 EFFLUENT GROSS	PERMIT REQUIREMENT	********	********	****	********	********	1 DAILY MX	ML/L		ONCE/ MONTH	GRAB
FLOW, IN CONDUIT OR THRU TREATMENT PLANT	SAMPLE MEASUREMENT			03	********	********	********	**			
50050 1 0 EFFLUENT GROSS	PERMIT REQUIREMENT	Req. Mon. MO AVG	Req. Mon. DAILY MX	MGD	********	********	********	*		ONCE/ BATCH	ESTIMA
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
Michael D. Skaggs Sequoyah Site Vice President	I Certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is , to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	Sequoyah Site Vice President SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	423	843-7001	11	05	09
TYPED OR PRINTED			AREA CODE	NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here*

During this reporting period, there has been no flow from the Dredge Pond other than that resulting from rainfall.

REVIEW/CONCURRENCE SHEET

DOCUMENT NAME: SEQUOYAH NUCLEAR PLANT – April 2011 DMR

ORGANIZATION: Environmental

DOCUMENT PREPARED BY: Brad Love

DATE: 05/09/2011

CONCURRENCES				
Name	RV	CN	Signature - Comment	Date
B.M. Love	X			5/9/11
S. A. Howard	X		Stephanie A Howard	5/9/11
D.A. Day		X	D. Alan Day	5/9/11
M.D. Skaggs		X	M Skaggs	5/10/11

INSTRUCTIONS: Originator will determine the review/concurrence assignment.

REVIEW: Examine technical content and commitments made. A review (RV) should confirm the truth and accuracy of factual statements and indicate agreement with commitments made which are applicable to the reviewer's organization.

CONCURRENCE: Indication of agreement with the document as a whole. Concurrence (CN) signifies that the document is responsive to the intended purpose, logical in construction, and clear in meaning in the eyes of the recipient. A concurrence signature indicates that the individual would be willing to sign the document for the agency.

June 8, 2011

State of Tennessee
Department of Environment and Conservation
Division of Water Pollution Control
Enforcement & Compliance Section
6th Floor, L & C Annex
401 Church Street
Nashville, Tennessee 37243-1534

Dear Mr. Patrick Cromer:

SEQUOYAH NUCLEAR PLANT - DISCHARGE MONITORING REPORT FOR MAY 2011

Enclosed is the May 2011 Discharge Monitoring Report for Sequoyah Nuclear Plant. Sample collection at the Diffuser Pond Inlet of the Yard Pond effluent due to a transformer oil spill that reached the Yard Drainage Pond has been discontinued as of 5/14/2011. Samples collected from 9/23/2010 through 5/14/2011 have all yielded results below detection limits for oil and grease. If you have any questions or need additional information, please contact Brad Love at (423) 843-6714 or Stephanie Howard at (423) 843-6700 of Sequoyah's Environmental staff.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Sincerely,

M Skaggs

Michael D. Skaggs
Site Vice President
Sequoyah Nuclear Plant

Enclosures
cc (Enclosures):

Chattanooga Environmental Field Office
Division of Water Pollution Control
State Office Building, Suite 550
540 McCallie Avenue
Chattanooga, Tennessee 37402-2013

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

B. E. Brickhouse, LP 5U-C
G. M. Cook, OPS 4A-SQN
D. A. Day, POB 2A-SQN
S. A. Howard, OPS 5N-SQN
K. Langdon, POB 2B-SQN

D. B. Nida, LP 5U-C
A. A. Ray, WT 11A-K
G. R. Signer, WT 6A-K
M. D. Skaggs, OPS 4A-SQN
K. M. Hodges (EDMS), LP 2V-C

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if Different)*

Name TVA - SEQUOYAH NUCLEAR PLANT
Address P.O. BOX 2000
(INTEROFFICE OPS-5N-SQN)
SODDY - DAISY, TN 37384
Facility TVA - SEQUOYAH NUCLEAR PLANT
Locatio HAMILTON COUNTY

ATTN: Stephanie A. Howard

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*

TN0026450	101 G
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
From	11	05	01	To	11	05	31

MAJOR
(SUBR 01)
F - FINAL
DIFFUSER DISCHARGE
EFFLUENT

*** NO DISCHARGE ☐ ***

Form Approved.
OMB No. 2040-0004

NOTE: Read instructions before completing this form.

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM	UNITS			
TEMPERATURE, WATER DEG. CENTIGRADE	SAMPLE MEASUREMENT	********	********	**	********	********	35.7	04	0	31 / 31	RCORDR
00010 1 0 EFFLUENT GROSS	PERMIT REQUIREMENT	********	********	****	********	********	Req. Mon. DAILY MAX	DEG. C.		CONTI NUOUS	CALCTD
TEMPERATURE, WATER DEG. CENTIGRADE	SAMPLE MEASUREMENT	********	********	**	********	********	25.9	04	0	31 / 31	MODELD
00010 Z 0 INSTREAM MONITORING	PERMIT REQUIREMENT	********	********	****	********	********	30.5 DAILY MX	DEG. C.		CONTI NUOUS	CALCTD
TEMP. DIFF. BETWEEN SAMP. & UPSTRM DEG.C	SAMPLE MEASUREMENT	********	********	**	********	********	2	04	0	31 / 31	CALCTD
00016 1 S EFFLUENT GROSS	PERMIT REQUIREMENT	********	********	****.	********	********	3 DAILY MX	DEG. C.		CONTI NUOUS	CALCTD
FLOW, IN CONDUIT OR THRU TREATMENT PLANT	SAMPLE MEASUREMENT	********	1644	03	********	********	********	**	0	31 / 31	RCORDR
50050 1 0 EFFLUENT GROSS	PERMIT REQUIREMENT	********	Req. Mon. DAILY MAX	MGD	********	********	********	****		CONTI NUOUS	RCORDR
CHLORINE, TOTAL RESIDUAL	SAMPLE MEASUREMENT	********	********	**	********	0.023	0.046	19	0	21 / 31	GRAB
50060 1 0 EFFLUENT GROSS	PERMIT REQUIREMENT	********	********	****	********	0.1 MO AVG	0.1 DAILY MAX	MG/L		FIVE PER WEEK	CALCTD
TEMPERATURE - C, RATE OF CHANGE	SAMPLE MEASUREMENT	********	0	62	********	********		**	0	31 / 31	CALCTD
82234 1 0 EFFLUENT GROSS	PERMIT REQUIREMENT	********	2 DAILY MX	DEG C/HR	********	********	*******	****		CONTI NUOUS	CALCTD
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
Michael D. Skaggs Sequoyah Site Vice President	I Certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is , to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	M Skaggs Sequoyah Site Vice President	423	843-7001	11	06	07
TYPED OR PRINTED		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA CODE	NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here*

No closed mode operation. Veliger monitoring data is included as an attachment. The following injections occurred: 1. Towerbrom 960 2. Floguard MS6236 (max. calc. conc. was 0.11mg/L--limit 0.2mg/L) 3. Spectrus CT1300 (max. calc. conc. was 0.039mg/L--limit 0.050mg/L)

Sample Date	Mean # of ZM/m3	% Settlers	Water Temp. (°C)	Sample Date	Mean# of Asiatic Clams/m3	Water Temp. (°C)	LOCATION	SUB LOCATION	NOTES: % Gravid Asiatic Clam	COLLECTED BY
12/07/2010	6	100	23	12/07/2010	0	23	1-25-545			PB
12/14/2010	0	0	10	12/14/2010	0	10	1-25-545			RS
12/22/2010	0	0	10.5	12/22/2010	0	10.5	1-ISV-24-1234			WE
12/29/2010	0	0	26	12/29/2010	0	26	1-25-545			WDT
01/04/2011	0	0	13	01/04/2010	0	13	1-25-545			PB
01/11/2011	0	0	22	01/11/2010	0	22	1-25-545			RS
01/18/2011	0	0	9.5	01/18/2010	0	9.5	1-ISV-24-1234			CR
01/25/2011	0	0	23	01/25/2011	0	23	1-25-545			WDT
02/02/2011	0	0	10	02/02/2011	0	10	1-25-545			PB
02/08/2011	0	0	9	02/08/2011	0	9	1-25-545			MJW
02/15/2011	0	0	23	02/15/2011	0	23	1-25-545			MLW
02/22/2011	20	100	10	02/22/2011	0	10	1-25-545			PB
03/01/2011	0	0	11	03/01/2011	0	11	1-ISV-24-1236			PB
03/08/2011	0	0	11	03/08/2011	0	11	1-ISV-24-1236			WE
03/16/2011	22	0	11	03/16/2011	0	11	1-ISV-24-1234			MLW
03/23/2011	0	0	11	03/23/2011	0	11	1-ISV-24-1234			MLW
03/30/2011	0	0	12	03/30/2011	0	12	1-15v-24-1236			MLW
04/06/2011	18	100	15	04/06/2011	0	15	1-ISV-24-1234			HMW
04/08/2011	45	100	15.5	04/08/2011	0	15.5	1-1SV-24-1236			WAW/PB
04/20/2011	21	100	16	04/20/2011	0	16	1-1SV-24-1236			PB
May 2011										No Samples Collected

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if Different)*

Name TVA - SEQUOYAH NUCLEAR PLANT
Address P.O. BOX 2000
(INTEROFFICE OPS-5N-SQN)
SODDY - DAISY, TN 37384
Facility TVA - SEQUOYAH NUCLEAR PLANT
Locatio HAMILTON COUNTY

ATTN: Stephanie A. Howard

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*

TN0026450	101 T
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
From	11	05	01	To	11	05	31

MAJOR
(SUBR 01)
F - FINAL
BIOMONITORING FOR OUTFALL 101
EFFLUENT

*** NO DISCHARGE ☐ ***

Form Approved.
OMB No. 2040-0004

NOTE: Read instructions before completing this form.

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM	UNITS			
IC25 STATRE 7DAY CHR CERIODAPHNIA	SAMPLE MEASUREMENT	********	********	**	>100.0	********	********	23	0	1 / 180	COMPOS
TRP3B 1 0 EFFLUENT GROSS	PERMIT REQUIREMENT	********	********	****	43.2 MINIMUM	********	********	PERCENT		SEMI ANNUAL	COMPOS
IC25 STATRE 7DAY CHR PIMEPHALES	SAMPLE MEASUREMENT	********	********	**	>100.0	********	********	23	0	1 / 180	COMPOS
TRP6C 1 0 EFFLUENT GROSS	PERMIT REQUIREMENT	********	********	****	43.2 MIMINUM	********	********	PERCENT		SEMI ANNUAL	COMPOS
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
Michael D. Skaggs Sequoyah Site Vice President	I Certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is , to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	M Skaggs Sequoyah Site Vice President	423	843-7001	11	06	07
TYPED OR PRINTED		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA CODE	NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here*

Toxicity sampling began on May 1 and ended on May 6. The toxicity report is included.

June 3, 2011

Bradley M. Love, OPS 5N-SQN

SEQUOYAH NUCLEAR PLANT (SQN) TOXICITY BIOMONITORING, NPDES PERMIT NO. TN0026450, COMPLIANCE TOXICITY TESTS, MAY, 2011

Per your request, I have also submitted an electronic copy of the subject report. Outfall 101 samples collected May 01-06, 2011, showed no toxic effects to fathead minnows or daphnids. The resulting IC_{25} values for both species were> 100 percent. Exposure of minnows and daphnids to intake samples resulted in no significant difference from the controls during this study period.

Fathead minnows were also exposed to UV treated Outfall 101 and intake samples since fish pathogens present in intake water have been the suspected cause of interference (anomalous dose response and high variability among replicates) in previous toxicity testing at Sequoyah. At the time this study was conducted, insignificant mortality occurred in minnows exposed to non-treated and UV-treated samples.

Please call me at your convenience if you have any questions or comments following your review of the report.

Donald W. Snodgrass

Donald W. Snodgrass
Manager (Acting),
Environmental Engineering Field Team-Muscle Shoals
CTR 2L - M

Attachment
Cc (Attachment):
R.M. Sherrard, PSC 1X - C (Electronic copy)
EDMS, MPB 1E - M (Electronic copy)

TENNESSEE VALLEY AUTHORITY
TOXICITY TEST REPORT

INTRODUCTION / EXECUTIVE SUMMARY

Report Date: June 03, 2011

1. Facility / Discharger: Sequoyah Nuclear Plant / TVA
2. County / State: Hamilton / Tennessee
3. NPDES Permit #: TN0026450
4. Type of Facility: Nuclear-Fueled Electric Generating Plant
5. Design Flow (MGD): 1,579
6. Receiving Stream: Tennessee River (TRM 483.6)
7. 1Q10: 3,491
8. Outfall Tested: 101
9. Dates Sampled: May 01 – 06, 2011
10. Average Flow on Days Sampled (MGD): 1635.7, 1623.12, 1618.58
11. Pertinent Site Conditions: Production / operation data will be provided upon request.
12. Test Dates: May 03 – 10, 2011
13. Test Type: Short-term Chronic Definitive
14. Test Species: Fathead Minnows (*Pimephales promelas*)
    Daphnids (*Ceriodaphnia dubia*)
15. Concentrations Tested (%): Outfall 101: 10.8, 21.6, 43.2, 86.4, 100
    Intake: 100.0

    Pimephales promelas: UV treated Outfall 101: 10.8, 21.6, 43.2, 86.4, 100
    UV treated Intake: 100.0
16. Permit Limit Endpoint (%): Outfall 101: $IC_{25} = 43.2\%$
17. Test Results: Outfall 101: *Pimephales promelas:* $IC_{25} > 100\%$
    Ceriodaphnia dubia: $IC_{25} > 100\%$

    UV treated Outfall 101: *Pimephales promelas:* $IC_{25} > 100\%$

18. Facility Contact: Brad Love Phone #: (423) 843-6714

19. Consulting / Testing Lab: Environmental Testing Solutions, Inc.

20. Lab Contact: Jim Sumner Phone #: (828) 350-9364

21. TVA Contact: Donald W. Snodgrass Phone #: (256) 386-2787

22. Notes: Outfall 101 samples collected May 01 – 06, 2011, showed no toxic effects to fathead minnows or daphnids. The resulting IC_{25} values, for both species, were > 100 percent. Exposure of minnows and daphnids to intake samples resulted in no significant difference from the controls during this study period.

    Fathead minnows were also exposed to UV treated Outfall 101 and intake samples since fish pathogens present in intake water have been the suspected cause of interference (anomalous dose response and high variability among replicates) in previous toxicity testing at Sequoyah. At the time this study was conducted, insignificant mortality occurred in minnows exposed to non-treated and UV treated samples.

METHODS SUMMARY

Samples:

1. Sampling Point: Outfall 101, Intake

2. Sample Type: Composite

3. Sample Information:

Sample ID	Date (MM-DD-YY) Time (ET) Collected	Date (MM-DD-YY) Time (ET) Received	Arrival Temp. (°C)	Initial TRC* (mg/L)	Date (MM-DD-YY) Time (ET) Last Used By
101	05-01-11 0800 to 05-02-11 0700	05-02-11 1512	0.7, 0.8†	<0.10	05-03-11 1415 05-04-11 1318
Intake	05-01-11 0845 to 05-02-11 0745	05-02-11 1512	1.2	<0.10	05-03-11 1415 05-04-11 1318
101	05-03-11 0800 to 05-04-11 0700	05-04-11 1437	0.7, 0.9†	<0.10	05-05-11 1319 05-06-11 1317
Intake	05-03-11 0830 to 05-04-11 0730	05-04-11 1437	0.8	<0.10	05-05-11 1319 05-06-11 1317
101	05-05-11 0800 to 05-06-11 0700	05-06-11 1515	0.9, 0.9, 1.5††	<0.10	05-07-11 1319 05-08-11 1322 05-09-11 1316
Intake	05-05-11 0830 to 05-06-11 0730	05-06-11 1515	0.9	<0.10	05-07-11 1319 05-08-11 1322 05-09-11 1316

*TRC = Total Residual Chlorine
†Samples were collected in two 2.5 gallon cubitainers. Temperature was measured in each cubitainer upon arrival.
††Samples were collected in two 2.5 gallon cubitainers and one 5 gallon cubitainer. Temperature was measured in each cubitainer upon arrival.

4. Sample Manipulation: Samples from Outfall 101 and intake were warmed to test temperature (25.0 ± 1.0°C) in a warm water bath.

   Aliquots of Outfall 101 and Intake samples were UV-treated through a 40-watt Smart® UV Sterilizer (manufactured by Emperor Aquatics, Inc.) for 2 minutes.

	Pimephales promelas	*Ceriodaphnia dubia*
Test Organisms:		
1. Source:	Aquatox, Inc.	In-house Cultures
2. Age:	21.75 – 22.25 hours old	< 24-hours old
Test Method Summary:		
1. Test Conditions:	Static, Renewal	Static, Renewal
2. Test Duration:	7 days	Until at least 60% of control females have 3 broods
3. Control / Dilution Water:	Moderately Hard Synthetic	Moderately Hard Synthetic
4. Number of Replicates:	4	10
5. Organisms per Replicate:	10	1
6. Test Initiation: (Date/Time)		
Outfall 101	05-03-11 1415 ET	05-03-11 1315 ET
UV Treated Outfall 101	05-03-11 1345 ET	
7. Test Termination: (Date/Time)		
Outfall 101	05-10-11 1325 ET	05-10-11 1224 ET
UV Treated Outfall 101	05-10-11 1342 ET	
8. Test Temperature: Outfall 101:	Mean = 24.7°C (24.2 – 25.2°C)	Mean = 25.0°C (24.7 – 25.2°C)

Test Temperature: UV-Treated Outfall 101: Mean = 24.8°C (24.2 – 25.2°C)

9. Physical / Chemical Measurements: Alkalinity, hardness, total residual chlorine, and conductivity were measured at the laboratory in each 100% sample. Daily temperatures were measured in one replicate for each test concentration. Pre- and post-exposure test solutions were analyzed daily for pH and dissolved oxygen.

10. Statistics: Statistics were performed according to methods prescribed by EPA using ToxCalc version 5.0 statistical software (Tidepool Scientific Software, McKinneyville, CA).

TOXICITY TEST RESULTS (see Appendix C for Bench Sheets)

1. Results of a *Pimephales promelas* Chronic/ 7-day Toxicity Test.
(Genus species) (Type / Duration)

Conducted May 03 – 10, 2011 using effluent from Outfall 101.

Test Solutions (% Effluent)	Percent Surviving (time interval used – days)						
	1	2	3	4	5	6	7
Control	100	100	100	100	100	100	100
10.8%	100	100	100	100	100	100	100
21.6%	100	100	100	100	100	98	98
43.2%	100	100	100	100	100	100	100
86.4%	100	100	100	100	100	100	100
100.0%	100	100	100	100	100	100	100
Intake	100	100	100	100	98	95	93

Test Solutions (% Effluent)	Mean Dry Weight (mg) (replicate number)				
	1	2	3	4	Mean
Control	0.704	0.756	0.799	0.819	0.770
10.8%	0.849	0.889	0.898	0.768	0.851
21.6%	0.659	0.886	0.913	0.879	0.834
43.2%	0.761	0.844	0.841	0.853	0.825
86.4%	0.845	0.805	0.716	0.797	0.791
100.0%	0.801	0.696	0.863	0.800	0.790
Intake	0.893	0.794	0.774	0.660	0.780

IC_{25} Value: > 100% Permit Limit: 43.2% 95% Confidence Limits: Upper Limit: NA Lower Limit: NA	Calculated TU Estimates: < 1.0 TUc* Permit Limit: 2.3 TUc

*TUa = $100/LC_{50}$: TUc = $100/ IC_{25}$

TOXICITY TEST RESULTS (see Appendix C for Bench Sheets)

2. Results of a *Ceriodaphnia dubia* (Genus species) Chronic/ 7-day Toxicity Test. (Type / Duration)

Conducted May 03 – 10, 2011 using effluent from Outfall 101.

Test Solutions (% Effluent)	Percent Surviving (time interval used – days)						
	1	2	3	4	5	6	7
Control	100	100	100	100	100	100	100
10.8%	100	100	100	100	100	100	100
21.6%	100	100	100	100	100	100	100
43.2%	100	100	100	100	100	100	100
86.4%	100	100	100	100	100	100	100
100.0%	100	100	100	100	100	100	100

Test Solutions (% Effluent)	Reproduction (#young/female/7 days) Data (replicate number)										
	1	2	3	4	5	6	7	8	9	10	Mean
Control	28	28	31	31	31	31	30	29	29	29	29.7
10.8%	33	30	34	32	27	33	30	28	30	32	30.9
21.6%	33	32	31	36	29	32	31	31	31	33	31.9
43.2%	36	32	34	30	35	36	35	34	32	34	33.8
86.4%	34	35	33	35	36	37	36	35	33	35	34.9
100.0%	38	36	36	37	35	38	36	36	36	36	36.4

IC_{25} Value: > 100% Permit Limit: 43.2% 95% Confidence Limits: Upper Limit: NA Lower Limit: NA	Calculated TU Estimates: < 1.0 TUc* Permit Limit: 2.3 TUc

*TUa = $100/LC_{50}$: TUc = $100/ IC_{25}$

TOXICITY TEST RESULTS (see Appendix C for Bench Sheets)

2. Results of a *Ceriodaphnia dubia* Chronic/ 7-day Toxicity Test.
(Genus species) (Type / Duration)

Conducted May 03 – 10, 2011 using water from Intake

Test Solutions (% Effluent)	Percent Surviving (time interval used – days)						
	1	2	3	4	5	6	7
Control	100	100	100	100	100	100	100
Intake	100	100	100	100	100	100	100

Test Solutions (% Effluent)	Reproduction (#young/female/7 days) Data (replicate number)										
	1	2	3	4	5	6	7	8	9	10	Mean
Control	29	26	34	30	29	27	30	32	31	29	29.7
Intake	37	37	35	35	37	35	32	36	38	36	35.8

IC_{25} Value: > 100% Permit Limit: N/A 95% Confidence Limits: Upper Limit: NA Lower Limit: NA	Calculated TU Estimates: < 1.0 TUc* Permit Limit: N/A

*TUa = $100/LC_{50}$: TUc = $100/ IC_{25}$

TOXICITY TEST RESULTS, UV-TREATED (see Appendix C for Bench Sheets)

3. Results of a *Pimephales promelas* Chronic/ 7-day Toxicity Test.
(Genus species) (Type / Duration)

Conducted May 03 – 10, 2011 using effluent from UV Treated Outfall 101.

Test Solutions (% Effluent)	Percent Surviving (time interval used – days)						
	1	2	3	4	5	6	7
Control	100	100	100	100	100	100	100
10.8%	100	100	100	100	100	100	100
21.6%	100	100	100	100	100	100	100
43.2%	100	100	100	100	98	98	98
86.4%	100	100	100	100	98	98	98
100.0%	100	100	98	98	98	98	98
Intake	100	100	100	100	100	100	98

Test Solutions (% Effluent)	Mean Dry Weight (mg) (replicate number)				
	1	2	3	4	Mean
Control	0.714	0.908	0.853	0.849	0.831
10.8%	0.901	0.813	0.867	0.888	0.867
21.6%	0.896	0.793	0.779	0.829	0.824
43.2%	0.879	0.852	0.847	0.773	0.838
86.4%	0.850	0.770	0.774	0.797	0.798
100.0%	0.816	0.802	0.660	0.840	0.780
Intake	0.948	0.883	0.925	0.799	0.889

IC_{25} Value: > 100% 95% Confidence Limits: Upper Limit: NA Lower Limit: NA	Calculated TU Estimates: < 1.0 TUc*

*TUa = 100/LC_{50}: TUc = 100/ IC_{25}

REFERENCE TOXICANT TEST RESULTS (see Appendix A and D)

Species	Date	Time	Duration	Toxicant	Results (IC_{25})
Pimephales promelas	May 03 – 10, 2011	1445	7-days	KCl	0.78 g/L
Ceriodaphnia dubia	May 03 – 10, 2011	1255	7-days	NaCl	1.07 g/L

PHYSICAL/CHEMICAL SUMMARY

Water Chemistry Mean Values and Ranges for *Pimephales promelas* and *Ceriodaphnia dubia* Tests, Non-treated Sequoyah Nuclear Plant (SQN) Outfall 101 performed May 03-10, 2011.

Test	Sample ID	Temperature (°C)		Dissolved Oxygen (mg/L)		pH (S.U.)		Conductance	Alkalinity	Hardness	Total Residual
		Initial	Final	Initial	Final	Initial	Final	(µmhos/cm)	(mg/L $CaCO_3$)	(mg/L $CaCO_3$)	Chlorine (mg/L)
Pimephales promelas	Control	24.8 24.7 - 24.9	24.6 24.4 - 24.8	7.6 7.4 - 7.7	7.7 7.5 - 7.9	7.81 7.73 - 7.89	7.77 7.68 - 7.86	321 305 - 333	59 58 - 59	90 89 - 91	
	10.8%	24.9 24.7 - 25.0	24.6 24.2 - 24.8	7.8 7.5 - 8.2	7.7 7.3 - 8.0	7.85 7.80 - 7.93	7.73 7.64 - 7.87	299 283 - 311			
	21.6%	24.9 24.7 - 25.0	24.6 24.4 - 24.8	7.9 7.7 - 8.1	7.7 7.3 - 8.0	7.85 7.79 - 7.93	7.73 7.64 - 7.86	282 272 - 292			
	43.2%	24.9 24.7 - 25.0	24.6 24.5 - 24.8	7.8 7.7 - 8.1	7.7 7.4 - 8.1	7.83 7.77 - 7.92	7.73 7.66 - 7.86	249 241 - 257			
	86.4%	24.9 24.7 - 25.1	24.5 24.4 - 24.6	7.8 7.7 - 8.0	7.7 7.4 - 8.1	7.80 7.72 - 7.92	7.71 7.66 - 7.85	188 179 - 207			
	100.0%	25.0 24.9 - 25.2	24.5 24.3 - 24.7	7.9 7.7 - 8.1	7.7 7.4 - 8.0	7.79 7.71 - 7.90	7.71 7.64 - 7.85	163 157 - 174	58 54 - 61	63 55 - 71	< 0.10 < 0.10 - < 0.10
	Intake	24.9 24.7 - 25.1	24.4 24.3 - 24.6	7.9 7.8 - 8.1	7.7 7.3 - 8.0	7.78 7.69 - 7.92	7.70 7.64 - 7.87	164 155 - 178	59 55 - 61	62 55 - 67	< 0.10 < 0.10 - < 0.10
Ceriodaphnia dubia	Control	24.9 24.8 - 24.9	25.0 24.7 - 25.2	7.6 7.4 - 7.7	7.7 7.4 - 8.0	7.81 7.73 - 7.89	7.84 7.77 - 7.90	321 305 - 333	59 58 - 59	90 89 - 91	
	10.8%	25.0 24.9 - 25.0	25.0 24.8 - 25.2	7.8 7.5 - 8.2	7.7 7.5 - 8.0	7.85 7.80 - 7.93	7.82 7.71 - 7.90	299 283 - 311			
	21.6%	25.0 24.9 - 25.0	25.0 24.8 - 25.2	7.9 7.7 - 8.1	7.8 7.6 - 8.0	7.85 7.79 - 7.93	7.84 7.77 - 7.91	282 272 - 292			
	43.2%	25.0 24.9 - 25.0	25.0 24.8 - 25.1	7.8 7.7 - 8.1	7.8 7.6 - 8.0	7.83 7.77 - 7.92	7.84 7.76 - 7.90	249 241 - 257			
	86.4%	25.0 24.9 - 25.1	25.0 24.8 - 25.2	7.8 7.7 - 8.0	7.8 7.6 - 8.0	7.80 7.72 - 7.92	7.84 7.74 - 7.93	188 179 - 207			
	100.0%	25.1 24.9 - 25.2	25.0 24.8 - 25.2	7.9 7.7 - 8.1	7.8 7.5 - 8.0	7.79 7.71 - 7.90	7.83 7.72 - 7.93	163 157 - 174	58 54 - 61	63 55 - 71	< 0.10 < 0.10 - < 0.10
	Intake	24.9 24.9 - 25.1	24.9 24.8 - 25.2	7.9 7.8 - 8.1	7.8 7.6 - 8.1	7.78 7.69 - 7.92	7.82 7.71 - 7.91	164 155 - 178	59 55 - 61	62 55 - 67	< 0.10 < 0.10 - < 0.10

Overall temperature (°C)	Average	Minimum	Maximum
Pimephales promelas	24.7	24.2	25.2
Ceriodaphnia dubia	25.0	24.7	25.2

PHYSICAL/CHEMICAL SUMMARY

Water Chemistry Mean Values and Ranges for *Pimephales promelas* Test, UV-treated Sequoyah Nuclear Plant (SQN) Outfall 101 performed May 03-10, 2011.

Test	Sample ID	Temperature (°C)		Dissolved Oxygen (mg/L)		pH (S.U.)		Conductance	Alkalinity	Hardness	Total Residual
		Initial	Final	Initial	Final	Initial	Final	(µmhos/cm)	(mg/L $CaCO_3$)	(mg/L $CaCO_3$)	Chlorine (mg/L)
Pimephales promelas	Control	24.9 24.8 - 24.9	24.6 24.4 - 24.9	7.8 7.5 - 8.1	7.7 7.5 - 8.0	7.83 7.78 - 7.91	7.74 7.66 - 7.84	311 299 - 326	59 57 - 60	92 90 - 96	
	10.8%	24.9 24.9 - 25.0	24.6 24.3 - 24.8	7.8 7.7 - 8.1	7.7 7.3 - 8.0	7.85 7.79 - 7.92	7.75 7.66 - 7.85	297 286 - 310			
	21.6%	25.0 24.9 - 25.1	24.6 24.2 - 24.8	7.8 7.7 - 8.1	7.7 7.3 - 7.9	7.86 7.80 - 7.93	7.74 7.66 - 7.86	283 270 - 293			
	43.2%	25.0 24.9 - 25.1	24.6 24.5 - 24.7	7.9 7.7 - 8.1	7.6 7.3 - 7.9	7.85 7.79 - 7.91	7.73 7.65 - 7.86	250 240 - 256			
	86.4%	25.0 24.9 - 25.1	24.6 24.5 - 24.7	7.9 7.8 - 8.1	7.7 7.4 - 8.0	7.83 7.75 - 7.90	7.71 7.62 - 7.87	187 178 - 197			
	100.0%	25.1 24.9 - 25.2	24.6 24.5 - 24.7	8.0 7.9 - 8.1	7.7 7.4 - 7.9	7.81 7.73 - 7.91	7.69 7.62 - 7.86	164 154 - 178	57 52 - 61	69 63 - 76	< 0.10 < 0.10 - < 0.10
	Intake	25.0 24.8 - 25.1	24.6 24.4 - 24.7	8.0 7.9 - 8.2	7.8 7.5 - 8.0	7.79 7.71 - 7.90	7.70 7.63 - 7.85	164 155 - 175	58 52 - 63	69 63 - 76	< 0.10 < 0.10 - < 0.10

Overall temperature (°C)	**Average**	**Minimum**	**Maximum**
Pimephales promelas	24.8	24.2	25.2

SUMMARY / CONCLUSIONS

Outfall 101 samples collected May 01 – 06, 2011, showed no toxic effects to fathead minnows or daphnids. The resulting IC_{25} values, for both species, were > 100 percent. Exposure of minnows and daphnids to intake samples resulted in no significant difference from the controls during this study period.

Fathead minnows were also exposed to UV treated Outfall 101 and intake samples since fish pathogens present in intake water have been the suspected cause of interference (anomalous dose response and high variability among replicates) in previous toxicity testing at Sequoyah. At the time this study was conducted, insignificant mortality occurred in minnows exposed to non-treated and UV treated samples.

Appendix A

ADDITIONAL TOXICITY TEST INFORMATION

SUMMARY OF METHODS

1. *Pimephales promelas*

   Tests were conducted according to EPA-821-R-02-013 (October 2002) using four replicates, each containing ten test organisms, per treatment. Test vessels consisted of 500-mL plastic disposable cups, each containing 250-mL of test solution.

2. *Ceriodaphnia dubia*

   Tests were conducted according to EPA-821-R-02-013 (October 2002) using ten replicates, each containing one test organism, per treatment. Test vessels consisted of 30-mL polypropylene cups, each containing 15-mL of test solution.

DEVIATIONS / MODIFICATIONS TO TEST PROTOCOL

1. *Pimephales promelas*

   None

2. *Ceriodaphnia dubia*

   None

DEVIATIONS / MODIFICATIONS TO PRETEST CULTURE OR HOLDING OF TEST ORGANISMS

1. *Pimephales promelas*

   None

2. *Ceriodaphnia dubia*

   None

PHYSICAL AND CHEMICAL METHODS

1. Reagents, Titrants, Buffers, etc.: All chemicals were certified products used before expiration dates (where applicable).

2. Instruments: All identification, service, and calibration information pertaining to laboratory instruments is recorded in calibration and maintenance logbooks.

3. Temperature was measured by SM 2550 B.

4. Dissolved oxygen was measured by SM 4500 O G.

5. The pH was measured by SM 4500 H+ B.

6. Conductance was measured by SM 2510 B.

7. Alkalinity was measured by SM 2320 B.

8. Total hardness was measured by SM 2340 C.

9. Total residual chlorine was measured by ORION Electrode Method 97-70.

QUALITY ASSURANCE

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 and EPA-821-R-02-013. Any known deviations were noted during the study and are reported herein.

REFERENCE TOXICANT TESTS (See Appendix D for control chart information)

1. Test Type: 7-day chronic tests with results expressed as IC_{25} values in g/L KCl or NaCl.

2. Standard Toxicant: Potassium Chloride (KCl crystalline) for *Pimephales promelas*.
   Sodium Chloride (NaCl crystalline) for *Ceriodaphnia dubia*.

3. Dilution Water Used: Moderately hard synthetic water.

4. Statistics: ToxCalc software Version 5.0 was used for statistical analyses.

REFERENCES

1. NPDES Permit No. TN0026450.

2. USEPA. Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, EPA-821-R-02-013 (October 2002).

3. Standard Methods for the Examination of Water and Wastewater, 21st Edition, 2005.

4. Quality Assurance Program: Standard Operating Procedures, Environmental Testing Solutions, Inc (most current version).

Sequoyah Nuclear Plant Biomonitoring
May 03 – 10, 2011

Appendix B

Diffuser Discharge Concentrations of Total Residual Chlorine,

Diffuser Discharge Concentrations of Chemicals Used
to Control Microbiologically Induced Corrosion and
Mollusks During Toxicity Test Sampling

Table B-1. Sequoyah Nuclear Plant Diffuser (Outfall 101) Discharge Concentrations of Chemicals Used to Control Microbiologically Induced Corrosion Mollusks, During Toxicity Test Sampling, March 12, 1998 – May 6, 2011

Date	Sodium Hypochlorite mg/L TRC	Towerbrom mg/L TRC	PCL-222 mg/L Phosphate	PCL-401 mg/L Copolymer	CL-363 mg/L DMAD	Cuprostat-PF mg/L Azole	H-130M mg/L Quat
03/12/1998	0.016	-	-	-	-	-	-
03/13/1998	0.015	-	-	-	-	-	-
03/14/1998	0.013	-	-	-	-	-	-
03/15/1998	0.030	-	-	-	-	-	-
03/16/1998	0.013	-	-	-	-	-	-
03/17/1998	0.020	-	-	-	-	-	-
03/18/1998	0.018	-	-	-	-	-	-
09/08/1998	0.015	-	0.014	0.005	-	-	0.021
09/09/1998	0.003	-	0.031	0.011	-	-	-
09/10/1998	0.014	-	0.060	0.021	-	-	-
09/11/1998	0.013	-	0.055	0.019	-	-	-
09/12/1998	< 0.001	-	0.044	0.015	-	-	-
09/13/1998	< 0.001	-	0.044	0.015	-	-	-
09/14/1998	0.008	-	0.044	0.015	-	-	-
02/22/1999	< 0.001	-	-	-	-	-	-
02/23/1999	0.005	-	-	-	-	-	-
02/24/1999	0.009	-	-	-	-	-	-
02/25/1999	0.012	-	-	-	-	-	-
02/26/1999	0.008	-	-	-	-	-	-
02/27/1999	< 0.001	-	-	-	-	-	-
02/28/1999	< 0.001	-	-	-	-	-	-
08/18/1999	-	0.015	0.069	0.024	0.006	-	-
08/19/1999	-	0.012	0.068	0.024	-	-	-
08/20/1999	-	0.023	0.070	0.024	-	0.120	-
08/21/1999	-	0.022	0.068	0.024	-	-	-
08/22/1999	-	0.022	0.068	0.024	-	-	-
08/23/1999	-	0.025	0.068	0.024	0.006	-	-
08/24/1999	-	0.016	0.067	0.023	0.020	-	-

Table B-1. Sequoyah Nuclear Plant Diffuser (Outfall 101) Discharge Concentrations of Chemicals Used to Control Microbiologically Induced Corrosion Mollusks, During Toxicity Test Sampling,
March 12, 1998 – May 6, 2011

Date	Sodium Hypochlorite mg/L TRC	Towerbrom mg/L TRC	PCL-222 mg/L Phosphate	PCL-401 mg/L Copolymer	CL-363 mg/L DMAD	Cuprostat-PF mg/L Azole	H-130M mg/L Quat
01/31/2000	-	< 0.002	0.026	0.009	-	-	-
02/01/2000	-	0.011	0.026	0.028	-	-	-
02/02/2000	-	0.028	0.026	0.009	0.006	-	-
02/03/2000	-	0.008	0.027	0.009	-	-	-
02/04/2000	-	0.006	0.027	0.009	0.005	0.109	-
02/05/2000	-	< 0.002	0.027	0.009	-	-	-
02/06/2000	-	< 0.002	0.027	0.009	-	-	-
07/26/2000	-	< 0.0057	0.055	0.019	-	-	-
07/27/2000	-	0.019	0.055	0.019	-	-	-
07/28/2000	-	0.0088	0.053	0.018	0.004	0.108	-
07/29/2000	-	< 0.0088	0.055	0.019	-	-	-
07/30/2000	-	< 0.0076	0.055	0.019	-	-	-
07/31/2000	-	< 0.0152	0.055	0.019	0.006	-	-
08/01/2000	-	< 0.0141	0.055	0.019	0.005	-	-
12/11/2000	-	0.0143	0.025	0.020	0.005	-	-
12/12/2000	-	0.0092	0.025	0.020	0.005	-	-
12/13/2000	-	< 0.0120	0.025	0.020	-	-	-
12/14/2000	-	< 0.0087	0.025	0.020	-	-	-
12/15/2000	-	0.0120	0.025	0.020	0.005	-	-
12/16/2000	-	< 0.0036	0.025	0.020	-	-	-
12/17/2000	-	< 0.0036	0.025	0.020	-	-	-
08/26/2001	-	0.017	0.06	0.021	0.006	-	-
08/27/2001	-	<0.0096	0.06	0.021	0.005	-	0.021
08/28/2001	-	<0.0085	0.06	0.021	-	-	-
08/29/2001	-	<0.0094	0.059	0.020	0.005	-	0.021
08/30/2001	-	<0.0123	0.06	0.021	0.005	-	-
08/31/2001	-	<0.005	0.059	0.020	-	-	-
11/25/2001	-	<0.0044	-	-	-	-	-
11/26/2001	-	<0.0119	0.024	0.02	0.005	-	-
11/27/2001	-	0.0137	0.023	0.019	0.007	-	-
11/28/2001	-	<0.0089	0.022	0.019	0.006	-	-
11/29/2001	-	0.0132	0.024	0.02	0.007	-	-
11/30/2001	-	< 0.0043	0.024	0.02	-	-	-
12/09/2001	-	<0.0042	-	-	-	-	-
12/10/2001	-	<0.0042	-	-	-	-	-
12/11/2001	-	<0.0104	-	-	-	-	-
12/12/2001	-	0.0128	0.024	0.02	0.008	-	-
12/13/2001	-	<0.0088	0.024	0.02	-	-	-
12/14/2001	-	0.0134	0.024	0.02	0.007	-	-

Table B-1. Sequoyah Nuclear Plant Diffuser (Outfall 101) Discharge Concentrations of Chemicals Used to Control Microbiologically Induced Corrosion Mollusks, During Toxicity Test Sampling,
March 12, 1998 – May 6, 2011

Date	Sodium Hypochlorite mg/L TRC	Towerbrom mg/L TRC	PCL-222 mg/L Phosphate	PCL-401 mg/L Copolymer	CL-363 mg/L DMAD	Cuprostat-PF mg/L Azole	H-130M mg/L Quat
01/02/2002	-	< 0.0079	0.023	0.02	0.006	-	-
01/03/2002	-	< 0.0042	0.023	0.014	-	-	-
01/04/2002	-	0.0124	0.024	0.014	0.009	-	-
01/05/2002	-	< 0.0042	-	-	-	-	-
01/06/2002	-	< 0.0042	-	-	-	-	-
01/07/2002	-	< 0.0089	0.024	0.014	0.006	-	-
02/24/2002	-	< 0.004	-	-	-	-	-
02/25/2002	-	< 0.004	0.023	0.023	-	-	-
02/26/2002	-	0.0143	0.023	0.023	0.007	-	-
02/27/2002	-	< 0.0041	0.023	0.023	-	-	-
02/28/2002	-	< 0.0041	0.024	0.008	-	-	-
03/01/2002	-	< 0.0041	0.024	0.008	-	-	-
05/05/2002	-	-	-	-	-	-	-
05/06/2002	-	-	0.058	0.02	0.014	-	-
05/07/2002	-	-	0.058	0.02	0.015	-	-
05/08/2002	-	-	0.056	0.019	-	-	-
05/09/2002	-	-	0.057	0.02	0.014	-	-
05/10/2002	-	-	0.056	0.019	-	-	-
08/04/2002	-	<0.0058	-	-	-	-	-
08/05/2002	-	<0.0058	0.053	0.018	-	-	0.025
08/06/2002	-	0.0092	0.053	0.018	-	-	-
08/07/2002	-	<0.0107	0.055	0.019	0.007	-	-
08/08/2002	-	<0.0061	0.055	0.019	-	-	-
08/09/2002	-	0.0152	0.054	0.018	0.008	-	-
10/06/2002	-	<0.00497	-	-	-	-	-
10/07/2002	-	0.0153	0.054	0.018	0.009	-	-
10/08/2002	-	<0.0092	0.054	0.018	0.007	-	-
10/09/2002	-	0.0124	0.053	0.018	0.009	-	-
10/10/2002	-	0.0134	0.054	0.018	0.009	-	-
10/11/2002	-	<0.0042	0.054	0.018	-	-	-
01/12/2003	-	<0.0035	-	-	-	-	-
01/13/2003	-	<0.006	0.025	0.019	0.009	-	-
01/14/2003	-	<0.0118	0.026	0.020		-	-
01/15/2003	-	<0.0063	0.026	0.020	0.009	-	-
01/16/2003	-	<0.0034	0.026	0.020		-	-
01/17/2003	-	<0.0034	0.026	0.009	-	-	-
04/06/2003	-	<0.0073	-	-	-	-	-
04/07/2003	-	<0.0189	-	0.021	-	-	-
04/08/2003	-	<0.0117	-	0.021	-	-	-
04/09/2003	-	<0.0139	-	0.021	0.016	-	-
04/10/2003	-	<0.0113	-	0.021	0.018	-	-
04/11/2003	-	<0.0073	-	0.022	-	-	-

Table B-1 (continued). Sequoyah Nuclear Plant Diffuser (Outfall 101) Discharge Concentrations of Chemicals Used to Control Growth of Microbiologically Induced Bacteria and Mollusks, During Toxicity Test Sampling, March 12, 1998 – May 6, 2011

Date	Sodium Hypochlorite mg/L TRC	Towerbrom mg/L TRC	PCL-222 mg/L Phosphate	PCL-401 mg/L Copolymer	CL-363 mg/L DMAD	Cuprostat-PF mg/L Azole	H-130M mg/L Quat
06/15/2003	-	< 0.0045	-	-	-	-	-
06/16/2003	-	< 0.0037	0.057	0.020	-	-	0.022
06/17/2003	-	< 0.0048	0.041	0.014	-	-	0.024
06/18/2003	-	< 0.0048	0.041	0.014	-	-	0.024
06/19/2003	-	< 0.0085	0.058	0.020	-	-	0.025
06/20/2003	-	< 0.0048	0.058	0.020	-	-	0.025
08/03/2003	-	<0.0050	-	-	-	-	-
08/04/2003	-	<0.0050	0.058	0.020	-	-	-
08/05/2003	-	<0.0051	0.057	0.020	-	-	0.025
08/06/2003	-	<0.0084	0.057	0.020	-	-	0.025
08/07/2003	-	0.0129	0.057	0.020	-	-	0.024
08/08/2003	-	0.0153	0.057	0.020	0.009	-	-
10/05/2003	-	<0.0043	0.057	0.020	-	-	-
10/06/2003	-	<0.0043	0.057	0.020	-	-	0.025
10/07/2003	-	<0.0090	0.057	0.020	-	-	0.025
10/08/2003	-	<0.0106	0.057	0.020	-	-	0.025
10/09/2003	-	0.0181	0.026	0.022	-	-	0.025
10/10/2003	-	0.0183	0.026	0.024	0.009	-	-
02/01/2004	-	0.0093	0.027	0.009	-	-	-
02/02/2004	-	<0.0034	0.026	0.009	-	-	-
02/03/2004	-	<0.0034	0.026	0.009	-	-	-
02/04/2004	-	0.0124	0.026	0.009	0.009	-	-
02/05/2004	-	<0.0034	0.026	0.009	-	-	-
02/06/2004	-	0.0105	0.026	0.009	0.010	-	-
05/04/2004	-	<0.0123	0.026	0.019	-	-	0.025
05/05/2004	-	<0.0144	0.026	0.014	0.009	-	0.025
05/06/2004	-	<0.0146	0.037	0.013	-	-	0.025
05/07/2004	-	0.0227	0.058	0.020	0.009	-	0.025
05/08/2004	-	0.016	0.060	0.021	-	-	-
05/09/2004	-	<0.0104	0.058	0.020	-	-	-
07/04/2004	-	0.0217	0.057	0.019	-	-	-
07/05/2004	-	<0.0085	0.057	0.020	0.009	-	-
07/06/2004	-	<0.0077	0.058	0.020	-	-	0.031
07/07/2004	-	0.0252	0.056	0.019	-	-	0.031
07/08/2004	-	0.0223	0.057	0.019	0.009	-	-
07/09/2004	-	0.0182	0.057	0.020	0.009	-	-

Table B-1. Sequoyah Nuclear Plant Diffuser (Outfall 101) Discharge Concentrations of Chemicals Used to Control Microbiologically Induced Corrosion Mollusks, During Toxicity Test Sampling,
March 12, 1998 – May 6, 2011

Date	Sodium Hypochlorite mg/L TRC	Towerbrom mg/L TRC	PCL-222 mg/L Phosphate	PCL-401 mg/L Copolymer	CL-363 mg/L DMAD	Cuprostat-PF mg/L Azole	H-130M mg/L Quat	Nalco 73551 mg/L EO/PO	H-150M mg/L Quat
11/07/2004	-	<0.0187	0.000	0.014	-	-	-	-	-
11/08/2004	-	<0.0192	0.047	0.030	-	-	-	-	-
11/09/2004	-	<0.0233	0.048	0.016	-	-	0.041	-	-
11/10/2004	-	<0.0149	0.047	0.016	-	-	0.041	-	-
11/11/2004	-	<0.0149	0.049	0.017	-	-	0.043	-	-
11/12/2004	-	<0.0253	0.048	0.017	-	-	0.042	-	-
02/06/2005	-	<0.0042	0.028	0.010	-	-	-	-	-
02/07/2005	-	<0.0116	0.028	0.010	-	-	-	0.007	-
02/08/2005	-	<0.0080	0.028	0.010	-	-	-	-	-
02/09/2005	-	0.0199	0.028	0.010	-	-	-	-	-
02/10/2005	-	<0.0042	0.028	0.010	-	-	-	-	-
02/11/2005	-	0.0155	0.028	0.010	-	-	-	0.007	-
06/05/2005	-	0.0063	-	-	-	-	-	-	-
06/06/2005	-	0.0043	-	-	-	-	-	-	0.037
06/07/2005	-	0.0103	-	-	-	-	-	-	0.037
06/08/2005	-	0.0295	-	-	-	-	-	-	0.037
06/09/2005	-	0.0129	-	-	-	-	-	-	-
06/10/2005	-	0.0184	-	-	-	-	-	-	-
07/17/2005	-	0.0109	0.026	0.009	-	-	-	-	-
07/18/2005	-	0.0150	0.026	0.009	-	-	-	-	0.036
07/19/2005	-	0.0163	0.026	0.009	-	-	-	-	0.036
07/20/2005	-	0.0209	0.026	0.009	-	-	-	0.014	0.036
07/21/2005	-	0.0242	0.026	0.009	-	-	-	-	-
07/22/2005	-	0.0238	0.054	0.018	-	-	-	0.014	-
10/30/2005	-	0.0068	-	-	-	-	-	-	-
10/31/2005	-	0.0112	-	-	-	-	-	-	-
11/01/2005	-	0.0104	-	-	-	-	-	-	0.035
11/02/2005	-	0.0104	-	-	-	-	-	-	0.036
11/03/2005	-	0.0117	-	-	-	-	-	-	0.036
11/04/2005	-	0.0165	-	-	-	-	-	-	0.035
11/14/2005	-	0.0274	-	-	-	-	-	-	-
11/15/2005	-	0.0256	-	-	-	-	-	-	-
11/16/2005	-	0.0234	-	-	-	-	-	-	-
11/17/2005	-	0.0231	-	-	-	-	-	-	-
11/18/2005	-	0.0200	-	-	-	-	-	-	-
11/19/2005	-	0.0116	-	-	-	-	-	-	-

Table B-1 (continued). Sequoyah Nuclear Plant Diffuser (Outfall 101) Discharge Concentrations of Chemicals Used to Control Growth of Microbiologically Induced Bacteria and Mollusks, During Toxicity Test Sampling, March 12, 1998 – May 6, 2011

Date	Sodium Hypochlorite mg/L TRC	Towerbrom mg/L TRC	PCL-222 mg/L Phosphate	PCL-401 mg/L Copolymer	CL-363 mg/L DMAD	Cuprostat-PF mg/L Azole	H-130M mg/L Quat	Nalco 73551 mg/L EO/PO	H-150M mg/L Quat	MSW 101 mg/L Phosphate
11/12/2006	-	0.0055	-	-	-	-	-	-	-	-
11/13/2006	-	0.0068	-	-	-	-	-	-	0.037	-
11/14/2006	-	0.0143	-	-	-	-	-	-	0.037	-
11/15/2006	-	0.0068	-	-	-	-	-	-	0.037	-
11/16/2006	-	0.0267	-	-	-	-	-	-	0.037	-
11/17/2006	-	0.0222	-	-	-	-	-	-	-	-
11/26/2006	-	0.0188	-	-	-	-	-	-	-	-
11/27/2006	-	0.0138	-	-	-	-	-	-	-	-
11/28/2006	-	0.0120	-	-	-	-	-	-	-	-
11/29/2006	-	0.0288	-	-	-	-	-	-	-	-
11/30/2006	-	0.0376	-	-	-	-	-	-	-	-
12/01/2006	-	0.0187	-	-	-	-	-	-	-	-
05/28/2007	-	-	-	-	-	-	-	-	-	0.015
05/29/2007	-	-	-	-	-	-	-	-	0.036	0.015
05/30/2007	-	0.0084	-	-	-	-	-	0.017	0.036	0.015
05/31/2007	-	0.0103	-	-	-	-	-	-	0.036	0.015
06/01/2007	-	0.0164	-	-	-	-	-	0.017	0.036	0.015
06/02/2007	-	0.0305	-	-	-	-	-	-	-	0.015
12/02/2007	-	0.0241	-	-	-	-	-	-	-	-
12/03/2007	-	0.0128	-	-	-	-	-	-	-	-
12/04/2007	-	0.0238	-	-	-	-	-	-	-	-
12/05/2007	-	0.0158	-	-	-	-	-	-	-	-
12/06/2007	-	0.0162	-	-	-	-	-	-	-	-
12/07/2007	-	0.0175	-	-	-	-	-	-	-	
04/13/2008	-	0.0039	-	-	-	-	-	-	-	-
04/14/2008	-	0.0124	-	-	-	-	-	-	-	-
04/15/2008	-	0.0229	-	-	-	-	-	-	-	-
04/16/2008	-	0.0143	-	-	-	-	-	-	-	-
04/17/2008	-	0.0120	-	-	-	-	-	-	-	-
04/18/2008	-	0.0149	-	-	-	-	-	-	-	-
10/26/2008	-	0.0260	-	-	-	-	-	-	-	-
10/27/2008	-	0.0151	-	-	-	-	-	0.017	-	-
10/28/2008	-	0.0172	-	-	-	-	-	-	0.041	-
10/29/2008	-	0.0154	-	-	-	-	-	0.018	0.041	0.030
10/30/2008	-	-	-	-	-	-	-	-	0.041	0.030
10/31/2008	-	0.0086	-	-	-	-	-	-	0.041	0.030

Table B-1. Sequoyah Nuclear Plant Diffuser (Outfall 101) Discharge Concentrations of Chemicals Used to Control Microbiologically Induced Corrosion Mollusks, During Toxicity Test Sampling,
March 12, 1998 – May 6, 2011

Date	Sodium Hypochlorite mg/L TRC	Towerbrom mg/L TRC	PCL-222 mg/L Phosphate	PCL-401 mg/L Copolymer	CL-363 mg/L DMAD	Cuprostat -PF mg/L Azole	H-130M mg/L Quat	Nalco 73551 mg/L EO/PO	Spectrus CT1300 mg/L Quat	H-150M mg/L Quat	MSW 101 mg/L Phosphate
02/08/2009	-	0.0197	-	-	-	-	-	0.017	-	-	-
02/09/2009	-	0.0237	-	-	-	-	-	0.017	-	-	-
02/10/2009	-	0.0104	-	-	-	-	-	0.021	-	-	-
02/11/2009	-	0.0155	-	-	-	-	-	0.017	-	-	-
02/12/2009	-	0.0106	-	-	-	-	-	0.017	-	-	-
02/13/2009	-	-	-	-	-	-	-	-	-	-	-
05/10/2009	-	0.0129	-	-	-	-	-	-	-	-	-
05/11/2009	-	0.0415	-	-	-	-	-	-	-	0.0446	-
05/12/2009	-	0.0053	-	-	-	-	-	-	-	0.0396	-
05/13/2009	-	0.0049	-	-	-	-	-	-	-	0.0396	-
05/14/2009	-	<0.0141	-	-	-	-	-	-	-	0.0397	-
05/15/2009	-	<0.0160	-	-	-	-	-	-	-	-	-
11/15/2009	-	0.025	-	-	-	-	-	-	-	-	-
11/16/2009	-	0.0152	-	-	-	-	-	-	-	-	-
11/17/2009	-	0.0255	-	-	-	-	-	-	-	-	-
11/18/2009	-	0.0306	-	-	-	-	-	-	-	-	-
11/19/2009	-	0.0204	-	-		-	-	-	-	-	-
11/20/2009	-	0.0093	-	-	-	-	-	-	-	-	-
05/09/2010	-	0.0192	-	-	-	-	-	-	-	-	-
05/10/2010	-	0.0055	-	-	-	-	-	-	-	-	-
05/11/2010	-	0.0100	-	-	-	-	-	-	0.039	-	-
05/12/2010	-	0.0171	-	-	-	-	-	-	0.039	-	-
05/13/2010	-	0.0041	-	-		-	-	-	0.039	-	-
05/14/2010	-	0.0099	-	-	-	-	-	-	0.039	-	-

Table B-1. Sequoyah Nuclear Plant Diffuser (Outfall 101) Discharge Concentrations of Chemicals Used to Control Microbiologically Induced Corrosion Mollusks, During Toxicity Test Sampling,
March 12, 1998 – May 6, 2011

Date	Sodium Hypochlorite mg/L TRC	Towerbrom mg/L TRC	PCL-222 mg/L Phosphate	PCL-401 mg/L Copolymer	CL-363 mg/L DMAD	Cuprostat-PF mg/L Azole	H-130M mg/L Quat	Nalco 73551 mg/L EO/PO	Spectrus CT1300 mg/L Quat	H-150M mg/L Quat	MSW 101 mg/L Phosphate
10/31/2010	-	-	-	-	-	-	-	-	-	-	-
11/01/2010	-	0.0122	-	-	-	-	-	-	-	-	-
11/02/2010	-	0.0112	-	-	-	-	-	-	-	-	-
11/03/2010	-	0.0163	-	-	-	-	-	-	-	-	-
11/04/2010	-	0.0107	-	-	-	-	-	-	-	-	-
11/05/2010	-	0.0132	-	-	-	-	-	-	-	-	-
05/01/2011	-	-	-	-	-	-	-	-	-	-	-
05/02/2011	-	-	-	-	-	-	-	-	0.04	-	-
05/03/2011	-	-	-	-	-	-	-	-	0.04	-	-
05/04/2011	-	0.0155	-	-	-	-	-	-	0.04	-	-
05/05/2011	-	0.0179	-	-	-	-	-	-	0.04	-	-
05/06/2011	-	0.0089	-	-	-	-	-	-	-	-	-

Sequoyah Nuclear Plant Biomonitoring
May 03 – 10, 2011

Appendix C

Chain of Custody Records and
Toxicity Test Bench Sheets

BIOMONITORING CHAIN OF CUSTODY RECORD

Client: TVA

Project Name: Sequoyah NP Toxicity

P.O. Number: N/A

Facility Sampled: Sequoyah NP

NPDES Number: TN0026450

Collected By: Ray Duncan, Ben Mitchell, Sara Snyder

Ray Duncan, SGS, Ben Mitchell

Environmental Testing Solution, Inc.
351 Depot Street.
Asheville, NC
28801
Phone: 828-350-9364
Fax: 828-350-9368

Delivered By (Circle One):

FedEx UPS Bus Client

Other (specify): Sonic Delivery

General Comments:
Ray Duncan:
Ben Mitchell :
Sara Snyder:
Metals samples filtered and stored. Samples remained on ice through out sampling and transport to lab.

Field Identification / Sample Description	Grab/Comp.	Collection Date/Time		Container Number & Volume Collected	Flow MGD	Rain Event? (Mark as Appropriate)				Laboratory Use (project 7008)				
	—	Date	Time ET	—	—	Yes	If Yes, Inches	No	Trace	ETS Log Number	Arrival Temp. (°C)	By	Time ET	Appearance
SQN-101-TOX	Comp	5/1/11 - 5/2/11	0800-0700	2 (2.5gal)	1635.7			✓		110502.01	0.7, 0.8°C	[illegible]	1512	*
SQN-INTAKE-TOX	Comp	5/1/11 - 5/2/11	0845-0745	1 (2.5 gal)	NA					110502.02	1.2°C	[illegible]	1512	*

Sample Custody – Fill In From Top Down

* CUSTODY SEALS INTACT. SAMPLES RECEIVED IN GOOD CONDITION. TRC ABSENT IN ALL SAMPLES. [illegible]

Relinquished By (Signature):	Date/Time	Received By (Signature):	Date/Time
Ray Duncan TVA	05/02/11 1047 ET	Sonic Delivery BR Stile	05/02/11 1047 ET
Sonic Delivery BR Stile	05/02/11 1512 ET	ETS [illegible]	05/02/11 1512 ET

Instructions: Clients should fill in all areas except those in the "Laboratory Use" block. Biomonitoring samples are preserved by storing them at 6°C and shipping them in ice. The hold time for each sample is 36 hours from the time of collection. Therefore, please collect and ship in such a way that the laboratory will receive the samples with ample time to initiate testing within that time frame. Samples shipped overnight on Friday via FedEx or UPS must be marked for Saturday delivery or they will not arrive until the following Monday.

ETS
Environmental Testing Solutions, Inc.

Whole Effluent Toxicity Sample Receipt Log

Date received	Time received	Received by	Received from	Sample temperature (°C)	Project number	Sample number	Sample name and description	State	Comments
05-02-11	1512	J. Sumner	TVA Courier	0.7, 0.8	7068	110502.01	TVA - Sequoyah Nuclear Plant - 101	TN	
05-02-11	1512	J. Sumner	TVA Courier	1.2	7068	110502.02	TVA - Sequoyah Nuclear Plant - Intake	TN	

BIOMONITORING CHAIN OF CUSTODY RECORD

Client: TVA

Project Name: Sequoyah NP Toxicity

P.O. Number: N/A

Facility Sampled: Sequoyah NP

NPDES Number: TN0026450

Collected By: Ray Duncan, Ben Mitchell, Sara Snyder

Ray Duncan Ben Mitchell SS

Environmental Testing Solution, Inc.
351 Depot Street.
Asheville, NC
28801
Phone: 828-350-9364
Fax: 828-350-9368

Delivered By (Circle One):
FedEx UPS Bus Client
Other (specify): Sonic Delivery

General Comments:
Ray Duncan:
Ben Mitchell :
Sara Snyder:
Metals samples filtered and stored. Samples remained on ice through out sampling and transport to lab.

Field Identification / Sample Description	Grab/Comp.	Collection Date/Time		Container Number & Volume Collected	Flow MGD	Rain Event? (Mark as Appropriate)				Project # 7068 Laboratory Use				
	—	Date	Time ET	—	—	Yes	If Yes, Inches	No	Trace	ETS Log Number	Arrival Temp. (°C)	By	Time ET	Appearance
SQN-101-TOX ~~3~~	Comp	05/03/11 - 05/04/11	0800-0700	2 (2.5gal)	1623.12	✓	.22			110504.21	0.7, 0.9°C	JK	1437	*
SQN-INTAKE-TOX ~~3~~	Comp	05/03/11 - 05/04/11	0830-0730	1 (2.5 gal)	NA	✓	.22			110504.22	0.8°C	JK	1437	*

Sample Custody – Fill In From Top Down

* CUSTODY SEALS INTACT, SAMPLES RECEIVED IN GOOD CONDITION. TRC ABSENT IN ALL SAMPLES

Relinquished By (Signature):	Date/Time	Received By (Signature):	Date/Time
Ray Duncan	05/04/11 1034 ET	Sonic Delivery BR Skib	05/04/11 10:34 ET
Sonic Delivery BR Skib	05/04/11 1437 ET	ETS Jim Junce	05/04/11 1437 ET

Instructions: Clients should fill in all areas except those in the "Laboratory Use" block. Biomonitoring samples are preserved by storing them at 6°C and shipping them in ice. The hold time for each sample is 36 hours from the time of collection. Therefore, please collect and ship in such a way that the laboratory will receive the samples with ample time to initiate testing within that time frame. Samples shipped overnight on Friday via FedEx or UPS must be marked for Saturday delivery or they will not arrive until the following Monday.

ETS Environmental Testing Solutions, Inc.

Whole Effluent Toxicity Sample Receipt Log

Date received	Time received	Received by	Received from	Sample temperature (°C)	Project number	Sample number	Sample name and description	State	Comments
05-04-11	0955	K. Keenan	Fed - Ex	1.4	7076	110504.01	Duke Energy Corporation - Belews Creek SS	NC	
05-04-11	0955	K. Keenan	Fed - Ex	1.3	7077	110504.02	Bladenboro WWTP	NC	
05-04-11	0955	K. Keenan	Fed - Ex	1.2	7078	110504.03	Progress Energy Carolinas - Cape Fear S. E.	NC	
05-04-11	0955	K. Keenan	Fed - Ex	1.2	7078	110504.04	Progress Energy Carolinas - Cape Fear S. E. - Upstream/Intake	NC	
05-04-11	0955	K. Keenan	Fed - Ex	1.0	7079	110504.05	City of Gastonia - Dallas WWTP	NC	
05-04-11	0955	K. Keenan	Fed - Ex	2.5	7080	110504.06	United Water - Enfield WWTP	NC	
05-04-11	0955	K. Keenan	Fed - Ex	2.5	7081	110504.07	United Water - Scotland Neck WWTP	NC	
05-04-11	0955	K. Keenan	Fed - Ex	1.0	7082	110504.08	Wilson WWTP	NC	
05-04-11	0955	K. Keenan	Fed - Ex	1.0	7083	110504.09	Elementis	NC	
05-04-11	0955	K. Keenan	Fed - Ex	1.0	7084	110504.10	United Water - Farmville WWTP	NC	
05-04-11	0955	K. Keenan	Fed - Ex	2.5	7085	110504.11	Progress Energy Carolinas - Mayo Electric Steam Plant	NC	
05-04-11	0955	K. Keenan	Fed - Ex	1.4	7086	110504.12	Progress Energy Carolinas - Shearon Harris E&E Center	NC	
05-04-11	0955	K. Keenan	Fed - Ex	0.9	7087	110504.13	Progress Energy Carolinas - Shearon Harris Plant	NC	
05-04-11	0955	K. Keenan	Fed - Ex	0.6	7088	110504.14	Carolina Beach WWTP	NC	
05-04-11	1000	K. Keenan	UPS	0.5	7089	110504.15	Microbac Environmental - Rockingham WWTP	NC	
05-04-11	1000	K. Keenan	UPS	0.5	7090	110504.16	Microbac Environmental - Roseboro WWTP	NC	
05-04-11	1000	K. Keenan	UPS	0.5	7091	110504.17	Microbac Environmental - JP Stevens - Wagram WWTP	NC	
05-04-11	1000	K. Keenan	UPS	0.7	7092	110504.18	Morehead City WWTP	NC	
05-04-11	1000	K. Keenan	UPS	0.6	7093	110504.19	Hyde County - Engelhard WTP	NC	UPS shipping error.
05-04-11	1226	K. Keenan	Dash Courier	0.5	7094	110504.20	OWASA - Mason Farms WWTP	NC	
05-04-11	1437	J. Sumner	TVA Courier	0.7/0.9	7068	110504.21	TVA - Sequoyah Nuclear Plant - 101	TN	
05-04-11	1437	J. Sumner	TVA Courier	0.8	7068	110504.22	TVA - Sequoyah Nuclear Plant - Intake	TN	

BIOMONITORING CHAIN OF CUSTODY RECORD

Client: TVA

Project Name: Sequoyah NP Toxicity

P.O. Number: N/A

Facility Sampled: Sequoyah NP

NPDES Number: TN0026450

Collected By: Ray Duncan, Ben Mitchell, Sara Snyder

Ray Duncan, Ben Mitchell, S Snyder

Environmental Testing Solution, Inc.
351 Depot Street.
Asheville, NC
28801
Phone: 828-350-9364
Fax: 828-350-9368

Delivered By (Circle One):

FedEx UPS Bus Client

Other (specify): Sonic Delivery

General Comments:
Ray Duncan:
Ben Mitchell :
Sara Snyder:
Metals samples filtered and stored. Samples remained on ice through out sampling and transport to lab.

Field Identification / Sample Description	Grab/Comp.	Collection Date/Time		Container Number & Volume Collected	Flow MGD	Rain Event? (Mark as Appropriate)				Laboratory Use (project# 7060)				
	—	Date	Time EST	—	—	Yes	If Yes, Inches	No	Trace	ETS Log Number	Arrival Temp. (°C)	By	Time ET	Appearance
SQN-101-TOX	Comp	05/05/11-05/06/11	0800-0700	2 (5gal)	1618.58			X		110506.15	0.9, 0.9, 1.5°C	J	1515	110506.15
SQN-INTAKE-TOX	Comp	05/05/11-05/06/11	0830-0730	1 (2.5 gal)	NA			X		110506.16	0.9°C	J	1515	110506.16

Sample Custody – Fill In From Top Down

* CUSTODY SEALS INTACT. SAMPLES RECEIVED IN GOOD CONDITION. TRC ABSENT IN ALL SAMPLES. JM

Relinquished By (Signature):	Date/Time	Received By (Signature):	Date/Time
Ray Duncan	05/06/11 1042 ET	Sonic Delivery BR Shiles	05/06/11 10:42
Sonic Delivery BR Shiles	05/06/11 15:15 ET	ETS JM	05/06/11 1515 ET

Instructions: Clients should fill in all areas except those in the "Laboratory Use" block. Biomonitoring samples are preserved by storing them at 6°C and shipping them in ice. The hold time for each sample is 36 hours from the time of collection. Therefore, please collect and ship in such a way that the laboratory will receive the samples with ample time to initiate testing within that time frame. Samples shipped overnight on Friday via FedEx or UPS must be marked for Saturday delivery or they will not arrive until the following Monday.

ETS
Environmental Testing Solutions, Inc.

Whole Effluent Toxicity Sample Receipt Log

Date received	Time received	Received by	Received from	Sample temperature (°C)	Project number	Sample number	Sample name and description	State	Comments
05-06-11	0946	K. Keenan	UPS	3.3	7089	110506.01	Microbac Environmental - Rockingham WWTP	NC	
05-06-11	0946	K. Keenan	UPS	3.3	7090	110506.02	Microbac Environmental - Roseboro WWTP	NC	
05-06-11	0946	K. Keenan	UPS	3.3	7091	110506.03	Microbac Environmental - Westpoint - Wagram WWTP	NC	
05-06-11	1000	K. Keenan	Fed - Ex	1.9	7076	110506.04	Duke Energy Carolinas - Belews Creek Steam Station	NC	
05-06-11	1000	K. Keenan	Fed - Ex	2.3	7077	110506.05	Bladenboro WWTP	NC	
05-06-11	1000	K. Keenan	Fed - Ex	2.5	7078	110506.06	Progress Energy Carolinas - Cape Fear S.E.	NC	
05-06-11	1000	K. Keenan	Fed - Ex	2.5	7078	110506.07	Progress Energy Carolinas - Cape Fear S.E. - Upstream/Intake	NC	
05-06-11	1000	K. Keenan	Fed - Ex	2.7	7079	110506.08	City of Gastonia - Dallas WWTP	NC	
05-06-11	1000	K. Keenan	Fed - Ex	2.0	7080	110506.09	United Water - Enfield WWTP	NC	
05-06-11	1000	K. Keenan	Fed - Ex	2.0	7081	110506.10	United Water - Scotland Neck WWTP	NC	
05-06-11	1000	K. Keenan	Fed - Ex	0.8	7082	110506.11	Wilson WWTP	NC	
05-06-11	1000	K. Keenan	Fed - Ex	1.8	7083	110506.12	Elementis	NC	
05-06-11	1000	K. Keenan	Fed - Ex	0.9	7084	110506.13	United Water - Farmville WWTP	NC	
05-06-11	1232	K. Keenan	Dash Courier	1.3	7094	110506.14	OWASA - Mason Farms WWTP	NC	
05-06-11	1515	J. Sumner	TVA Courier	0.9, 0.9, 1.5	7068	110506.15	TVA - Sequoyah Nuclear Plant - 101	TN	
05-06-11	1515	J. Sumner	TVA Courier	0.9	7068	110506.16	TVA - Sequoyah Nuclear Plant - Intake	TN	

ETS
Environmental Testing Solutions, Inc.

Chronic Whole Effluent Toxicity Test (EPA-821-R-02-013 Method 1000.0)
Species: *Pimephales promelas*

Client: Tennessee Valley Authority
Facility: Sequoyah Nuclear Plant
NPDES #: ~~TN0020168~~ TN0026450
Project #: 7068

County: ~~Rhea~~ HAMILTON
Outfall: 101

Dilution preparation information:						*Comments:*
Dilution prep (%)	10.8	21.6	43.2	86.4	100	
Effluent volume (mL)	270	540	1080	2160	2500	
Diluent volume (mL)	2230	1960	1420	340	0	
Total volume (mL)	2500	2500	2500	2500	2500	

Test organism information:		*Test information:*		
Organism age: 22.25	~~21.42~~ HOURS OLD	Randomizing template:	YELLOW	
Date and times organisms were born between:	05·02·11 1600	Incubator number and shelf location:	3C	
Organism source:	ATOX BATCH Pp 05·02·11	*Artemia* CHM number:	CHM593	
		Drying information for weight determination:		
Transfer bowl information:	pH = 7.68 S.U. Temperature = 24.2 °C	Date / Time in oven:	05·10·11	1410
		Initial oven temperature:	60°C	
Average transfer volume:	0.1776 mL	Date / Time out of oven:	05·11·11	1415
		Final oven temperature:	60°C	
		Total drying time:	24 HOURS	

Daily feeding and renewal information:

Day	Date	Morning feeding		Afternoon feeding		Test initiation, renewal, or termination		Sample numbers used		MHSW batch used
		Time	Analyst	Time	Analyst	Time	Analyst	Outfall 101	Intake	
0	05·03·11	—	—	1630	JH	1415	JH	110502.01	110502.02	05·02·11 A
1	05·04·11	0900	JH	1500	JH	1318	JH	110502.01	110502.02	05·02·11 A
2	05·05·11	0900	JH	1500	JH	1319	JH	110504.21	110504.22	05·02·11 B
3	05·06·11	0900	JH	1500	JH	1317	JH	110504.21	110504.22	05·02·11 B
4	05·07·11	0900	JH	1500	JH	1319	JH	110506.15	110506.16	05·05·11
5	05·08·11	0800	JH	1400	JH	1322	JH	110506.15	110506.16	05·05·11
6	05·09·11	0800	JH	1400	JH	1316	JH	110506.15	110506.16	05·05·11
7	05·10·11					1325	JH			

Control information:		Acceptance criteria	*Summary of test endpoints:*	
% Mortality:	0%	≤ 20%	7-day LC_{50}	>100%
Average weight per initial larvae:	0.770		NOEC	100%
Average weight per surviving larvae:	0.770	≥ 0.25mg/larvae	LOEC	>100%
			ChV	>100%
			IC_{25}	>100%

ETS
Environmental Testing Solutions, Inc.

Species: ***Pimephales promelas***
Client: **TVA / Sequoyah Nuclear Plant, Outfall 101, Non-treated** **Date:** 05-03-11

Survival and Growth Data

Day	CONTROL				10.8%				21.6%			
	A	B	C	D	E	F	G	H	I	J	K	L
0	10	10	10	10	10	10	10	10	10	10	10	10
1	10	10	10	10	10	10	10	10	10	10	10	10
2	10	10	10	10	10	10	10	10	10	10	10	10
3	10	10	10	10	10	10	10	10	10	10	10	10
4	10	10	10	10	10	10	10	10	10	10	10	10
5	10	10	10	10	10	10	10	10	10	10	10	10
6	10	10	10	10	10	10	10	10	9 lg	10	10	10
7	10	10	10	10	10	10	10	10	9	10	10	10
A = Pan weight (mg) Tray color code:: Light Blue Analyst: MHC Date: 05-04-11	14.85	14.06	14.34	13.19	13.36	13.89	13.81	12.55	14.01	12.05	13.91	14.49
B = Pan + Larvae weight (mg) Analyst: MHC Date: 05-14-11	21.89	21.62	CONFIRMED ~~[illegible]~~ 22.33	~~[illegible]~~ 21.38	21.85	22.78	22.79	20.23	20.60	21.71	23.04	23.28
C = Larvae weight (mg) = B – A Hand calculated. Analyst: [illegible]	7.04	7.56	7.99	8.19	8.49	8.89	8.98	7.68	6.59	8.86	9.13	8.79
Weight per initial number of larvae (mg) = C / Initial number of larvae Hand calculated. Analyst: [illegible]	0.704	0.756	0.799	0.819	0.849	0.889	0.898	0.768	0.659	0.886	0.913	0.879
Average weight per initial number of larvae (mg) / Percent reduction from control (%)	0.770				0.851		-10.6%		0.834		-8.4%	

Comment codes: c = clear, d = dead, fg = fungus, k = killed, m = missing, sk = sick, sm = unusually small, lg = unusually large, d&r = decanted and returned, w = wounded.

Comments:

ETS
Environmental Testing Solutions, Inc.

Species: ***Pimephales promelas***
Client: **TVA / Sequoyah Nuclear Plant, Outfall 101, Non-treated** **Date:** 05-03-11

Survival and Growth Data

Day	43.2%				86.4%				100%			
	M	N	O	P	Q	R	S	T	U	V	W	X
0	10	10	10	10	10	10	10	10	10	10	10	10
1	10	10	10	10	10	10	10	10	10	10	10	10
2	10	10	10	10	10	10	10	10	10	10	10	10
3	10	10	10	10	10	10	10	10	10	10	10	10
4	10	10	10	10	10	10	10	10	10	10	10	10
5	10	10	10	10	10	10	10	10	10	10	10	10
6	10	10	10	10	10	10	10	10	10	10	10	10
7	10	10	10	10	10	10	10	10	10	10	10	10
A = Pan weight (mg) Tray color code:: Light Blue Analyst: MMP Date: 05-04-11	13.54	13.92	13.23	11.74	13.83	13.79	15.00	14.76	13.63	13.44	13.49	12.97
B = Pan + Larvae weight (mg) Analyst: MHF Date: 05-14-11	21.15	22.36	21.64	20.27	22.28	21.84	22.16	22.73	21.64	20.40	22.12	20.97
C = Larvae weight (mg) = B – A Hand calculated. Analyst: [illegible]	7.61	8.44	8.41	8.53	8.45	8.05	7.16	7.97	8.01	6.96	8.63	8.00
Weight per initial number of larvae (mg) = C / Initial number of larvae Hand calculated. Analyst: [illegible]	0.761	0.844	0.841	0.853	0.845	0.805	0.716	0.797	0.801	0.696	0.863	0.800
Average weight per initial number of larvae (mg) / Percent reduction from control (%)	0.825		-7.2%		0.791		-2.8%		0.790		-2.7%	

Comment codes: c = clear, d = dead, fg = fungus, k = killed, m = missing, sk = sick, sm = unusually small, lg = unusually large, d&r = decanted and returned, w = wounded.

Comments:

ETS
Environmental Testing Solutions, Inc.

Species: ***Pimephales promelas***
Client: **TVA / Sequoyah Nuclear Plant, Outfall 101, Non-treated** **Date:** 05-03-11

Survival and Growth Data

Day	100% Intake				
	Y	Z	AA	BB	
0	10	10	10	10	
1	10	10	10	10	
2	10	10	10	10	
3	10	10	10	10	
4	10	10	10	10	
5	10	10	10	9 1dFG	
6	10	10	10	8 1dFG	
7	10	10	10	7 1dFG	
A = Pan weight (mg) Tray color code:: Light Blue Analyst: MHF Date: 05-24-11	14.35	13.38	14.45	12.24	
B = Pan + Larvae weight (mg) Analyst: MHF Date: 05-14-11	23.28	21.32	22.19	18.84	
C = Larvae weight (mg) = B – A Hand calculated. Analyst: [illegible]	8.93	7.94	7.74	6.60	
Weight per initial number of larvae (mg) = C / Initial number of larvae Hand calculated. Analyst: [illegible]	0.893	0.794	0.774	0.660	
Average weight per initial number of larvae (mg) / Percent reduction from control (%)	0.780		-1.4%		

Comment codes: c = clear, d = dead, fg = fungus, k = killed, m = missing, sk = sick, sm = unusually small, lg = unusually large, d&r = decanted and returned, w = wounded.

Comments:

TVA / Sequoyah Nuclear Plant, Outfall 101
Non-treated
May 03-10, 2011

Environmental Testing Solutions, Inc.

***Pimephales promelas* Chronic Whole Effluent Toxicity Test**
EPA-821-R-02-013, Method 1000.0

Quality Control
Verification of Data Entry, Calculations, and Statistical Analyses

Project number: 7068

Concentration (%)	Replicate	Initial number of larvae	Final number of larvae	A = Pan weight (mg)	B = Pan + Larvae weight (mg)	Larvae weight (mg) = A - B	Not for Compliance Assessment, Internal Laboratory QC: Weight / Surviving number of larvae (mg)	Mean weight / Surviving number of larvae (mg)	Coefficient of variation (Mean weight per surviving number of larvae) (%)	Weight / Initial number of larvae (mg)	Mean survival (%)	Mean weight / Initial number of larvae (mg)	Coefficient of variation (Mean weight per initial number of larvae) (%)	Percent reduction from control (%)
Control	A	10	10	14.85	21.89	7.04	0.704	0.770	6.6	0.704	100.0	0.770	6.6	Not applicable
	B	10	10	14.06	21.62	7.56	0.756			0.756				
	C	10	10	14.34	22.33	7.99	0.799			0.799				
	D	10	10	13.19	21.38	8.19	0.819			0.819				
10.8%	E	10	10	13.36	21.85	8.49	0.849	0.851	7.0	0.849	100.0	0.851	7.0	-10.6
	F	10	10	13.89	22.78	8.89	0.889			0.889				
	G	10	10	13.81	22.79	8.98	0.898			0.898				
	H	10	10	12.55	20.23	7.68	0.768			0.768				
21.6%	I	10	9	14.01	20.60	6.59	0.732	0.853	9.6	0.659	97.5	0.834	14.1	-8.4
	J	10	10	12.85	21.71	8.86	0.886			0.886				
	K	10	10	13.91	23.04	9.13	0.913			0.913				
	L	10	10	14.49	23.28	8.79	0.879			0.879				
43.2%	M	10	10	13.54	21.15	7.61	0.761	0.825	5.2	0.761	100.0	0.825	5.2	-7.2
	N	10	10	13.92	22.36	8.44	0.844			0.844				
	O	10	10	13.23	21.64	8.41	0.841			0.841				
	P	10	10	11.74	20.27	8.53	0.853			0.853				
86.4%	Q	10	10	13.83	22.28	8.45	0.845	0.791	6.8	0.845	100.0	0.791	6.8	-2.8
	R	10	10	13.79	21.84	8.05	0.805			0.805				
	S	10	10	15.00	22.16	7.16	0.716			0.716				
	T	10	10	14.76	22.73	7.97	0.797			0.797				
100%	U	10	10	13.63	21.64	8.01	0.801	0.790	8.8	0.801	100.0	0.790	8.8	-2.7
	V	10	10	13.44	20.40	6.96	0.696			0.696				
	W	10	10	13.49	22.12	8.63	0.863			0.863				
	X	10	10	12.97	20.97	8.00	0.800			0.800				
100% Intake	Y	10	10	14.35	23.28	8.93	0.893	0.851	9.4	0.893	92.5	0.780	12.2	-1.4
	Z	10	10	13.38	21.32	7.94	0.794			0.794				
	AA	10	10	14.45	22.19	7.74	0.774			0.774				
	BB	10	7	12.24	18.84	6.60	0.943			0.660				

Outfall 101:
Dunnett's MSD value: 0.1196
PMSD: 15.5

Intake:
Dunnett's MSD value: 0.1052
PMSD: 13.7

MSD = Minimum Significant Difference
PMSD = Percent Minimum Significant Difference
PMSD is a measure of test precision. The PMSD is the minimum percent difference between the control and treatment that can be declared statistically significant in a whole effluent toxicity test.

Lower PMSD bound determined by USEPA (10th percentile) = 12%.
Upper PMSD bound determined by USEPA (90th percentile) = 30%.

Lower and upper PMSD bounds were determined from the 10th and 90th percentile, respectively, of PMSD data from EPA's WET Interlaboratory Variability Study (USEPA, 2001a; USEPA, 2001b).

USEPA. 2001a, 2001b. Final Report: Interlaboratory Variability Study of EPA Short-term Chronic and Acute Whole Effluent Toxicity Test Methods, Volumes 1 and 2-Appendix. EPA-821-B-01-004 and EPA-821-B-01-005. US Environmental Protection Agency, Cincinnati, OH.

File: sqn101_050311data.xlsx
Entered by: J. Sumner
Reviewed by: _____

TVA / Sequoyah Nuclear Plant, Outfall 101
Non-treated
May 03-10, 2011
Statistical Analyses

ETS Environmental Testing Solutions, Inc.

Larval Fish Growth and Survival Test-7 Day Growth

Start Date:	5/3/2011	Test ID:	PpFRCR	Sample ID:	TVA / Sequoyah Nuclear Plant, Outfall 101
End Date:	5/10/2011	Lab ID:	ETS-Envir. Testing Sol.	Sample Type:	DMR-Discharge Monitoring Report
Sample Date:		Protocol:	FWCHR-EPA-821-R-02-013	Test Species:	PP-Pimephales promelas
Comments:					

Conc-%	1	2	3	4
D-Control	0.7040	0.7560	0.7990	0.8190
10.8	0.8490	0.8890	0.8980	0.7680
21.6	0.6590	0.8860	0.9130	0.8790
43.2	0.7610	0.8440	0.8410	0.8530
86.4	0.8450	0.8050	0.7160	0.7970
100	0.8010	0.6960	0.8630	0.8000
Intake	0.8930	0.7940	0.7740	0.6600

			Transform: Untransformed						1-Tailed		Isotonic	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD	Mean	N-Mean
D-Control	0.7695	1.0000	0.7695	0.7040	0.8190	6.623	4				0.8199	1.0000
10.8	0.8510	1.1059	0.8510	0.7680	0.8980	6.967	4	-1.643	2.410	0.1196	0.8199	1.0000
21.6	0.8343	1.0841	0.8343	0.6590	0.9130	14.114	4	-1.305	2.410	0.1196	0.8199	1.0000
43.2	0.8248	1.0718	0.8248	0.7610	0.8530	5.190	4	-1.114	2.410	0.1196	0.8199	1.0000
86.4	0.7908	1.0276	0.7908	0.7160	0.8450	6.839	4	-0.428	2.410	0.1196	0.7908	0.9645
100	0.7900	1.0266	0.7900	0.6960	0.8630	8.766	4	-0.413	2.410	0.1196	0.7900	0.9636
Intake	0.7803	1.0140	0.7803	0.6600	0.8930	12.249	4					

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.88409168	0.884	-1.217221232	1.2704004
Bartlett's Test indicates equal variances (p = 0.56)	3.9158771	15.0863171		

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU	MSDu	MSDp	MSB	MSE	F-Prob	df
Dunnett's Test	100	>100		1	0.11955186	0.15536303	0.00391794	0.00492163	0.566574454	5, 18
Treatments vs D-Control										

Linear Interpolation (200 Resamples)

Point	%	SD	95% CL(Exp)	Skew
IC05	>100			
IC10	>100			
IC15	>100			
IC20	>100			
IC25	>100			
IC40	>100			
IC50	>100			

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TVA / Sequoyah Nuclear Plant, Outfall 101 - Intake
Non-treated
May 03-10, 2011

ETS
Environmental Testing Solutions, Inc.

Statistical Analyses

Larval Fish Growth and Survival Test-7 Day Growth

Start Date:	5/3/2011	Test ID:	PpFRCR	Sample ID:	TVA / Sequoyah Nuclear Plant, Outfall 101 - Intake
End Date:	5/10/2011	Lab ID:	ETS-Envir. Testing Sol.	Sample Type:	DMR-Discharge Monitoring Report
Sample Date:		Protocol:	FWCHR-EPA-821-R-02-013	Test Species:	PP-Pimephales promelas
Comments:	Non-treated				

Conc-%	1	2	3	4
D-Control	0.7040	0.7560	0.7990	0.8190
10.8	0.8490	0.8890	0.8980	0.7680
21.6	0.6590	0.8860	0.9130	0.8790
43.2	0.7610	0.8440	0.8410	0.8530
86.4	0.8450	0.8050	0.7160	0.7970
100	0.8010	0.6960	0.8630	0.8000
Intake	0.8930	0.7940	0.7740	0.6600

			Transform: Untransformed						1-Tailed	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
D-Control	0.7695	1.0000	0.7695	0.7040	0.8190	6.623	4			
10.8	0.8510	1.1059	0.8510	0.7680	0.8980	6.967	4			
21.6	0.8343	1.0841	0.8343	0.6590	0.9130	14.114	4			
43.2	0.8248	1.0718	0.8248	0.7610	0.8530	5.190	4			
86.4	0.7908	1.0276	0.7908	0.7160	0.8450	6.839	4			
100	0.7900	1.0266	0.7900	0.6960	0.8630	8.766	4			
Intake	0.7803	1.0140	0.7803	0.6600	0.8930	12.249	4	-0.199	1.943	0.1052

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.98316872	0.749	-0.2349007	0.4704176
F-Test indicates equal variances (p = 0.33)	3.51607203	47.4683456		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates no significant differences Treatments vs D-Control	0.10523383	0.13675612	0.00023113	0.00586562	0.84920698	1, 6

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Reviewed by: _____

TVA / Sequoyah Nuclear Plant, Outfall 101 - Non-treated
May 03-10, 2011

ETS
Environmental Testing Solutions, Inc.

***Pimephales promelas* Chronic Whole Effluent Toxicity Test**
EPA-821-R-02-013, Method 1000.0

Daily Chemical Analyses

Project number: 7068

Concentration	Parameter	Day 0		Day 1		Day 2		Day 3		Day 4		Day 5		Day 6	
		Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Control	pH (SU)	7.84	7.80	7.78	7.77	7.89	7.78	7.81	7.77	7.80	7.86	7.80	7.68	7.73	7.70
	DO (mg/L)	7.4	7.8	7.5	7.6	7.5	7.5	7.6	7.7	7.7	7.9	7.7	7.6	7.6	7.9
	Conductivity (µmhos/cm)	333		332		305		314		306		332		322	
	Alkalinity (mg/L $CaCO_3$)	59				59				58					
	Hardness (mg/L $CaCO_3$)	91				89				91					
	Temperature (°C)	24.9	24.8	24.8	24.4	24.8	24.7	24.9	24.5	24.7	24.5	24.7	24.7	24.8	24.7
10.8%	pH (SU)	7.85	7.75	7.80	7.77	7.88	7.67	7.86	7.75	7.82	7.87	7.93	7.64	7.80	7.68
	DO (mg/L)	7.8	7.7	7.7	7.5	7.5	7.6	8.2	7.8	7.7	8.0	7.9	7.3	7.8	7.9
	Conductivity (µmhos/cm)	310		311		283		288		290		307		303	
	Temperature (°C)	24.9	24.8	24.9	24.2	24.9	24.6	25.0	24.7	24.8	24.5	24.7	24.6	24.8	24.7
21.6%	pH (SU)	7.84	7.75	7.79	7.74	7.87	7.66	7.85	7.76	7.84	7.86	7.93	7.64	7.82	7.67
	DO (mg/L)	7.7	7.7	7.7	7.5	7.9	7.6	8.1	7.8	7.8	7.9	8.1	7.3	7.9	8.0
	Conductivity (µmhos/cm)	292		291		272		275		275		284		285	
	Temperature (°C)	24.9	24.6	25.0	24.5	24.9	24.4	25.0	24.7	24.8	24.4	24.7	24.8	24.8	24.7
43.2%	pH (SU)	7.77	7.73	7.77	7.70	7.86	7.66	7.84	7.77	7.84	7.86	7.92	7.68	7.81	7.69
	DO (mg/L)	7.7	7.7	7.7	7.4	7.8	7.5	8.0	7.8	7.8	7.9	8.1	7.6	7.8	8.1
	Conductivity (µmhos/cm)	253		257		241		242		243		254		253	
	Temperature (°C)	25.0	24.5	25.0	24.6	24.9	24.6	25.0	24.6	24.8	24.5	24.7	24.8	24.8	24.6
86.4%	pH (SU)	7.72	7.67	7.73	7.68	7.80	7.68	7.82	7.75	7.82	7.85	7.92	7.66	7.79	7.69
	DO (mg/L)	7.8	7.7	7.7	7.4	7.8	7.5	8.0	7.8	7.8	7.9	8.0	7.5	7.8	8.1
	Conductivity (µmhos/cm)	179		183		185		187		187		207		189	
	Temperature (°C)	25.0	24.6	25.0	24.6	24.9	24.6	25.1	24.4	24.8	24.4	24.7	24.5	24.9	24.6
100%	pH (SU)	7.71	7.68	7.72	7.67	7.76	7.66	7.81	7.74	7.81	7.85	7.90	7.64	7.79	7.71
	DO (mg/L)	7.8	7.8	7.8	7.4	8.0	7.5	8.0	7.8	7.8	8.0	8.1	7.4	7.7	7.8
	Conductivity (µmhos/cm)	157		159		158		158		166		174		171	
	Alkalinity (mg/L $CaCO_3$)	54				59				61					
	Hardness (mg/L $CaCO_3$)	55				63				71					
	Total Residual Chlorine (mg/L)	<0.10				<0.10				<0.10					
	Temperature (°C)	25.0	24.5	25.0	24.3	25.0	24.5	25.2	24.4	25.0	24.3	24.9	24.5	24.9	24.7
100% Intake	pH (SU)	7.69	7.68	7.72	7.64	7.75	7.65	7.81	7.73	7.82	7.87	7.92	7.66	7.78	7.70
	DO (mg/L)	7.8	7.8	7.8	7.3	8.0	7.5	8.0	7.8	7.9	8.0	8.1	7.6	7.8	7.9
	Conductivity (µmhos/cm)	155		157		157		159		170		178		172	
	Alkalinity (mg/L $CaCO_3$)	55				61				61					
	Hardness (mg/L $CaCO_3$)	55				63				67					
	Total Residual Chlorine (mg/L)	<0.10				<0.10				<0.10					
	Temperature (°C)	25.0	24.5	25.1	24.3	24.9	24.5	24.9	24.4	24.7	24.3	24.8	24.4	24.9	24.6

File: sqn101_050311chem.xls
Entered by: S. Evans
Reviewed by: _____

ETS
Environmental Testing Solutions, Inc.

Species: ***Pimephales promelas*** **Date:** 05-03-11

Client: **TVA / Sequoyah Nuclear Plant, Outfall 101, Non-treated**

Daily Chemistry:

		Day					
		0		1		2	
	Analyst	KCK	MHF	MHF	CDJ	CDJ	CDJ
Concentration	Parameter						
CONTROL Non-treated	pH (S.U.)	7.84	7.80	7.78	7.90 7.77	7.99	7.78
	DO (mg/L)	7.4	7.8	7.5	7.6	7.5	7.5
	Conductivity (µmhos/cm)	333		332		305	
	Alkalinity (mg $CaCO_3$/L)	59				59	
	Hardness (mg $CaCO_3$/L)	91				89	
	Temperature (°C)	24.9	24.8	24.8	24.4	24.8	24.7
10.8%	pH (S.U.)	7.85	7.75	7.80	7.90 7.77	7.98	7.67
	DO (mg/L)	7.8	7.7	7.7	7.5	7.5	7.6
	Conductivity (µmhos/cm)	310		311		283	
	Temperature (°C)	24.9	24.8	24.9	24.2	24.9	24.6
21.6%	pH (S.U.)	7.84	7.75	7.79	7.90 7.74	7.97	7.66
	DO (mg/L)	7.7	7.7	7.7	7.5	7.9	7.6
	Conductivity (µmhos/cm)	292		291		272	
	Temperature (°C)	24.9	24.6	25.0	24.5	24.9	24.4
43.2%	pH (S.U.)	7.77	7.73	7.77	7.90 7.70	7.86	7.68 7.66
	DO (mg/L)	7.7	7.7	7.7	7.4	7.8	7.5
	Conductivity (µmhos/cm)	253		257		241	
	Temperature (°C)	25.0	24.5	25.0	24.6	24.9	24.6
86.4%	pH (S.U.)	7.72	7.67	7.73	7.84 7.68	7.80	7.68
	DO (mg/L)	7.8	7.7	7.7	7.4	7.8	7.5
	Conductivity (µmhos/cm)	179		183		185	
	Temperature (°C)	25.0	24.6	25.0	24.6	24.9	24.6
100%	pH (S.U.)	7.71	7.68	7.72	7.85 7.67	7.76	7.66
	DO (mg/L)	7.8	7.8	7.8	7.4	8.0	7.5
	Conductivity (µmhos/cm)	157		159		158	
	Alkalinity (mg $CaCO_3$/L)	54				59	
	Hardness (mg $CaCO_3$/L)	55				63	
	TR chlorine (mg/L)	<0.10				<0.10	
	Temperature (°C)	25.0	24.5	25.0	24.3	25.0	24.5
100% Intake	pH (S.U.)	7.69	7.68	7.72	7.83 7.64	7.75	7.65
	DO (mg/L)	7.8	7.8	7.8	7.3	8.0	7.5
	Conductivity (µmhos/cm)	155		157		157	
	Alkalinity (mg $CaCO_3$/L)	55				61	
	Hardness (mg $CaCO_3$/L)	55				63	
	TR chlorine (mg/L)	<0.10				<0.10	
	Temperature (°C)	25.0	24.5	25.1	24.3	24.9	24.5
		Initial	Final	Initial	Final	Initial	Final

* pH REANALYZED & CONFIRMED.

ETS Environmental Testing Solutions, Inc.

Species: ***Pimephales promelas***
Client: **TVA / Sequoyah Nuclear Plant, Outfall 101, Non-treated** **Date:** 05-03-11

		Day							
		3		4		5		6	
	Analyst	CDJ	MHL	MHL	BSL	BSL	LAB	LAB	CDJ
Concen-tration	**Parameter**								
CONTROL Non-treated	**pH** (S.U.)	7.81	7.77	7.80	7.86	7.80	7.68	7.73	7.70
	DO (mg/L)	7.6	7.7	7.7	7.9	7.7	7.6	7.6	7.9
	Conductivity (µmhos/cm)	314		306		332		322	
	Alkalinity (mg $CaCO_3$/L)			58					
	Hardness (mg $CaCO_3$/L)			91					
	Temperature (°C)	24.9	24.5	24.7	24.5	24.7	24.7	24.8	24.7
10.8%	**pH** (S.U.)	7.86	7.75	7.82	7.87	7.93	7.64	7.80	7.68
	DO (mg/L)	8.2	7.8	7.7	8.0	7.9	7.3	7.8	7.9
	Conductivity (µmhos/cm)	288		290		307		303	
	Temperature (°C)	25.0	24.7	24.8	24.5	24.7	24.6	24.8	24.7
21.6%	**pH** (S.U.)	7.85	7.76	7.84	7.86	7.93	7.64	7.82	7.67
	DO (mg/L)	8.1	7.8	7.8	7.9	8.1	7.3	7.9	8.0
	Conductivity (µmhos/cm)	275		275		284		285	
	Temperature (°C)	25.0	24.7	24.8	24.4	24.7	24.8	24.8	24.7
43.2%	**pH** (S.U.)	7.84	7.77	7.84	7.86	7.92	7.68	7.81	7.69
	DO (mg/L)	8.0	7.8	7.8	7.9	8.1	7.6	7.8	8.1
	Conductivity (µmhos/cm)	242		243		254		253	
	Temperature (°C)	25.0	24.6	24.8	24.5	24.7	24.8	24.8	24.6
86.4%	**pH** (S.U.)	7.82	7.75	7.82	7.85	7.92	7.66	7.79	7.69
	DO (mg/L)	8.0	7.8	7.8	7.9	8.0	7.5	7.8	8.1
	Conductivity (µmhos/cm)	187		187		207		189	
	Temperature (°C)	25.1	24.4	24.8	24.4	24.7	24.5	24.9	24.6
100%	**pH** (S.U.)	7.81	7.74	7.81	7.85	7.90	7.64	7.79	7.71
	DO (mg/L)	8.0	7.8	7.8	8.0	8.1	7.4	7.7	7.8
	Conductivity (µmhos/cm)	158		166		174		171	
	Alkalinity (mg $CaCO_3$/L)			61					
	Hardness (mg $CaCO_3$/L)			71					
	TR Chlorine (mg/L)			<0.10					
	Temperature (°C)	25.2	24.4	25.0	24.3	24.9	24.5	24.9	24.7
100% Intake	**pH** (S.U.)	7.81	7.73	7.82	7.87	7.92	7.66	7.78	7.70
	DO (mg/L)	8.0	7.8	7.9	8.0	8.1	7.6	7.8	7.9
	Conductivity (µmhos/cm)	159		170		178		172	
	Alkalinity (mg $CaCO_3$/L)			61					
	Hardness (mg $CaCO_3$/L)			67					
	TR chlorine (mg/L)			<0.10					
	Temperature (°C)	24.9	24.4	24.7	24.3	24.8	24.4	24.9	24.6
		Initial	**Final**	**Initial**	**Final**	**Initial**	**Final**	**Initial**	**Final**

ETS Environmental Testing Solutions, Inc.

Chronic Whole Effluent Toxicity Test (EPA-821-R-02-013 Method 1002.0)
Species: *Ceriodaphnia dubia*

Client: Tennessee Valley Authority
Facility: Sequoyah Nuclear Plant
NPDES #: TN0026450
Project #: 7068

County: Hamilton
Outfall: 101

Dilution preparation information:						*Comments:*
Dilution prep (%)	10.8	21.6	43.2	86.4	100	
Effluent volume (mL)	270	540	1080	2160	2500	
Diluent volume (mL)	2230	1960	1420	340	0	
Total volume (mL)	2500	2500	2500	2500	2500	

Test organism source information:											*Test information:*	
Organism age:	< 24-hours old										Randomizing template color:	GOLD
Date and times organisms were born between:	05-03-11 0715 TO 1200										Incubator number and shelf location:	2B2
Culture board:	04-26-11 A											
Replicate number:	1	2	3	4	5	6	7	8	9	10	YWT batch:	04-21-11
Culture board cup number:	4	5	7	11	13	14	15	18	21	25		
Transfer vessel information:	pH = 8.00 S.U. Temperature = 24.9 °C										*Selenastrum* batch:	04-27-11
Average transfer volume (mL):	0.0415 mL											

Daily renewal information:

Day	Date	Test initiation and feeding, renewal and feeding, or termination time	MHSW batch used	Sample numbers used Outfall 101	Sample numbers used Intake	Analyst
0	05-03-11	1315	05-02-11A	110502.01	110502.02	JH
1	05-04-11	1218	05-02-11A	110502.01	110502.02	JH
2	05-05-11	1220	05-02-11B	110504.21	110504.22	JH
3	05-06-11	1228	05-02-11B	110504.21	110504.22	JH
4	05-07-11	1223	05-05-11	110506.15	110506.16	JH
5	05-08-11	1226	05-05-11	110506.15	110506.16	JH
6	05-09-11	1224	05-05-11	110506.15	110506.16	JH
7	05-10-11	1224				JH

Control information:	Control-1	Control-2	Acceptance criteria	*Summary of test endpoints:*	
% of Male Adults:	0%	0%	≤ 20%	7-day LC_{50}	>100%
% Adults having 3rd Broods:	100%	100%	≥ 80%	NOEC	100%
% Mortality:	0%	0%	≤ 20%	LOEC	>100%
Mean Offspring/Female:	29.7	29.7	≥ 15.0 offspring/female	ChV	>100%
% CV:	4.2%	7.8%	< 40.0 %	IC_{25}	>100%

Species: *Ceriodaphnia dubia*
Client: TVA / Sequoyah Nuclear Plant, Outfall 101 Date: 05-03-11

CONTROL-1 ***Survival and Reproduction Data***

Day		Replicate number 1	2	3	4	5	6	7	8	9	10
1	Young produced	0	0	0	0	0	0	0	0	0	0
	Adult mortality	L	L	L	L	L	L	L	L	L	L
2	Young produced	0	0	0	0	0	0	0	0	0	0
	Adult mortality	L	L	L	L	L	L	L	L	L	L
3	Young produced	0	0	0	0	0	0	0	0	0	0
	Adult mortality	L	L	L	L	L	L	L	L	L	L
4	Young produced	4	3	4	4	5	4	4	4	4	4
	Adult mortality	L	L	L	L	L	L	L	L	L	L
5	Young produced	10	11	11	12	11	12	12	10	12	12
	Adult mortality	L	L	L	L	L	L	L	L	L	L
6	Young produced	0	0	0	0	0	0	0	0	0	0
	Adult mortality	L	L	L	L	L	L	L	L	L	L
7	Young produced	14	14	16	15	15	15	14	15	13	13
Total young produced		28	28	31	31	31	31	30	29	29	29
Final Adult Mortality		L	L	L	L	L	L	L	L	L	L
X for 3rd Broods		X	X	X	X	X	X	X	X	X	X

Note: Adult mortality (L = live, D = dead), SB = split brood (single brood split between two days), CO = carry over (offspring carried over with adult during transfer).

Concentration:	
% Mortality:	0%
Mean Offspring/Female:	29.7

CONC: **10.8%** ***Survival and Reproduction Data***

Day		Replicate number 1	2	3	4	5	6	7	8	9	10
1	Young produced	0	0	0	0	0	0	0	0	0	0
	Adult mortality	L	L	L	L	L	L	L	L	L	L
2	Young produced	0	0	0	0	0	0	0	0	0	0
	Adult mortality	L	L	L	L	L	L	L	L	L	L
3	Young produced	0	0	0	0	0	0	0	0	0	0
	Adult mortality	L	L	L	L	L	L	L	L	L	L
4	Young produced	3	5	5	4	4	5	4	4	4	6
	Adult mortality	L	L	L	L	L	L	L	L	L	L
5	Young produced	13	10	13	12	10	12	12	10	11	11
	Adult mortality	L	L	L	L	L	L	L	L	L	L
6	Young produced	0	0	0	0	0	0	0	0	0	0
	Adult mortality	L	L	L	L	L	L	L	L	L	L
7	Young produced	17	15	16	16	13	16	14	14	15	15
Total young produced		33	30	34	32	27	33	30	28	30	32
Final Adult Mortality		L	L	L	L	L	L	L	L	L	L

Note: Adult mortality (L = live, D = dead), SB = split brood (single brood split between two days), CO = carry over (offspring carried over with adult during transfer).

Concentration:	
% Mortality:	0%
Mean Offspring/Female:	30.9
% Reduction from Control-1:	-4.0%

ETS Environmental Testing Solutions, Inc.

Species: ***Ceriodaphnia dubia***
Client: **TVA / Sequoyah Nuclear Plant, Outfall 101** **Date:** 05-03-11

CONC: 21.6% ***Survival and Reproduction Data***

Day		Replicate number 1	2	3	4	5	6	7	8	9	10
1	Young produced	0	0	0	0	0	0	0	0	0	0
	Adult mortality	L	L	L	L	L	L	L	L	L	L
2	Young produced	0	0	0	0	0	0	0	0	0	0
	Adult mortality	L	L	L	L	L	L	L	L	L	L
3	Young produced	0	0	0	0	0	0	0	0	0	0
	Adult mortality	L	L	L	L	L	L	L	L	L	L
4	Young produced	4	5	4	4	3	4	4	4	4	4
	Adult mortality	L	L	L	L	L	L	L	L	L	L
5	Young produced	12	10	12	13	12	12	12	12	11	11
	Adult mortality	L	L	L	L	L	L	L	L	L	L
6	Young produced	0	0	0	0	0	0	0	0	0	0
	Adult mortality	L	L	L	L	L	L	L	L	L	L
7	Young produced	17	17	15	19	14	16	15	15	16	18
Total young produced		33	32	31	36	29	32	31	31	31	33
Final Adult Mortality		L	L	L	L	L	L	L	L	L	L

Note: Adult mortality (L = live, D = dead), SB = split brood (single brood split between two days), CO = carry over (offspring carried over with adult during transfer).

Concentration:	
% Mortality:	0%
Mean Offspring/Female:	31.9
% Reduction from Control-1:	-7.4%

CONC: 43.2% ***Survival and Reproduction Data***

Day		Replicate number 1	2	3	4	5	6	7	8	9	10
1	Young produced	0	0	0	0	0	0	0	0	0	0
	Adult mortality	L	L	L	L	L	L	L	L	L	L
2	Young produced	0	0	0	0	0	0	0	0	0	0
	Adult mortality	L	L	L	L	L	L	L	L	L	L
3	Young produced	0	0	0	0	0	0	0	0	0	0
	Adult mortality	L	L	L	L	L	L	L	L	L	L
4	Young produced	6	4	5	4	4	4	3	4	4	4
	Adult mortality	L	L	L	L	L	L	L	L	L	L
5	Young produced	11	12	14	11	12	12	13	13	13	12
	Adult mortality	L	L	L	L	L	L	L	L	L	L
6	Young produced	0	0	0	0	0	0	0	0	0	0
	Adult mortality	L	L	L	L	L	L	L	L	L	L
7	Young produced	19	16	15	15	19	20	19	17	15	18
Total young produced		36	32	34	30	35	36	35	34	32	34
Final Adult Mortality		L	L	L	L	L	L	L	L	L	L

Note: Adult mortality (L = live, D = dead), SB = split brood (single brood split between two days), CO = carry over (offspring carried over with adult during transfer).

Concentration:	
% Mortality:	0%
Mean Offspring/Female:	33.8
% Reduction from Control-1:	-13.8%

ETS Environmental Testing Solutions, Inc.

Species: ***Ceriodaphnia dubia***
Client: **TVA / Sequoyah Nuclear Plant, Outfall 101** **Date:** 05-03-11
CONC: 86.4%

Survival and Reproduction Data

Day		Replicate number 1	2	3	4	5	6	7	8	9	10
1	Young produced	0	0	0	0	0	0	0	0	0	0
	Adult mortality	L	L	L	L	L	L	L	L	L	L
2	Young produced	0	0	0	0	0	0	0	0	0	0
	Adult mortality	L	L	L	L	L	L	L	L	L	L
3	Young produced	0	0	0	0	0	0	0	0	0	0
	Adult mortality	L	L	L	L	L	L	L	L	L	L
4	Young produced	5	4	5	5	4	4	6	4	6	5
	Adult mortality	L	L	L	L	L	L	L	L	L	L
5	Young produced	13	12	12	14	12	11	11	12	12	12
	Adult mortality	L	L	L	L	L	L	L	L	L	L
6	Young produced	0	0	0	0	0	0	0	0	0	0
	Adult mortality	L	L	L	L	L	L	L	L	L	L
7	Young produced	16	19	16	16	20	22	19	19	15	18
Total young produced		34	35	33	35	36	37	36	35	33	35
Final Adult Mortality		L	L	L	L	L	L	L	L	L	L

Note: Adult mortality (L = live, D = dead), SB = split brood (single brood split between two days), CO = carry over (offspring carried over with adult during transfer).

Concentration:	
% Mortality:	0%
Mean Offspring/Female:	34.9
% Reduction from Control-1:	-17.5%

CONC: 100%

Survival and Reproduction Data

Day		Replicate number 1	2	3	4	5	6	7	8	9	10
1	Young produced	0	0	0	0	0	0	0	0	0	0
	Adult mortality	L	L	L	L	L	L	L	L	L	L
2	Young produced	0	0	0	0	0	0	0	0	0	0
	Adult mortality	L	L	L	L	L	L	L	L	L	L
3	Young produced	0	0	0	0	0	0	0	0	0	0
	Adult mortality	L	L	L	L	L	L	L	L	L	L
4	Young produced	5	5	6	5	5	4	6	6	4	5
	Adult mortality	L	L	L	L	L	L	L	L	L	L
5	Young produced	14	12	13	13	12	14	12	12	12	12
	Adult mortality	L	L	L	L	L	L	L	L	L	L
6	Young produced	0	0	0	0	0	0	0	0	0	0
	Adult mortality	L	L	L	L	L	L	L	L	L	L
7	Young produced	19	19	17	19	18	20	18	18	20	19
Total young produced		38	36	36	37	35	38	36	36	36	36
Final Adult Mortality		L	L	L	L	L	L	L	L	L	L

Note: Adult mortality (L = live, D = dead), SB = split brood (single brood split between two days), CO = carry over (offspring carried over with adult during transfer).

Concentration:	
% Mortality:	0%
Mean Offspring/Female:	36.4
% Reduction from Control-1:	-22.6%

ETS Environmental Testing Solutions, Inc.

Species: ***Ceriodaphnia dubia***
Client: **TVA / Sequoyah Nuclear Plant, Outfall 101** **Date:** 05-03-11

CONTROL-2 ***Survival and Reproduction Data***

Day		Replicate number 1	2	3	4	5	6	7	8	9	10
1	Young produced	0	0	0	0	0	0	0	0	0	0
	Adult mortality	L	L	L	L	L	L	L	L	L	L
2	Young produced	0	0	0	0	0	0	0	0	0	0
	Adult mortality	L	L	L	L	L	L	L	L	L	L
3	Young produced	0	0	0	0	0	0	0	0	0	0
	Adult mortality	L	L	L	L	L	L	L	L	L	L
4	Young produced	4	3	5	3	3	3	4	3	4	4
	Adult mortality	L	L	L	L	L	L	L	L	L	L
5	Young produced	12	10	12	11	11	11	11	12	12	10
	Adult mortality	L	L	L	L	L	L	L	L	L	L
6	Young produced	0	0	0	0	0	0	0	0	0	0
	Adult mortality	L	L	L	L	L	L	L	L	L	L
7	Young produced	13	13	17	16	15	13	15	17	15	15
Total young produced		29	26	34	30	29	27	30	32	31	29
Final Adult Mortality		L	L	L	L	L	L	L	L	L	L
X for 3rd Broods		X	X	X	X	X	X	X	X	X	X

Note: Adult mortality (L = live, D = dead), SB = split brood (single brood split between two days), CO = carry over (offspring carried over with adult during transfer).

Concentration:	
% Mortality:	0%
Mean Offspring/Female:	29.7

CONC: **100% Intake** ***Survival and Reproduction Data***

Day		Replicate number 1	2	3	4	5	6	7	8	9	10
1	Young produced	0	0	0	0	0	0	0	0	0	0
	Adult mortality	L	L	L	L	L	L	L	L	L	L
2	Young produced	0	0	0	0	0	0	0	0	0	0
	Adult mortality	L	L	L	L	L	L	L	L	L	L
3	Young produced	0	0	0	0	0	0	0	0	0	0
	Adult mortality	L	L	L	L	L	L	L	L	L	L
4	Young produced	6	4	5	4	5	5	4	4	4	4
	Adult mortality	L	L	L	L	L	L	L	L	L	L
5	Young produced	13	12	14	11	12	12	10	13	13	11
	Adult mortality	L	L	L	L	L	L	L	L	L	L
6	Young produced	0	0	0	0	0	0	0	0	0	0
	Adult mortality	L	L	L	L	L	L	L	L	L	L
7	Young produced	18	21	16	20	20	18	18	19	21	21
Total young produced		37	37	35	35	37	35	32	36	38	36
Final Adult Mortality		L	L	L	L	L	L	L	L	L	L

Note: Adult mortality (L = live, D = dead), SB = split brood (single brood split between two days), CO = carry over (offspring carried over with adult during transfer).

Concentration: /	
% Mortality:	0%
Mean Offspring/Female:	35.8
% Reduction from Control-2:	-20.5%

TVA / Sequoyah Nuclear Plant, Outfall 101 - Non-treated
May 03-10, 2011

ETS
Environmental Testing Solutions, Inc.

Verification of *Ceriodaphnia* Reproduction Totals

Control-1

Day	Replicate number 1	2	3	4	5	6	7	8	9	10	Total
1	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0
4	4	3	4	4	5	4	4	4	4	4	40
5	10	11	11	12	11	12	12	10	12	12	113
6	0	0	0	0	0	0	0	0	0	0	0
7	14	14	16	15	15	15	14	15	13	13	144
Total	28	28	31	31	31	31	30	29	29	29	297

86.4%

Day	Replicate number 1	2	3	4	5	6	7	8	9	10	Total
1	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0
4	5	4	5	5	4	4	6	4	6	5	48
5	13	12	12	14	12	11	11	12	12	12	121
6	0	0	0	0	0	0	0	0	0	0	0
7	16	19	16	16	20	22	19	19	15	18	180
Total	34	35	33	35	36	37	36	35	33	35	349

10.8%

Day	Replicate number 1	2	3	4	5	6	7	8	9	10	Total
1	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0
4	3	5	5	4	4	5	4	4	4	6	44
5	13	10	13	12	10	12	12	10	11	11	114
6	0	0	0	0	0	0	0	0	0	0	0
7	17	15	16	16	13	16	14	14	15	15	151
Total	33	30	34	32	27	33	30	28	30	32	309

100%

Day	Replicate number 1	2	3	4	5	6	7	8	9	10	Total
1	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0
4	5	5	6	5	5	4	6	6	4	5	51
5	14	12	13	13	12	14	12	12	12	12	126
6	0	0	0	0	0	0	0	0	0	0	0
7	19	19	17	19	18	20	18	18	20	19	187
Total	38	36	36	37	35	38	36	36	36	36	364

21.6%

Day	Replicate number 1	2	3	4	5	6	7	8	9	10	Total
1	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0
4	4	5	4	4	3	4	4	4	4	4	40
5	12	10	12	13	12	12	12	12	11	11	117
6	0	0	0	0	0	0	0	0	0	0	0
7	17	17	15	19	14	16	15	15	16	18	162
Total	33	32	31	36	29	32	31	31	31	33	319

Control-2

Day	Replicate number 1	2	3	4	5	6	7	8	9	10	Total
1	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0
4	4	3	5	3	3	3	4	3	4	4	36
5	12	10	12	11	11	11	11	12	12	10	112
6	0	0	0	0	0	0	0	0	0	0	0
7	13	13	17	16	15	13	15	17	15	15	149
Total	29	26	34	30	29	27	30	32	31	29	297

43.2%

Day	Replicate number 1	2	3	4	5	6	7	8	9	10	Total
1	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0
4	6	4	5	4	4	4	3	4	4	4	42
5	11	12	14	11	12	12	13	13	13	12	123
6	0	0	0	0	0	0	0	0	0	0	0
7	19	16	15	15	19	20	19	17	15	18	173
Total	36	32	34	30	35	36	35	34	32	34	338

100% Intake

Day	Replicate number 1	2	3	4	5	6	7	8	9	10	Total
1	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0
4	6	4	5	4	5	5	4	4	4	4	45
5	13	12	14	11	12	12	10	13	13	11	121
6	0	0	0	0	0	0	0	0	0	0	0
7	18	21	16	20	20	18	18	19	21	21	192
Total	37	37	35	35	37	35	32	36	38	36	358

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Reviewed by: JH

TVA / Sequoyah Nuclear Plant, Outfall 101
Non-treated
May 03-10, 2011

ETS
Environmental Testing Solutions, Inc.

***Ceriodaphnia dubia* Chronic Whole Effluent Toxicity Test**
EPA-821-R-02-013, Method 1002.0

Quality Control
Verification of Data Entry, Calculations, and Statistical Analyses

Project number: 7068

Concentration (%)	Replicate number										Survival (%)	Average reproduction (offspring/female)	Coefficient of variation (%)	Percent reduction from control (%)
	1	2	3	4	5	6	7	8	9	10				
Control - 1	28	28	31	31	31	31	30	29	29	29	100	29.7	4.2	Not applicable
10.8%	33	30	34	32	27	33	30	28	30	32	100	30.9	7.4	-4.0
21.6%	33	32	31	36	29	32	31	31	31	33	100	31.9	5.8	-7.4
43.2%	36	32	34	30	35	36	35	34	32	34	100	33.8	5.7	-13.8
86.4%	34	35	33	35	36	37	36	35	33	35	100	34.9	3.7	-17.5
100%	38	36	36	37	35	38	36	36	36	36	100	36.4	2.7	-22.6
Control - 2	29	26	34	30	29	27	30	32	31	29	100	29.7	7.8	Not applicable
100% Intake	37	37	35	35	37	35	32	36	38	36	100	35.8	4.7	-20.5

Outfall 101:
Dunnett's MSD value: 1.698
PMSD: 5.7

Intake:
Dunnett's MSD value: 1.569
PMSD: 5.3

MSD = Minimum Significant Difference
PMSD = Percent Minimum Significant Difference
PMSD is a measure of test precision. The PMSD is the minimum percent difference between the control and treatment that can be declared statistically significant in a whole effluent toxicity test.

Lower PMSD bound determined by USEPA (10th percentile) = 13%.
Upper PMSD bound determined by USEPA (90th percentile) = 47%.
Lower and upper PMSD bounds were determined from the 10th and 90th percentile, respectively, of PMSD data from EPA's WET Interlaboratory Variability Study (USEPA, 2001a; USEPA, 2001b).

USEPA. 2000. Understanding and Accounting for Method Variability in Whole Effluent Toxicity Applications Under the National Pollutant Discharge Elimination Program. EPA-833-R-00-003. US Environmental Protection Agency, Cincinnati, OH.

USEPA. 2001a, 2001b. Final Report: Interlaboratory Variability Study of EPA Short-term Chronic and Acute Whole Effluent Toxicity Test Methods, Volumes 1 and 2-Appendix. EPA-821-B-01-004 and EPA-821-B-01-005. US Environmental Protection Agency, Cincinnati, OH.

File: sqn101_050311data.xlsx
Table populated from associated "Verification of Ceriodaphnia Reproduction Totals" spreadsheet.
Spreadsheet entered by: J. Sumner
Reviewed by: JH

TVA / Sequoyah Nuclear Plant, Outfall 101
Non-treated
May 03-10, 2011
Statistical Analyses

ETS Environmental Testing Solutions, Inc.

Ceriodaphnia Survival and Reproduction Test-Reproduction

Start Date:	5/3/2011	Test ID:	CdFRCR	Sample ID:	TVA / Sequoyah Nuclear Plant, Outfall 101
End Date:	5/10/2011	Lab ID:	ETS-Envir. Testing Sol.	Sample Type:	DMR-Discharge Monitoring Report
Sample Date:		Protocol:	FWCHR-EPA-821-R-02-013	Test Species:	CD-Ceriodaphnia dubia
Comments:					

Conc-%	1	2	3	4	5	6	7	8	9	10
Control-1	28.000	28.000	31.000	31.000	31.000	31.000	30.000	29.000	29.000	29.000
Control-2	29.000	26.000	34.000	30.000	29.000	27.000	30.000	32.000	31.000	29.000
10.8	33.000	30.000	34.000	32.000	27.000	33.000	30.000	28.000	30.000	32.000
21.6	33.000	32.000	31.000	36.000	29.000	32.000	31.000	31.000	31.000	33.000
43.2	36.000	32.000	34.000	30.000	35.000	36.000	35.000	34.000	32.000	34.000
86.4	34.000	35.000	33.000	35.000	36.000	37.000	36.000	35.000	33.000	35.000
100	38.000	36.000	36.000	37.000	35.000	38.000	36.000	36.000	36.000	36.000
Intake	37.000	37.000	35.000	35.000	37.000	35.000	32.000	36.000	38.000	36.000

			Transform: Untransformed						1-Tailed		Isotonic	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD	Mean	N-Mean
Control-1	29.700	1.0000	29.700	28.000	31.000	4.214	10	*			32.933	1.0000
Control-2	29.700	1.0000	29.700	26.000	34.000	7.784	10					
10.8	30.900	1.0404	30.900	27.000	34.000	7.388	10	-1.616	2.287	1.698	32.933	1.0000
21.6	31.900	1.0741	31.900	29.000	36.000	5.809	10	-2.963	2.287	1.698	32.933	1.0000
43.2	33.800	1.1380	33.800	30.000	36.000	5.717	10	-5.523	2.287	1.698	32.933	1.0000
86.4	34.900	1.1751	34.900	33.000	37.000	3.687	10	-7.005	2.287	1.698	32.933	1.0000
100	36.400	1.2256	36.400	35.000	38.000	2.654	10	-9.025	2.287	1.698	32.933	1.0000
Intake	35.800	1.2054	35.800	32.000	38.000	4.711	10					

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Kolmogorov D Test indicates normal distribution (p > 0.01)	0.829582155	1.035	-0.138685175	0.300894097
Bartlett's Test indicates equal variances (p = 0.13)	8.592660904	15.08631706		
The control means are not significantly different (p = 1.00)	0	2.100923666		

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU	MSDu	MSDp	MSB	MSE	F-Prob	df
Dunnett's Test	100	>100		1	1.697549464	0.057156548	64.58666667	2.755555556	1.9E-12	5, 54
Treatments vs Control-1										

Linear Interpolation (200 Resamples)

Point	%	SD	95% CL	Skew
IC05	>100			
IC10	>100			
IC15	>100			
IC20	>100			
IC25	>100			
IC40	>100			
IC50	>100			

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Reviewed by: JL

TVA / Sequoyah Nuclear Plant, Outfall 101 - Intake
Non-treated
May 03-10, 2011

ETS
Environmental Testing Solutions, Inc.

Statistical Analyses

Ceriodaphnia Survival and Reproduction Test-Reproduction

Start Date:	5/3/2011	Test ID:	CdFRCR	Sample ID:	TVA / Sequoyah Nuclear Plant, Outfall 101 - Intake
End Date:	5/10/2011	Lab ID:	ETS-Envir. Testing Sol.	Sample Type:	DMR-Discharge Monitoring Report
Sample Date:		Protocol:	FWCHR-EPA-821-R-02-013	Test Species:	CD-Ceriodaphnia dubia
Comments:					

Conc-%	1	2	3	4	5	6	7	8	9	10
Control-1	28.000	28.000	31.000	31.000	31.000	31.000	30.000	29.000	29.000	29.000
Control-2	29.000	26.000	34.000	30.000	29.000	27.000	30.000	32.000	31.000	29.000
10.8	33.000	30.000	34.000	32.000	27.000	33.000	30.000	28.000	30.000	32.000
21.6	33.000	32.000	31.000	36.000	29.000	32.000	31.000	31.000	31.000	33.000
43.2	36.000	32.000	34.000	30.000	35.000	36.000	35.000	34.000	32.000	34.000
86.4	34.000	35.000	33.000	35.000	36.000	37.000	36.000	35.000	33.000	35.000
100	38.000	36.000	36.000	37.000	35.000	38.000	36.000	36.000	36.000	36.000
Intake	37.000	37.000	35.000	35.000	37.000	35.000	32.000	36.000	38.000	36.000

			Transform: Untransformed						1-Tailed	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
Control-1	29.700	1.0000	29.700	28.000	31.000	4.214	10			
Control-2	29.700	1.0000	29.700	26.000	34.000	7.784	10	*		
10.8	30.900	1.0404	30.900	27.000	34.000	7.388	10			
21.6	31.900	1.0741	31.900	29.000	36.000	5.809	10			
43.2	33.800	1.1380	33.800	30.000	36.000	5.717	10			
86.4	34.900	1.1751	34.900	33.000	37.000	3.687	10			
100	36.400	1.2256	36.400	35.000	38.000	2.654	10			
Intake	35.800	1.2054	35.800	32.000	38.000	4.711	10	-6.741	1.734	1.569

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.949571669	0.868	-0.13778615	0.558140392
F-Test indicates equal variances (p = 0.36)	1.87890625	6.54108572		
The control means are not significantly different (p = 1.00)	0	2.100923666		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates no significant differences Treatments vs Control-2	1.569196635	0.052834904	186.05	4.094444444	2.6E-06	1, 18

File: sqn101_050311data.xlsx
Entered by: J. Sumner
Reviewed by: JH

TVA / Sequoyah Nuclear Plant, Outfall 101 - Non-treated
May 03-10, 2011

Environmental Testing Solutions, Inc.

Ceriodaphnia dubia Chronic Whole Effluent Toxicity Test
EPA-821-R-02-013, Method 1002.0

Daily Chemical Analyses

Project number: 7068

Concentration	Parameter	Day 0		Day 1		Day 2		Day 3		Day 4		Day 5		Day 6	
		Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Control	pH (SU)	7.84	7.78	7.78	7.90	7.89	7.86	7.81	7.86	7.80	7.90	7.80	7.81	7.73	7.77
	DO (mg/L)	7.4	7.7	7.5	7.4	7.5	7.8	7.6	7.8	7.7	8.0	7.7	7.7	7.6	7.8
	Conductivity (µmhos/cm)	333		332		305		314		306		332		322	
	Alkalinity (mg/L $CaCO_3$)	59				59				58					
	Hardness (mg/L $CaCO_3$)	91				89				91					
	Temperature (°C)	24.9	24.7	24.9	24.8	24.9	24.9	24.9	25.0	24.9	24.9	24.8	25.2	24.9	25.2
10.8%	pH (SU)	7.85	7.79	7.80	7.90	7.88	7.85	7.86	7.86	7.82	7.71	7.93	7.81	7.80	7.80
	DO (mg/L)	7.8	7.6	7.7	7.5	7.5	7.7	8.2	7.8	7.7	8.0	7.9	7.8	7.8	7.8
	Conductivity (µmhos/cm)	310		311		283		288		290		307		303	
	Temperature (°C)	25.0	24.9	25.0	24.9	24.9	25.0	25.0	24.8	25.0	25.2	24.9	25.1	25.0	25.2
22.6%	pH (SU)	7.84	7.78	7.79	7.90	7.87	7.86	7.85	7.87	7.84	7.91	7.93	7.81	7.82	7.77
	DO (mg/L)	7.7	7.6	7.7	7.6	7.9	7.8	8.1	7.8	7.8	8.0	8.1	7.8	7.9	7.8
	Conductivity (µmhos/cm)	292		291		272		275		275		284		285	
	Temperature (°C)	25.0	24.9	25.0	24.9	24.9	25.0	25.0	24.8	25.0	25.2	24.9	25.1	25.0	25.0
43.2%	pH (SU)	7.77	7.76	7.77	7.90	7.86	7.86	7.84	7.86	7.84	7.90	7.92	7.83	7.81	7.78
	DO (mg/L)	7.7	7.6	7.7	7.6	7.8	7.8	8.0	7.8	7.8	8.0	8.1	7.8	7.8	7.7
	Conductivity (µmhos/cm)	253		257		241		242		243		254		253	
	Temperature (°C)	25.0	25.1	25.0	24.9	25.0	25.1	25.0	24.8	25.0	25.0	24.9	25.1	25.0	25.1
86.4%	pH (SU)	7.72	7.74	7.73	7.86	7.80	7.86	7.82	7.86	7.82	7.93	7.92	7.83	7.79	7.78
	DO (mg/L)	7.8	7.6	7.7	7.6	7.8	7.8	8.0	7.7	7.8	8.0	8.0	7.7	7.8	7.9
	Conductivity (µmhos/cm)	179		183		185		187		187		207		189	
	Temperature (°C)	25.0	24.8	25.0	24.9	25.0	24.9	25.1	24.9	25.0	25.1	24.9	24.9	25.1	25.2
100%	pH (SU)	7.71	7.72	7.72	7.85	7.76	7.86	7.81	7.84	7.81	7.93	7.90	7.83	7.79	7.77
	DO (mg/L)	7.8	7.5	7.8	7.6	8.0	7.8	8.0	7.7	7.8	8.0	8.1	7.8	7.7	8.0
	Conductivity (µmhos/cm)	157		159		158		158		166		174		171	
	Alkalinity (mg/L $CaCO_3$)	54				59				61					
	Hardness (mg/L $CaCO_3$)	55				63				71					
	Total Residual Chlorine (mg/L)	<0.10				<0.10				<0.10					
	Temperature (°C)	25.0	24.8	25.0	24.8	25.1	25.2	25.2	24.9	25.1	24.9	24.9	24.9	25.1	25.2
100% Intake	pH (SU)	7.69	7.71	7.72	7.83	7.75	7.84	7.81	7.85	7.82	7.91	7.92	7.83	7.78	7.77
	DO (mg/L)	7.8	7.6	7.8	7.7	8.0	7.8	8.0	7.8	7.9	8.1	8.1	7.7	7.8	7.9
	Conductivity (µmhos/cm)	155		157		157		159		170		178		172	
	Alkalinity (mg/L $CaCO_3$)	55				61				61					
	Hardness (mg/L $CaCO_3$)	55				63				67					
	Total Residual Chlorine (mg/L)	<0.10				<0.10				<0.10					
	Temperature (°C)	25.0	24.9	24.9	24.8	24.9	25.1	24.9	24.8	24.9	24.9	24.9	24.9	25.1	25.2

File: sqn101_050311chem.xls
Entered by: S. Evans
Reviewed by: [illegible]

ETS Environmental Testing Solutions, Inc.

Species: ***Ceriodaphnia dubia*** **Date:** 05-03-11

Client: **TVA / Sequoyah Nuclear Plant, Outfall 101**

Daily Chemistry:

		Day					
		0		1		2	
	Analyst	MCM.	MHF	MHF	CDJ	CDJ	CDJ
Concentration	Parameter						
CONTROL	pH (S.U.)	7.84	7.78	7.78	7.90	7.89	7.86
	DO (mg/L)	7.4	7.7	7.5	7.4	7.5	7.8
	Conductivity (µmhos/cm)	333		332		305	
	Alkalinity (mg $CaCO_3$/L)	59				59	
	Hardness (mg $CaCO_3$/L)	91				89	
	Temperature (°C)	24.9	24.7	24.9	24.8	24.9	24.9
10.8%	pH (S.U.)	7.85	7.79	7.80	7.90	7.88	7.85
	DO (mg/L)	7.8	7.6	7.7	7.5	7.5	7.7
	Conductivity (µmhos/cm)	310		311		283	
	Temperature (°C)	25.0	24.9	25.0	24.9	24.9	25.0
21.6%	pH (S.U.)	7.84	7.78	7.79	7.90	7.87	7.86
	DO (mg/L)	7.7	7.6	7.7	7.6	7.9	7.8
	Conductivity (µmhos/cm)	292		291		272	
	Temperature (°C)	25.0	24.9	25.0	24.9	24.9	25.0
43.2%	pH (S.U.)	7.77	7.76	7.77	7.90	7.86	7.86
	DO (mg/L)	7.7	7.6	7.7	7.6	7.8	7.8
	Conductivity (µmhos/cm)	253		257		241	
	Temperature (°C)	25.0	25.1	25.0	24.9	25.0	25.1
86.4%	pH (S.U.)	7.72	7.74	7.73	7.86	7.80	7.86
	DO (mg/L)	7.8	7.6	7.7	7.6	7.8	7.8
	Conductivity (µmhos/cm)	179		183		185	
	Temperature (°C)	25.0	24.8	25.0	24.9	25.0	24.9
100%	pH (S.U.)	7.71	7.72	7.72	7.85	7.76	7.86
	DO (mg/L)	7.8	7.5	7.8	7.6	8.0	7.8
	Conductivity (µmhos/cm)	157		159		158	
	Alkalinity (mg $CaCO_3$/L)	54				59	
	Hardness (mg $CaCO_3$/L)	55				63	
	TR chlorine (mg/L)	<0.10				<0.10	
	Temperature (°C)	25.0	24.8	25.0	24.8	25.1	25.2
100% Intake	pH (S.U.)	7.69	7.71	7.72	7.83	7.75	7.84
	DO (mg/L)	7.8	7.6	7.8	7.7	8.0	7.8
	Conductivity (µmhos/cm)	155		157		157	
	Alkalinity (mg $CaCO_3$/L)	55				61	
	Hardness (mg $CaCO_3$/L)	55				63	
	TR chlorine (mg/L)	<0.10				<0.10	
	Temperature (°C)	25.0	24.9	24.9	24.8	24.9	25.1
		Initial	Final	Initial	Final	Initial	Final

ETS Environmental Testing Solutions, Inc.

Species: ***Ceriodaphnia dubia***
Client: **TVA / Sequoyah Nuclear Plant, Outfall 101** **Date:** 05-03-11

		Day							
		3		4		5		6	
	Analyst	CDT	MHF	MHP	BSL	BSL	LAB	LAB	CDT
Concen-tration	Parameter								
CONTROL	pH (S.U.)	7.81	7.86	7.80	7.90	7.80	7.81	7.73	7.77
	DO (mg/L)	7.6	7.8	7.7	8.0	7.7	7.7	7.6	7.8
	Conductivity (µmhos/cm)	314		306		332		322	
	Alkalinity (mg $CaCO_3$/L)			58					
	Hardness (mg $CaCO_3$/L)			91					
	Temperature (°C)	24.9	25.0	24.9	24.9	24.8	25.2	24.9	25.2
10.8%	pH (S.U.)	7.86	7.86	7.82	7.91	7.93	7.81	7.80	7.80
	DO (mg/L)	8.2	7.8	7.7	8.0	7.9	7.8	7.8	7.8
	Conductivity (µmhos/cm)	288		290		307		303	
	Temperature (°C)	25.0	24.8	25.0	25.2	24.9	25.1	25.0	25.2
21.6%	pH (S.U.)	7.85	7.87	7.84	7.91	7.93	7.81	7.82	7.77
	DO (mg/L)	8.1	7.8	7.8	8.0	8.1	7.8	7.9	7.8
	Conductivity (µmhos/cm)	275		275		284		285	
	Temperature (°C)	25.0	24.8	25.0	25.2	24.9	25.1	25.0	25.0
43.2%	pH (S.U.)	7.84	7.86	7.84	7.90	7.92	7.83	7.81	7.78
	DO (mg/L)	8.0	7.8	7.8	8.0	8.1	7.8	7.8	7.7
	Conductivity (µmhos/cm)	242		243		254		253	
	Temperature (°C)	25.0	24.8	25.0	25.0	24.9	25.1	25.0	25.1
86.4%	pH (S.U.)	7.82	7.86	7.82	7.93	7.92	7.83	7.79	7.78
	DO (mg/L)	8.0	7.7	7.8	8.0	8.0	7.7	7.8	7.9
	Conductivity (µmhos/cm)	187		187		207		189	
	Temperature (°C)	25.1	24.9	25.0	25.1	24.9	24.9	25.1	25.2
100%	pH (S.U.)	7.81	7.84	7.81	7.93	7.90	7.83	7.79	7.77
	DO (mg/L)	8.0	7.7	7.8	8.0	8.1	7.8	7.7	8.0
	Conductivity (µmhos/cm)	158		166		174		171	
	Alkalinity (mg $CaCO_3$/L)			61					
	Hardness (mg $CaCO_3$/L)			71					
	TR Chlorine (mg/L)			<0.10					
	Temperature (°C)	25.2	24.9	25.1	24.9	24.9	24.9	25.1	25.2
100% Intake	pH (S.U.)	7.81	7.85	7.82	7.91	7.92	7.83	7.78	7.77
	DO (mg/L)	8.0	7.8	7.9	8.1	8.1	7.7	7.8	7.9
	Conductivity (µmhos/cm)	159		170		178		172	
	Alkalinity (mg $CaCO_3$/L)			61					
	Hardness (mg $CaCO_3$/L)			67					
	TR chlorine (mg/L)			<0.10					
	Temperature (°C)	24.9	24.8	24.9	24.9	24.9	24.9	25.1	25.2
		Initial	Final	Initial	Final	Initial	Final	Initial	Final

ETS
Environmental Testing Solutions, Inc.

Chronic Whole Effluent Toxicity Test (EPA-821-R-02-013 Method 1000.0)

Species: *Pimephales promelas*

Client: Tennessee Valley Authority
Facility: Sequoyah Nuclear Plant
NPDES #: ~~TN0020168~~ TN 0026450
Project #: 7068

County: ~~Rhea~~ HAMILTON
Outfall: 101

Dilution preparation information:						*Comments:*
Dilution prep (%)	10.8	21.6	43.2	86.4	100	Each concentration was UV-treated
Effluent volume (mL)	270	540	1080	2160	2500	for 2 minutes to remove pathogenic
Diluent volume (mL)	2230	1960	1420	340	0	Interferences.
Total volume (mL)	2500	2500	2500	2500	2500	

Test organism information:		*Test information:*	
Organism age:	21.75 HOURS OLD	Randomizing template:	BLUE
Date and times organisms were born between:	05-02-11 1600	Incubator number and shelf location:	3B
Organism source:	ATOX BATCH B 05-02-11	*Artemia* CHM number:	CHM593
		Drying information for weight determination:	
Transfer bowl information:	pH = 7.68 S.U. Temperature = 24.2 °C	Date / Time in oven:	05-10-11 1410
		Initial oven temperature:	60°C
Average transfer volume:	0.1776 ml	Date / Time out of oven:	05-11-11 1415
		Final oven temperature:	60°C
		Total drying time:	24 HOURS

Daily feeding and renewal information:

Day	Date	Morning feeding		Afternoon feeding		Test initiation, renewal, or termination		Sample numbers used		MHSW batch used
		Time	Analyst	Time	Analyst	Time	Analyst	Outfall 101	Intake	
0	05-03-11	—	—	1630	JH	1345	JH	110502.01	110502.02	05-02-11 A
1	05-04-11	0900	JH	1500	JH	1259	JH	110502.01	110502.02	05-02-11 A
2	05-05-11	0900	JH	1500	JH	1300	JH	110504.21	110504.22	05-02-11 B
3	05-06-11	0900	JH	1500	JH	1308	JH	110504.21	110504.22	05-02-11 B
4	05-07-11	0900	JH	1500	JH	1310	JH	110506.15	110506.16	05-05-11
5	05-08-11	0800	JH	1400	JH	1314	JH	110506.15	110506.16	05-05-11
6	05-09-11	0800	JH	1400	JH	1311	JH	110506.15	110506.16	05-05-11
7	05-10-11					1342	JH			

Control information:		Acceptance criteria	*Summary of test endpoints:*	
% Mortality:	0%	≤ 20%	7-day LC_{50}	>100%
Average weight per initial larvae:	0.831		NOEC	100%
Average weight per surviving larvae:	0.831	≥ 0.25mg/larvae	LOEC	>100%
			ChV	>100%
			IC_{25}	>100%

ETS
Environmental Testing Solutions, Inc.

Species: ***Pimephales promelas***
Client: **TVA / Sequoyah Nuclear Plant, Outfall 101, UV-treated** **Date:** 05-03-11

Survival and Growth Data

Day	CONTROL				10.8%				21.6%			
	A	B	C	D	E	F	G	H	I	J	K	L
0	10	10	10	10	10	10	10	10	10	10	10	10
1	10	10	10	10	10	10	10	10	10	10	10	10
2	10	10	10	10	10	10	10	10	10	10	10	10
3	10	10	10	10	10	10	10	10	10	10	10	10
4	10	10	10	10	10	10	10	10	10	10	10	10
5	10	10	10	10	10	10	10	10	10	10	10	10
6	10	10	10	10	10	10	10	10	10	10	10	10
7	10 sm	10 lg	10	10	10	10	10	10	10	10	10	10
A = Pan weight (mg) Tray color code:: Magenta Analyst: MHf Date: 05.04.11	14.07	13.19	12.59	13.38	15.09	13.35	13.24	14.87	14.68	14.06	13.16	13.14
B = Pan + Larvae weight (mg) Analyst: MHf Date: 05.14.11	21.21	22.27	21.12	21.87	24.10	21.48	21.91	23.72	23.64	21.99	20.95	21.43
C = Larvae weight (mg) = B – A Hand calculated. Analyst: [illegible]	7.14	9.08	8.53	8.49	9.01	8.13	8.67	~~8.85~~ 8.85	8.96	7.93	7.79	8.29
Weight per initial number of larvae (mg) = C / Initial number of larvae Hand calculated. Analyst: [illegible]	0.714	0.908	0.853	0.849	0.901	0.813	0.867	0.885	0.896	0.793	0.779	0.829
Average weight per initial number of larvae (mg) / Percent reduction from control (%)	0.831				0.867		-4.3% ~~-4.4%~~		0.824		0.87.	

Comment codes: c = clear, d = dead, fg = fungus, k = killed, m = missing, sk = sick, sm = unusually small, lg = unusually large, d&r = decanted and returned, w = wounded.

Comments:

ETS
Environmental Testing Solutions, Inc.

Species: ***Pimephales promelas***
Client: **TVA / Sequoyah Nuclear Plant, Outfall 101, UV-treated** **Date:** 05-03-11

Survival and Growth Data

Day	43.2%				86.4%				100%			
	M	N	O	P	Q	R	S	T	U	V	W	X
0	10	10	10	10	10	10	10	10	10	10	10	10
1	10	10	10	10	10	10	10	10	10	10	10	10
2	10	10	10	10	10	10	10	10	10	10	10	10
3	10	10	10	10	10	10	10	10	10	10	10	9 d
4	10	10	10	10	10	10	10	10	10	10	10	9
5	10	10	10	9 d	10	9 d	10	10	10	10	10	9
6	10	10	10	9	10	9	10	10	10	10	10	9
7	10	10	10	9	10	9	10	10	10	10	10 sm	9
A = Pan weight (mg) Tray color code:: Magenta Analyst: MHG Date: 05-04-11	14.76	14.42	13.76	14.39	13.83	15.23	14.26	14.64	12.55	11.96	14.80	14.85
B = Pan + Larvae weight (mg) Analyst: MHG Date: 05-14-11	23.55	22.94	22.23	22.12	22.33	22.93	22.00	22.61	20.71	19.98	21.40	23.25
C = Larvae weight (mg) = B – A Hand calculated. Analyst: [illegible]	8.79	8.52	8.47	7.73	8.50	7.70	7.74	7.97	8.16	8.02	6.60	8.40
Weight per initial number of larvae (mg) = C / Initial number of larvae Hand calculated. Analyst: [illegible]	0.879	0.852	0.847	0.773	0.850	0.770	0.774	0.797	0.816	0.802	0.660	0.840
Average weight per initial number of larvae (mg) / Percent reduction from control (%)	0.838		-0.8%		0.798		4.0%		0.780		6.2%	

Comment codes: c = clear, d = dead, fg = fungus, k = killed, m = missing, sk = sick, sm = unusually small, lg = unusually large, d&r = decanted and returned, w = wounded.

Comments:

ETS
Environmental Testing Solutions, Inc.

Species: ***Pimephales promelas***
Client: **TVA / Sequoyah Nuclear Plant, Outfall 101, UV-treated** **Date:** 05-03-11

Survival and Growth Data

Day	100% Intake			
	Y	Z	AA	BB
0	10	10	10	10
1	10	10	10	10
2	10	10	10	10
3	10	10	10	10
4	10	10	10	10
5	10	10	10	10
6	10	10	10	10
7	10 lg	10	10 lg	9 d
A = Pan weight (mg) Tray color code:: MAGENTA Analyst: MHC Date: 05-04-11	13.26	13.84	13.58	14.80
B = Pan + Larvae weight (mg) Analyst: MHC Date: 05-14-11	22.74	22.47	22.83	22.79
C = Larvae weight (mg) = B – A Hand calculated. Analyst: [illegible]	9.48	8.63	9.25	7.99
Weight per initial number of larvae (mg) = C / Initial number of larvae Hand calculated. Analyst: [illegible]	0.948	0.863	0.925	0.799
Average weight per initial number of larvae (mg)	0.889			
Percent reduction from control (%)			-6.97	

Comment codes: c = clear, d = dead, fg = fungus, k = killed, m = missing, sk = sick, sm = unusually small, lg = unusually large, d&r = decanted and returned, w = wounded.

Comments:

TVA / Sequoyah Nuclear Plant, Outfall 101
UV-treated
May 03-10, 2011

Environmental Testing Solutions, Inc.

***Pimephales promelas* Chronic Whole Effluent Toxicity Test**
EPA-821-R-02-013, Method 1000.0

Quality Control
Verification of Data Entry, Calculations, and Statistical Analyses

Project number: 7068

Concentration (%)	Replicate	Initial number of larvae	Final number of larvae	A = Pan weight (mg)	B = Pan + Larvae weight (mg)	Larvae weight (mg) = A - B	Not for Compliance Assessment, Internal Laboratory QC: Weight / Surviving number of larvae (mg)	Mean weight / Surviving number of larvae (mg)	Coefficient of variation (Mean weight per surviving number of larvae) (%)	Weight / Initial number of larvae (mg)	Mean survival (%)	Mean weight / Initial number of larvae (mg)	Coefficient of variation (Mean weight per initial number of larvae) (%)	Percent reduction from control (%)
Control	A	10	10	14.07	21.21	7.14	0.714	0.831	9.9	0.714	100.0	0.831	9.9	Not applicable
	B	10	10	13.19	22.27	9.08	0.908			0.908				
	C	10	10	12.59	21.12	8.53	0.853			0.853				
	D	10	10	13.38	21.87	8.49	0.849			0.849				
10.8%	E	10	10	15.09	24.10	9.01	0.901	0.867	4.4	0.901	100.0	0.867	4.4	-4.3
	F	10	10	13.35	21.48	8.13	0.813			0.813				
	G	10	10	13.24	21.91	8.67	0.867			0.867				
	H	10	10	14.87	23.72	8.85	0.885			0.885				
21.6%	I	10	10	14.68	23.64	8.96	0.896	0.824	6.3	0.896	100.0	0.824	6.3	0.8
	J	10	10	14.06	21.99	7.93	0.793			0.793				
	K	10	10	13.16	20.95	7.79	0.779			0.779				
	L	10	10	13.14	21.43	8.29	0.829			0.829				
43.2%	M	10	10	14.76	23.55	8.79	0.879	0.859	1.6	0.879	97.5	0.838	5.4	-0.8
	N	10	10	14.42	22.94	8.52	0.852			0.852				
	O	10	10	13.76	22.23	8.47	0.847			0.847				
	P	10	9	14.39	22.12	7.73	0.859			0.773				
86.4%	Q	10	10	13.83	22.33	8.50	0.850	0.819	4.9	0.850	97.5	0.798	4.6	4.0
	R	10	9	15.23	22.93	7.70	0.856			0.770				
	S	10	10	14.26	22.00	7.74	0.774			0.774				
	T	10	10	14.64	22.61	7.97	0.797			0.797				
100%	U	10	10	12.55	20.71	8.16	0.816	0.803	13.9	0.816	97.5	0.780	10.4	6.2
	V	10	10	11.96	19.98	8.02	0.802			0.802				
	W	10	10	14.80	21.40	6.60	0.660			0.660				
	X	10	9	14.85	23.25	8.40	0.933			0.840				
100% Intake	Y	10	10	13.26	22.74	9.48	0.948	0.911	3.4	0.948	97.5	0.889	7.4	-6.9
	Z	10	10	13.84	22.67	8.83	0.883			0.883				
	AA	10	10	13.58	22.83	9.25	0.925			0.925				
	BB	10	9	14.80	22.79	7.99	0.888			0.799				

Outfall 101:
Dunnett's MSD value: 0.1009
PMSD: 12.1

Intake:
Dunnett's MSD value: 0.1024
PMSD: 12.3

MSD = Minimum Significant Difference
PMSD = Percent Minimum Significant Difference
PMSD is a measure of test precision. The PMSD is the minimum percent difference between the control and treatment that can be declared statistically significant in a whole effluent toxicity test.

Lower PMSD bound determined by USEPA (10th percentile) = 12%.
Upper PMSD bound determined by USEPA (90th percentile) = 30%.

Lower and upper PMSD bounds were determined from the 10th and 90th percentile, respectively, of PMSD data from EPA's WET Interlaboratory Variability Study (USEPA, 2001a; USEPA, 2001b).

USEPA. 2001a, 2001b. Final Report: Interlaboratory Variability Study of EPA Short-term Chronic and Acute Whole Effluent Toxicity Test Methods, Volumes 1 and 2-Appendix. EPA-821-B-01-004 and EPA-821-B-01-005. US Environmental Protection Agency, Cincinnati, OH.

File: sqn101_050311data-uv.xlsx
Entered by: J. Sumner
Reviewed by: JK

TVA / Sequoyah Nuclear Plant, Outfall 101
UV-treated
May 03-10, 2011
Statistical Analyses

ETS
Environmental Testing Solutions, Inc.

Larval Fish Growth and Survival Test-7 Day Growth

Start Date:	5/3/2011	Test ID:	PpFRCR	Sample ID:	TVA / Sequoyah Nuclear Plant, Outfall 101
End Date:	5/10/2011	Lab ID:	ETS-Envir. Testing Sol.	Sample Type:	DMR-Discharge Monitoring Report
Sample Date:		Protocol:	FWCHR-EPA-821-R-02-013	Test Species:	PP-Pimephales promelas
Comments:					

Conc-%	1	2	3	4
D-Control	0.7140	0.9080	0.8530	0.8490
10.8	0.9010	0.8130	0.8670	0.8850
21.6	0.8960	0.7930	0.7790	0.8290
43.2	0.8790	0.8520	0.8470	0.7730
86.4	0.8500	0.7700	0.7740	0.7970
100	0.8160	0.8020	0.6600	0.8400
Intake	0.9480	0.8830	0.9250	0.7990

			Transform: Untransformed						1-Tailed		Isotonic	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD	Mean	N-Mean
D-Control	0.8310	1.0000	0.8310	0.7140	0.9080	9.930	4				0.8488	1.0000
10.8	0.8665	1.0427	0.8665	0.8130	0.9010	4.417	4	-0.848	2.410	0.1009	0.8488	1.0000
21.6	0.8243	0.9919	0.8243	0.7790	0.8960	6.341	4	0.161	2.410	0.1009	0.8310	0.9791
43.2	0.8378	1.0081	0.8378	0.7730	0.8790	5.419	4	-0.161	2.410	0.1009	0.8310	0.9791
86.4	0.7978	0.9600	0.7978	0.7700	0.8500	4.614	4	0.795	2.410	0.1009	0.7978	0.9399
100	0.7795	0.9380	0.7795	0.6600	0.8400	10.417	4	1.231	2.410	0.1009	0.7795	0.9184
Intake	0.8888	1.0695	0.8888	0.7990	0.9480	7.382	4					

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.93555665	0.884	-0.827227683	0.41674318
Bartlett's Test indicates equal variances (p = 0.63)	3.45981002	15.0863171		

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU	MSDu	MSDp	MSB	MSE	F-Prob	df
Dunnett's Test	100	>100		1	0.10085134	0.12136142	0.00376394	0.00350235	0.406950474	5, 18
Treatments vs D-Control										

Linear Interpolation (200 Resamples)

Point	%	SD	95% CL(Exp)	Skew
IC05	75.275			
IC10	>100			
IC15	>100			
IC20	>100			
IC25	>100			
IC40	>100			
IC50	>100			

File: sqn101_050311data-uv.xlsx
Entered by: J. Sumner
Reviewed by: _____

TVA / Sequoyah Nuclear Plant, Outfall 101 - Intake
UV-treated
May 03-10, 2011

ETS
Environmental Testing Solutions, Inc.

Statistical Analyses

Larval Fish Growth and Survival Test-7 Day Growth

Start Date:	5/3/2011	Test ID:	PpFRCR	Sample ID:	TVA / Sequoyah Nuclear Plant, Outfall 101
End Date:	5/10/2011	Lab ID:	ETS-Envir. Testing Sol.	Sample Type:	DMR-Discharge Monitoring Report
Sample Date:		Protocol:	FWCHR-EPA-821-R-02-013	Test Species:	PP-Pimephales promelas
Comments:	Non-treated				

Conc-%	1	2	3	4
D-Control	0.7140	0.9080	0.8530	0.8490
10.8	0.9010	0.8130	0.8670	0.8850
21.6	0.8960	0.7930	0.7790	0.8290
43.2	0.8790	0.8520	0.8470	0.7730
86.4	0.8500	0.7700	0.7740	0.7970
100	0.8160	0.8020	0.6600	0.8400
Intake	0.9480	0.8830	0.9250	0.7990

			Transform: Untransformed						1-Tailed	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
D-Control	0.8310	1.0000	0.8310	0.7140	0.9080	9.930	4			
10.8	0.8665	1.0427	0.8665	0.8130	0.9010	4.417	4			
21.6	0.8243	0.9919	0.8243	0.7790	0.8960	6.341	4			
43.2	0.8378	1.0081	0.8378	0.7730	0.8790	5.419	4			
86.4	0.7978	0.9600	0.7978	0.7700	0.8500	4.614	4			
100	0.7795	0.9380	0.7795	0.6600	0.8400	10.417	4			
Intake	0.8888	1.0695	0.8888	0.7990	0.9480	7.382	4	-1.096	1.943	0.1024

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.88838106	0.749	-0.9249599	-0.3380108
F-Test indicates equal variances (p = 0.72)	1.58184743	47.4683456		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates no significant differences Treatments vs D-Control	0.10242295	0.12325264	0.00667012	0.00555646	0.31525472	1, 6

File: sqn101_050311data-uv.xlsx
Entered by: J. Sumner
Reviewed by: _____

TVA / Sequoyah Nuclear Plant, Outfall 101 - UV-treated
May 03-10, 2011

ETS
Environmental Testing Solutions, Inc.

***Pimephales promelas* Chronic Whole Effluent Toxicity Test**
EPA-821-R-02-013, Method 1000.0

Daily Chemical Analyses

Project number: 7068

Concentration	Parameter	Day 0		Day 1		Day 2		Day 3		Day 4		Day 5		Day 6	
		Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Control	pH (SU)	7.78	7.78	7.78	7.73	7.89	7.76	7.86	7.74	7.78	7.84	7.91	7.66	7.83	7.69
	DO (mg/L)	7.8	7.7	7.7	7.8	7.5	7.5	8.0	7.7	7.8	8.0	8.1	7.5	8.0	8.0
	Conductivity (µmhos/cm)	324		326		299		306		302		307		316	
	Alkalinity (mg/L $CaCO_3$)	60				59				57					
	Hardness (mg/L $CaCO_3$)	96				90				90					
	Temperature (°C)	24.9	24.7	24.9	24.4	24.9	24.5	24.9	24.9	24.8	24.5	24.8	24.6	24.9	24.6
10.8%	pH (SU)	7.79	7.78	7.79	7.73	7.89	7.76	7.88	7.76	7.84	7.85	7.92	7.66	7.83	7.70
	DO (mg/L)	7.7	7.7	7.8	7.3	7.7	7.5	7.8	7.8	7.8	8.0	8.1	7.5	7.8	7.8
	Conductivity (µmhos/cm)	306		310		286		291		292		297		300	
	Temperature (°C)	25.0	24.7	25.0	24.5	24.9	24.8	25.0	24.6	24.9	24.3	24.9	24.6	24.9	24.6
21.6%	pH (SU)	7.80	7.77	7.80	7.69	7.89	7.72	7.88	7.76	7.86	7.86	7.93	7.66	7.83	7.69
	DO (mg/L)	7.7	7.7	7.8	7.3	7.8	7.5	7.8	7.8	7.8	7.9	8.1	7.5	7.7	7.9
	Conductivity (µmhos/cm)	288		293		270		275		278		288		286	
	Temperature (°C)	25.1	24.6	25.0	24.5	24.9	24.6	25.0	24.6	24.9	24.2	24.9	24.7	24.9	24.8
43.2%	pH (SU)	7.80	7.74	7.79	7.70	7.90	7.70	7.88	7.77	7.87	7.86	7.91	7.65	7.81	7.68
	DO (mg/L)	7.7	7.8	7.9	7.3	7.7	7.5	7.9	7.8	7.9	7.9	8.1	7.4	7.9	7.8
	Conductivity (µmhos/cm)	252		256		240		246		248		255		252	
	Temperature (°C)	25.1	24.6	25.0	24.6	24.9	24.6	25.0	24.5	25.0	24.6	24.9	24.7	25.0	24.7
86.4%	pH (SU)	7.79	7.71	7.75	7.70	7.83	7.69	7.88	7.74	7.84	7.87	7.90	7.62	7.81	7.66
	DO (mg/L)	7.8	7.8	7.9	7.4	7.9	7.5	7.9	7.7	7.9	8.0	8.1	7.4	7.8	7.8
	Conductivity (µmhos/cm)	178		186		179		180		192		197		195	
	Temperature (°C)	25.1	24.6	25.0	24.6	24.9	24.6	25.0	24.7	25.0	24.5	24.9	24.5	25.0	24.7
100%	pH (SU)	7.73	7.69	7.74	7.62	7.80	7.66	7.88	7.70	7.84	7.86	7.91	7.62	7.79	7.68
	DO (mg/L)	8.0	7.7	7.9	7.4	8.0	7.6	7.9	7.8	7.9	7.9	8.1	7.5	7.9	7.9
	Conductivity (µmhos/cm)	154		158		157		158		171		178		171	
	Alkalinity (mg/L $CaCO_3$)	52				61				59					
	Hardness (mg/L $CaCO_3$)	63				69				76					
	Total Residual Chlorine (mg/L)	<0.10				<0.10				<0.10					
	Temperature (°C)	25.2	24.7	25.1	24.6	24.9	24.5	25.2	24.7	25.2	24.5	25.0	24.7	25.1	24.7
100% Intake	pH (SU)	7.71	7.68	7.73	7.66	7.78	7.69	7.78	7.75	7.85	7.85	7.90	7.63	7.78	7.67
	DO (mg/L)	8.0	7.7	7.9	7.5	8.0	8.0	7.9	7.8	8.0	7.8	8.2	7.5	7.9	8.0
	Conductivity (µmhos/cm)	155		158		160		158		169		175		174	
	Alkalinity (mg/L $CaCO_3$)	52				59				63					
	Hardness (mg/L $CaCO_3$)	63				69				76					
	Total Residual Chlorine (mg/L)	<0.10				<0.10				<0.10					
	Temperature (°C)	25.1	24.7	25.1	24.6	24.9	24.5	25.0	24.6	25.0	24.4	24.8	24.7	25.0	24.7

File: sqn101_050311chem-UV.xls
Entered by: S. Evans
Reviewed by: _____

ETS Environmental Testing Solutions, Inc.

Species: ***Pimephales promelas*** **Date:** 05-03-11

Client: **TVA / Sequoyah Nuclear Plant, Outfall 101, UV-treated**

Daily Chemistry:

		Day					
		0		1		2	
	Analyst	MM.	MHF	MHF	CDJ	CDJ	CDJ
Concentration	Parameter						
CONTROL UV-treated	pH (S.U.)	7.78	7.78	7.78	7.73	7.89	7.76
	DO (mg/L)	7.8	7.7	7.7	7.8	7.5	7.5
	Conductivity (µmhos/cm)	324		326		299	
	Alkalinity (mg $CaCO_3$/L)	60				59	
	Hardness (mg $CaCO_3$/L)	96				90	
	Temperature (°C)	24.9	24.7	24.9	24.4	24.9	24.5
10.8%	pH (S.U.)	7.79	7.78	7.79	7.73	7.89	7.76
	DO (mg/L)	7.7	7.7	7.8	7.3	7.7	7.5
	Conductivity (µmhos/cm)	306		310		286	
	Temperature (°C)	25.0	24.7	25.0	24.5	24.9	24.8
21.6%	pH (S.U.)	7.80	7.77	7.80	7.69	7.89	7.72
	DO (mg/L)	7.7	7.7	7.8	7.3	7.8	7.5
	Conductivity (µmhos/cm)	288		293		270	
	Temperature (°C)	25.1	24.6	25.0	24.5	24.9	24.6
43.2%	pH (S.U.)	7.80	7.74	7.79	7.70	7.90	7.70
	DO (mg/L)	7.7	7.8	7.9	7.3	7.7	7.5
	Conductivity (µmhos/cm)	252		256		240	
	Temperature (°C)	25.1	24.6	25.0	24.6	24.9	24.6
86.4%	pH (S.U.)	7.79	7.71	7.75	7.70	7.83	7.69
	DO (mg/L)	7.8	7.8	7.9	7.4	7.9	7.5
	Conductivity (µmhos/cm)	178		186		179	
	Temperature (°C)	25.1	24.6	25.0	24.6	24.9	24.6
100%	pH (S.U.)	7.73	7.69	7.74	7.62	7.80	7.66
	DO (mg/L)	8.0	7.7	7.9	7.4	8.0	7.6
	Conductivity (µmhos/cm)	154		158		157	
	Alkalinity (mg $CaCO_3$/L)	52				61	
	Hardness (mg $CaCO_3$/L)	63				69	
	TR chlorine (mg/L)	<0.10				<0.10	
	Temperature (°C)	25.2	24.7	25.1	24.6	24.9	24.5
100% Intake	pH (S.U.)	7.71	7.68	7.73	7.66	7.78	7.69
	DO (mg/L)	8.0	7.7	7.9	7.5	8.0	8.0
	Conductivity (µmhos/cm)	155		158		160	
	Alkalinity (mg $CaCO_3$/L)	52				59	
	Hardness (mg $CaCO_3$/L)	63				69	
	TR chlorine (mg/L)	<0.10				<0.10	
	Temperature (°C)	25.1	24.7	25.1	24.6	24.9	24.5
		Initial	Final	Initial	Final	Initial	Final

ETS
Environmental Testing Solutions, Inc.

Species: ***Pimephales promelas***
Client: **TVA / Sequoyah Nuclear Plant, Outfall 101, UV-treated** **Date:** 05-03-11

		Day							
		3		4		5		6	
	Analyst	CDT	IUHF	IUHF	BSC	BSC	LAB	LAB	CDT
Concen-tration	Parameter								
CONTROL UV-treated	pH (S.U.)	7.86	7.74	7.78	7.87	7.91	7.66	7.83	7.69
	DO (mg/L)	8.0	7.7	7.8	8.0	8.1	7.5	8.0	8.0
	Conductivity (µmhos/cm)	306		302		307		316	
	Alkalinity (mg $CaCO_3$/L)			57					
	Hardness (mg $CaCO_3$/L)			90					
	Temperature (°C)	24.9	24.9	24.8	24.5	24.8	24.6	24.9	24.6
10.8%	pH (S.U.)	7.88	7.76	7.84	7.85	7.92	7.66	7.83	7.70
	DO (mg/L)	7.8	7.8	7.8	8.0	8.1	7.5	7.8	7.8
	Conductivity (µmhos/cm)	306 291		292		297		300	
	Temperature (°C)	25.0	24.6	24.9	24.3	24.9	24.6	24.9	24.6
21.6%	pH (S.U.)	7.88	7.76	7.86	7.86	7.93	7.66	7.83	7.69
	DO (mg/L)	7.8	7.8	7.8	7.9	8.1	7.5	7.7	7.9
	Conductivity (µmhos/cm)	279 275		278		288		286	
	Temperature (°C)	25.0	24.6	24.9	24.2	24.9	24.7	24.9	24.8
43.2%	pH (S.U.)	7.88	7.77	7.87	7.86	7.91	7.65	7.81	7.68
	DO (mg/L)	7.9	7.8	7.9	7.9	8.1	7.4	7.9	7.8
	Conductivity (µmhos/cm)	275 246		248		255		252	
	Temperature (°C)	25.0	24.5	25.0	24.6	24.9	24.7	25.0	24.7
86.4%	pH (S.U.)	7.88	7.74	7.84	7.87	7.90	7.62	7.81	7.66
	DO (mg/L)	7.9	7.7	7.9	8.0	8.1	7.4	7.8	7.8
	Conductivity (µmhos/cm)	246 180		192		197		195	
	Temperature (°C)	25.0	24.7	25.0	24.5	24.9	24.5	25.0	24.7
100%	pH (S.U.)	7.88	7.70	7.84	7.86	7.91	7.62	7.79	7.68
	DO (mg/L)	7.9	7.8	7.9	7.9	8.1	7.5	7.9	7.9
	Conductivity (µmhos/cm)	180 158		171		178		171	
	Alkalinity (mg $CaCO_3$/L)			59					
	Hardness (mg $CaCO_3$/L)			76					
	TR Chlorine (mg/L)			<0.10					
	Temperature (°C)	25.2	24.7	25.2	24.5	25.0	24.7	25.1	24.7
100% Intake	pH (S.U.)	7.78	7.75	7.85	7.85	7.90	7.63	7.78	7.67
	DO (mg/L)	7.9	7.8	8.0	7.8	8.2	7.5	7.9	8.0
	Conductivity (µmhos/cm)	158		169		175		174	
	Alkalinity (mg $CaCO_3$/L)			63					
	Hardness (mg $CaCO_3$/L)			76					
	TR chlorine (mg/L)			<0.10					
	Temperature (°C)	25.0	24.6	25.0	24.4	24.8	24.7	25.0	24.7
		Initial	Final	Initial	Final	Initial	Final	Initial	Final

* CONDUCTIVITIES CONFIRMED

ETS
Environmental Testing Solutions, Inc.

Total Residual Chlorine
(Orion Electrode Method, Orion 97-70)

Matrix: Water, RL = 0.10 mg/L
Meter: Accumet Model AR25 pH/Ion Meter

Analyst	KDA	Iodide reagent:	1NR447
Date analyzed	05-03.11	Acid reagent:	1NR428

Calibration:

	0.10 mg/L	1.00 mg/L	Slope
Reference standard number	1NSS921	1NSS921	-44.2%

Note: For samples with a residual chlorine of > 1.0 mg/L, the calibration range must be adjusted to bracket the chlorine levels of the samples.

Laboratory control standard:

Reference standard number	True value (TV) (mg/L)	Measured value (MV) (mg/L)	% RS = MV / TV x 100 (acceptable range = 90 to 110%)
1NSS921	0.50	0.451	90.2%

Duplicate sample precision:

Sample number	Sample ID	Sample characteristics	Residual chlorine (mg/L)	%RPD = {(S - D) /[(S+D)/2]} x 100 (acceptable range = ± 10%)
110503.04	Sutton	tan, Clear	S <0.00369	
1	Duplicate		D <0.00307	-N

Sample measurements:

Sample number	Sample ID	Sample characteristics	Residual chlorine (mg/L)	
	Reagent Blank		<0.00743	
110503.05	PCS. ~~005~~ 007	pale yellow, Clear	<0.00182	
110503.03	Wallace	pale tan, Clear	0.255	
110503.02	Chattanooga	brown, yellow, Clear	<0.00362	
110503.06	McGuire NS. 5'	yellow / brown, Clear	0.0348	
110503.07	↓ 10m, 15'	brown/yellow - dark - Clear	0.446	
110503.08	↓ 35'	red. Clear	1.91	RHO
110502.01	TVA - SQN 101	no color, Clear	<0.0236	
110502.02	↓ INT	pale tan, Clear	<0.00956	

Note: All samples were analyzed in excess of EPA recommended holding time (15 minutes) unless otherwise noted.

Laboratory control standard:

Reference standard number	True value (TV) (mg/L)	Measured value (MV) (mg/L)	% RS = MV / TV x 100 (acceptable range = 90 to 110%)
1NSS 921	0.50	0.452	90.4%

Reviewed by	[illegible]
Date reviewed	05-03-11

ETS
Environmental Testing Solutions, Inc.

Total Residual Chlorine
(Orion Electrode Method, Orion 97-70)

Matrix: Water, RL = 0.10 mg/L
Meter: Accumet Model AR25 pH/Ion Meter

Analyst	CDJ	Iodide reagent:	INR447
Date analyzed	05.05.11	Acid reagent:	INR428

Calibration:

	0.10 mg/L	1.00 mg/L	Slope
Reference standard number	INSS921	INSS921	-50.0%

Note: For samples with a residual chlorine of > 1.0 mg/L, the calibration range must be adjusted to bracket the chlorine levels of the samples.

Laboratory control standard:

Reference standard number	True value (TV) (mg/L)	Measured value (MV) (mg/L)	% RS = MV / TV x 100 (acceptable range = 90 to 110%)
INSS921	0.50	0.531	106.2%

Duplicate sample precision:

Sample number	Sample ID	Sample characteristics	Residual chlorine (mg/L)	%RPD = {(S - D) /[(S+D)/2]} x 100 (acceptable range = ± 10%)
110504.21	SQN-101	pale tan, cloudy particles	S < 0.00394	
↓	Duplicate		D < 0.01248	—

Sample measurements:

Sample number	Sample ID	Sample characteristics	Residual chlorine (mg/L)
	Reagent Blank		< 0.00642
110505.08	~~McG~~* McGuire	orange, opaque, particles	0.514 x 4 = 2.056
110505.02	Wallace	no color, clear, particles	0.423
110504.22	SQN- Intake	pale tan, cloudy, particles	< 0.00891
110505.03	Cape Fear - Loughlin	pale tan, ~~cloudy~~ clear, particles	< 0.00514
110505.01	Chattanooga	tan, opaque, particles	< 0.000294
110505.04	Wash: WWTP	no color, clear, particles	< 0.000260
110505.05	Wash WTP	pale tan, cloudy, particles	0.00104

Note: All samples were analyzed in excess of EPA recommended holding time (15 minutes) unless otherwise noted.

* 25 ml diluted into 100 ml deionized water

Laboratory control standard:

Reference standard number	True value (TV) (mg/L)	Measured value (MV) (mg/L)	% RS = MV / TV x 100 (acceptable range = 90 to 110%)
INSS921	0.50	0.480	96.0%

Reviewed by	JH
Date reviewed	05.05.11

ETS
Environmental Testing Solutions, Inc.

Total Residual Chlorine
(Orion Electrode Method, Orion 97-70)

Matrix: Water, RL = 0.10 mg/L
Meter: Accumet Model AR25 pH/Ion Meter

Analyst: MHF
Date analyzed: 05.07.11

Iodide reagent: IN2447
Acid reagent: IN2423

Calibration:

	0.10 mg/L	1.00 mg/L	Slope
Reference standard number	IN55921	IN55921	-45.3%

Note: For samples with a residual chlorine of > 1.0 mg/L, the calibration range must be adjusted to bracket the chlorine levels of the samples.

Laboratory control standard:

Reference standard number	True value (TV) (mg/L)	Measured value (MV) (mg/L)	% RS = MV / TV x 100 (acceptable range = 90 to 110%)
IN55921	0.50	0.549	109.8%

Duplicate sample precision:

Sample number	Sample ID	Sample characteristics	Residual chlorine (mg/L)	%RPD = {(S - D) /[(S+D)/2]} x 100 (acceptable range = ± 10%)
110507.02	WALLACE	clear, particles, no color	S 0.310	
↓	Duplicate		D 0.305	1.63%

Sample measurements:

Sample number	Sample ID	Sample characteristics	Residual chlorine (mg/L)
	Reagent Blank		<0.00712
110507.01	CHATTANOOGA	cloudy, particles, tan	<0.000226
110506.15	TVA SQN - OUTFALL 101	cloudy, particles, pale tan	0.000983
110506.16	↓ INTAKE	cloudy, particles, pale tan	0.00216

Note: All samples were analyzed in excess of EPA recommended holding time (15 minutes) unless otherwise noted.

Laboratory control standard:

Reference standard number	True value (TV) (mg/L)	Measured value (MV) (mg/L)	% RS = MV / TV x 100 (acceptable range = 90 to 110%)
IN55921	0.50	0.500	100.0%

Reviewed by: [illegible]
Date reviewed: 05.07.11

ETS Environmental Testing Solutions, Inc.

Alkalinity (SM 2320 B)

Matrix: Water, RL = 1.0 mg $CaCO_3$/L

Analyst	BSL
Date analyzed	05.08.11

Titrate samples to pH = 4.5 S.U.

Time initiated	1050
Time completed	1301

Titrant normality and multiplier determination:

pH of Deionized water = 4.5 S.U.	Titrant reference number	Normality check standard number	Begin ml	End ml	Total ml (E)	Normality (*N*) of H_2SO_4 = (5 ml Na_2CO_3 x 0.05)/E = 0.25/E (acceptable range = 0.0180 - 0.0220)	pH Factor or Multiplier = (*N* x 50000)/ 100 ml sample = *N* x 500
4.4	INR429	INSS920	0.0	12.6	12.6	0.0198	9.9

Blk Corr: 0.0-70.0 ml

Laboratory control standard:

Reference standard number	True value (TV) (mg $CaCO_3$/L)	Sample volume (ml)	Begin ml	End ml	Total ml	Multiplier	Alkalinity (MV) (mg $CaCO_3$/L)	% RS = MV / TV x 100 (acceptable range = 90 to 110%)
INSS 883	100	100	12.6	21.6	9.0	9.9	~~9.9~~ 89	89.0%

Duplicate sample precision:

Sample number	Sample ID	Sample volume (ml)	Begin ml	End ml	Total ml	Multiplier	Alkalinity (mg $CaCO_3$/L)	%RPD = {(S - D) /[(S+D)/2]} x 100 (acceptable range = ± 10%)
		redo	21.6	30.3	8.7	9.9	86	86.0%
		redo	30.3	39.4	9.1	9.9	90.	90.0%
050511	SSW	100	39.4	42.4	3.0	9.9	S ~~9.9~~ 30	
1	Duplicate (B)	1	0.0	3.1	3.1	1	D ~~1~~ 31	3.3%

Matrix spike recovery:

Reference standard number	Spike value (SV) (mg $CaCO_3$/L)	Sample volume (ml)	Begin ml	End ml	Total ml	Multiplier	Spike alkalinity (A) (mg $CaCO_3$/L)
INSS 883	50 ~~50~~	100	0.0	7.6	7.6	9.9	75

Sample alkalinity (B) (mg $CaCO_3$/L)	Measured spike value (MV) MV = A - B (mg $CaCO_3$/L)	% R = MV / SV x 100 (acceptable range = 75 to 125%)
31	44	88%

Sample measurements:

Sample number	Sample ID	Sample volume (ml)	Begin ml	End ml	Total ml	Multiplier	Alkalinity (mg $CaCO_3$/L)
050511	MHSW	100	7.6	13.5	5.9	9.9	58
~~050611A~~ 05.07.11A			13.5	19.5	6.0		59
~~050611B~~ 05.07.11B			19.5	25.5	6.0		59
04.21.11			25.5	31.5	6.0		59
04.26.11			31.5	37.8	6.3		62
05.02.11A			37.8	43.8	6.0		59
05.02.11B			~~43.8~~ 43.8	6.0	6.0		59
05.03.11			6.0	12.0	6.0		59
05.02.11	SSW		12.0	15.2	3.2		32

Reviewed by: KGL Date reviewed: 05.09.11

ETS Environmental Testing Solutions, Inc.

Alkalinity (SM 2320 B)

Matrix: Water, RL = 1.0 mg $CaCO_3$/L

Analyst	BSL
Date analyzed	05.08.11

Titrate samples to pH = 4.5 S.U.

Time initiated	
Time completed	BSL

Titrant normality and multiplier determination:

pH of Deionized water = 4.5 S.U.	Titrant reference number	Normality check standard number	Begin ml	End ml	Total ml (E)	Normality (N) of H_2SO_4 = (5 ml Na_2CO_3 x 0.05)/E = 0.25/E (acceptable range = 0.0180 - 0.0220)	pH Factor or Multiplier = (N x 50000)/ 100 ml sample = N x 500
							BSL

Laboratory control standard:

Reference standard number	True value (TV) (mg $CaCO_3$/L)	Sample volume (ml)	Begin ml	End ml	Total ml	Multiplier	Alkalinity (MV) (mg $CaCO_3$/L)	% RS = MV / TV x 100 (acceptable range = 90 to 110%)
INSS 883	100	100	15.2	24.3	9.1	9.9	90	90.0%

Duplicate sample precision:

Sample number	Sample ID	Sample volume (ml)	Begin ml	End ml	Total ml	Multiplier	Alkalinity (mg $CaCO_3$/L)	%RPD = {(S - D) /[(S+D)/2]} x 100 (acceptable range = ± 10%)
05.08.11B	Salt SW	100	24.3	33.7	9.4	9.9	S 93	
1	Duplicate (B)	1	33.7	43.1	9.4	↓	D 93	0.0%

Matrix spike recovery:

Reference standard number	Spike value (SV) (mg $CaCO_3$/L)	Sample volume (ml)	Begin ml	End ml	Total ml	Multiplier	Spike alkalinity (A) (mg $CaCO_3$/L)
INSS 883	50	100	33.7	~~47.2~~ 47.7 BSL	~~13.5~~ 14.0 BSL	9.9	~~130~~ BSL 140

Sample alkalinity (B) (mg $CaCO_3$/L)	Measured spike value (MV) MV = A - B (mg $CaCO_3$/L)	% R = MV / SV x 100 (acceptable range = 75 to 125%)
93	47	94.0%

Sample measurements:

Sample number	Sample ID	Sample volume (ml)	Begin ml	End ml	Total ml	Multiplier	Alkalinity (mg $CaCO_3$/L)	
05.05.11	Salt SW	100	0.0	9.6	9.6	9.9	95	
05.02.11A	1	|	9.6	21.6	12.0	|	120	
110503.03	Wallace 1	|	21.6	33.0	11.4	|	110	
110505.02	| 2	|	33.0	44.1	11.1	|	110	
110507.02	| 3	|	0.0	11.1	11.1	|	110	
110503.02	Chattanooga 1	50	11.1	20.6	9.5	(2) |	~~94~~ BSL 190	188
110505.02	| 2	|	20.6	31.6	11.0	|	~~110~~ BSL 220	218
110507.01	| 3	|	31.6	42.7	11.1	|	~~110~~ BSL 220	220
110502.01	TVA SQN 101 1	|	0.0	2.7	2.7	|	~~27~~ BSL 54	

Reviewed by: KGL Date reviewed: 05-09-11

ETS Environmental Testing Solutions, Inc.

Alkalinity (SM 2320 B)

Matrix: Water, RL = 1.0 mg $CaCO_3$/L

Analyst	BSL
Date analyzed	05.08.11

Titrate samples to pH = 4.5 S.U.

Time initiated	
Time completed	

Titrant normality and multiplier determination:

pH of Deionized water = 4.5 S.U.	Titrant reference number	Normality check standard number	Begin ml	End ml	Total ml (E)	Normality (N) of H_2SO_4 = (5 ml Na_2CO_3 x 0.05)/E = 0.25/E (acceptable range = 0.0180 - 0.0220)	pH Factor or Multiplier = (N x 50000)/ 100 ml sample = N x 500

Laboratory control standard:

Reference standard number	True value (TV) (mg $CaCO_3$/L)	Sample volume (ml)	Begin ml	End ml	Total ml	Multiplier	Alkalinity (MV) (mg $CaCO_3$/L)	% RS = MV / TV x 100 (acceptable range = 90 to 110%)
INSS 883	100	100	2.7	11.9	9.2	9.9	91	91.0%

Duplicate sample precision:

Sample number	Sample ID	Sample volume (ml)	Begin ml	End ml	Total ml	Multiplier	Alkalinity (mg $CaCO_3$/L)	%RPD = {(S - D) /[(S+D)/2]} x 100 (acceptable range = ± 10%)
110504.21	TVASQN101 2	50	11.9	14.9	3.0	(2) 9.9	S 59	
↓	Duplicate (B)	1	14.9	17.8	2.9	↓	D 57	3.4%

Matrix spike recovery:

Reference standard number	Spike value (SV) (mg $CaCO_3$/L)	Sample volume (ml)	Begin ml	End ml	Total ml	Multiplier	Spike alkalinity (A) (mg $CaCO_3$/L)
INSS 883	100	50	14.9	22.5	7.6	(2) 9.9	150

Sample alkalinity (B) (mg $CaCO_3$/L)	Measured spike value (MV) MV = A - B (mg $CaCO_3$/L)	% R = MV / SV x 100 (acceptable range = 75 to 125%)
57	93	93.0%

Sample measurements:

Sample number	Sample ID	Sample volume (ml)	Begin ml	End ml	Total ml	Multiplier	Alkalinity (mg $CaCO_3$/L)
110506.15	TVASQN101 3	50	22.5	25.6	3.1	(2) 9.9	61
110502.02	TVASQN INT 1		25.6	28.4	2.8		55
110504.22	2		28.4	31.5	3.1		61
110506.16	3		31.5	34.6	3.1		61
05-02-11A	MHS UU 1	100	34.6	40.7	6.1		60
05-02-11B	2		40.7	46.7	6.0		59
05-05-11	3		46.7	58	58		57
110502.01	TVASQN 101 UU1	50	5.8	8.4	2.6	(2)	52
110504.21	2		8.4	11.5	3.1	↓	61

Reviewed by: KLM Date reviewed: 05.09.11

ETS Environmental Testing Solutions, Inc.

Alkalinity (SM 2320 B)

Matrix: Water, RL = 1.0 mg $CaCO_3$/L

Analyst	BSL
Date analyzed	05.08.11

Titrate samples to pH = 4.5 S.U.

Time initiated	
Time completed	

Titrant normality and multiplier determination:

pH of Deionized water = 4.5 S.U.	Titrant reference number	Normality check standard number	Begin ml	End ml	Total ml (E)	Normality (N) of H_2SO_4 = (5 ml Na_2CO_3 x 0.05)/E = 0.25/E (acceptable range = 0.0180 - 0.0220)	pH Factor or Multiplier = (N x 50000)/ 100 ml sample = N x 500

Laboratory control standard:

Reference standard number	True value (TV) (mg $CaCO_3$/L)	Sample volume (ml)	Begin ml	End ml	Total ml	Multiplier	Alkalinity (MV) (mg $CaCO_3$/L)	% RS = MV / TV x 100 (acceptable range = 90 to 110%)
INSS883	100	100	11.5	20.6	9.1	9.9	90	90.0%

Duplicate sample precision:

Sample number	Sample ID	Sample volume (ml)	Begin ml	End ml	Total ml	Multiplier	Alkalinity (mg $CaCO_3$/L)	%RPD = {(S - D) /[(S+D)/2]} x 100 (acceptable range = ± 10%)
110506.15	TVASONIOIUN3	00	20.6	23.6	3.0	9.9 (2)	S 59	
↓	Duplicate (B)	↓	23.6	26.6	3.0	↓	D 59	0.0%

Matrix spike recovery:

Reference standard number	Spike value (SV) (mg $CaCO_3$/L)	Sample volume (ml)	Begin ml	End ml	Total ml	Multiplier	Spike alkalinity (A) (mg $CaCO_3$/L)
INSS883	100	50	23.6	31.4	7.8	(2) 9.9	150

Sample alkalinity (B) (mg $CaCO_3$/L)	Measured spike value (MV) MV = A - B (mg $CaCO_3$/L)	% R = MV / SV x 100 (acceptable range = 75 to 125%)
59	91	91.0%

Sample measurements:

Sample number	Sample ID	Sample volume (ml)	Begin ml	End ml	Total ml	Multiplier	Alkalinity (mg $CaCO_3$/L)
110502.02	TVASONIOIUN1	00	31.4	34.0	2.6	(2) 9.9	~~51~~ 52
110504.22	2	↓	34.0	37.0	3.0	↓	59
110506.16	3	↓	37.0	40.2	3.2	↓	63
110316.04	Dmr CdAC	100	40.2	46.0	5.8	↓	57
↓	PPAC	↓	~~0.0~~ 14.9	21.0	6.1	↓	60
↓	PPCR	↓	21.0	27.0	6.0	↓	59
↓	MBAC	↓	27.0	38.8	11.8	↓	120
110504.14	Carolina Beach	25	38.8	42.2	3.4	(4) ↓	~~130~~ 140
110504.18	Morehead	↓	42.2	47.4	5.2	↓	210

Reviewed by: KOL Date reviewed: 05-09-11

ETS Environmental Testing Solutions, Inc.

Total Hardness (SM 2340 C)

RL = 1.0 mg $CaCO_3$/L

Analyst	BSL	Time initiated	0904
Date analyzed	BSL 05-08-11	Time completed	1040

* LCS OUT OF ACCEPTANCE LIMITS. ASSOCIATED SAMPLES REANALYZED - SEE PAGE 38

Titrant normality and multiplier determination:

Titrant reference number	Normality check standard number	Begin ml	End ml	Total ml (E)	Normality (N) of EDTA = 0.2/E (acceptable range = 0.0180 - 0.0220)	pH Factor or Multiplier = (N x 50000)/ 50 ml sample = N x 1000
INR423	INSS898	0.1	9.9	9.8	0.0204	20.4

Laboratory control standard:

Reference standard number	True value (TV) (mg $CaCO_3$/L)	Sample volume (ml)	Begin ml	End ml	Total ml	Multiplier	Hardness (MV) (mg $CaCO_3$/L)	% RS = MV / TV x 100 (acceptable range = 90 to 110%)
INSS919	40	50	9.9	11.6	~~1.8~~ BSL	~~20.4~~	~~37~~	~~92.5%~~ *
					1.7	20.4	35	*87.5%

Duplicate sample precision:

Sample number	Sample ID	Sample volume (ml)	Begin ml	End ml	Total ml	Multiplier	Hardness (mg $CaCO_3$/L)	%RPD = {(S - D) /[(S+D)/2]} x 100
05.05.11	SSW	50	11.6	13.3	1.7	20.4	S 35	
1	Duplicate (B)	1	13.3	15.0	1.7	1	D 35	0.0%

Matrix spike recovery:

Reference standard number	Spike value (SV) (mg $CaCO_3$/L)	Sample volume (ml)	Begin ml	End ml	Total ml	Multiplier	Spike hardness (A) (mg $CaCO_3$/L)
INSS919	40	50	13.3	17.0	3.7	20.4	~~75~~ R 76

Sample hardness (B) (mg $CaCO_3$/L)	Measured spike value (MV) MV = A - B (mg $CaCO_3$/L)	% R = MV / SV x 100 (acceptable range = 75 to 125%)
35	~~40~~ R 41	~~100.0%~~ * 102.5%

Sample measurements:

Sample number	Sample ID	Sample volume (ml)	Begin ml	End ml	Total ml	Multiplier	Hardness (mg $CaCO_3$/L)
TV = ND	Blank (should be = 0 mg $CaCO_3$/L)	50	17.0	17.0	0.0	20.4	ND
05-05.11	MHSW		17.0	21.2	4.2		~~85~~ BSL 86
05-07.11A			21.2	25.3	4.1		84
05.07.11B			25.3	29.5	4.2		86
04.21.11			29.5	33.7	4.2		86
04.26.11			33.7	38.0	4.3		88
05.02-11A			38.0	42.2	4.2		86
05.02-11B			42.2	46.3	4.1		84
05.03.11			0.0	4.1	4.1		84
05.02-11	SSW		4.1	5.8	1.7		35

Note: If >15ml of titrant is used, sample must be diluted. Reviewed by: [signature] Date reviewed 05-08-11

ETS Environmental Testing Solutions, Inc.

Total Hardness (SM 2340 C)

RL = 1.0 mg $CaCO_3$/L

Analyst: BSL

Date analyzed: 05.08.11

Time initiated:

Time completed:

Titrant normality and multiplier determination:

Titrant reference number	Normality check standard number	~~Begin~~ ml	~~End~~ ml	Total ml (E)	Normality (*N*) of EDTA = 0.2/E (acceptable range = ~~0.0180 – 0.0220~~)	pH Factor or Multiplier = (*N* x 50000)/ 50 ml sample = *N* x 1000

Laboratory control standard:

Reference standard number	True value (TV) (mg $CaCO_3$/L)	Sample volume (ml)	Begin ml	End ml	Total ml	Multiplier	Hardness (MV) (mg $CaCO_3$/L)	% RS = MV / TV x 100 (acceptable range = 90 to 110%)
INSS 919	40	50	5.8	7.7	1.9	20.4	39	97.5%

Duplicate sample precision:

Sample number	Sample ID	Sample volume (ml)	Begin ml	End ml	Total ml	Multiplier	Hardness (mg $CaCO_3$/L)	%RPD = {(S - D) /[(S+D)/2]} x 100
110503.03	Wallace 1	50	7.7	12.4	4.7	20.4	S 96	
↓	Duplicate (B)	1	12.4	17.1	4.7	↓	D 96	0.0%

Matrix spike recovery:

Reference standard number	Spike value (SV) (mg $CaCO_3$/L)	Sample volume (ml)	Begin ml	End ml	Total ml	Multiplier	Spike hardness (A) (mg $CaCO_3$/L)
INSS 919	40	50	12.4	19.0	6.6	20.4	~~135~~ 140

Sample hardness (B) (mg $CaCO_3$/L)	Measured spike value (MV) MV = A - B (mg $CaCO_3$/L)	% R = MV / SV x 100 (acceptable range = 75 to 125%)
96	~~39~~ 44	~~97.5%~~ 110.0%

Sample measurements:

Sample number	Sample ID	Sample volume (ml)	Begin ml	End ml	Total ml	Multiplier	Hardness (mg $CaCO_3$/L)
TV = ~~ND~~	Blank (should be = 0 mg $CaCO_3$/L)						
110505.02	Wallace 2	50	19.0	23.7	4.7	20.4	96
110507.02	3	1	23.7	28.5	4.8		98
110503.02	Chattanooga 1	25	28.5	32.6	4.1	(2)	170
110505.02	2		32.6	36.7	4.1		170
110507.01	3		36.7	41.1	4.4		180
110502.01	TVA SQN 101 1	50	41.1	43.8	2.7		55
110504.21	2		43.8	46.9	3.1		63
110506.15	3		0.0	3.5	3.5		71
110502.02	TVA SQN INT 1		3.5	6.2	2.7		55

Note: If >15ml of titrant is used, sample must be diluted. Reviewed by: KGL Date reviewed 05-09-11

ETS Environmental Testing Solutions, Inc.

Total Hardness (SM 2340 C)

RL = 1.0 mg $CaCO_3$/L

Analyst	BSL	Time initiated	
Date analyzed	05.08.11	Time completed	

Titrant normality and multiplier determination:

Titrant reference number	Normality check standard number	Begin ml	End ml	Total ml (E)	Normality (*N*) of EDTA = 0.2/E (acceptable range = 0.0180 - 0.0220)	pH Factor or Multiplier = (*N* x 50000)/ 50 ml sample = *N* x 1000

Laboratory control standard:

Reference standard number	True value (TV) (mg $CaCO_3$/L)	Sample volume (ml)	Begin ml	End ml	Total ml	Multiplier	Hardness (MV) (mg $CaCO_3$/L)	% RS = MV / TV x 100 (acceptable range = 90 to 110%)
INSS919	40	50	6.2	7.9	1.7	20.4	35	87.5%
redo:			7.9	9.8	1.9	20.4	39	97.5%

Duplicate sample precision:

Sample number	Sample ID	Sample volume (ml)	Begin ml	End ml	Total ml	Multiplier	Hardness (mg $CaCO_3$/L)	%RPD = {(S - D) /[(S+D)/2]} x 100
110504.22	TVASQN INT 2	50	9.8	12.9	3.1	20.4	S 63	
↓	Duplicate (B)	1	12.9	16.0	3.1	↓	D 63	0.0%

Matrix spike recovery:

Reference standard number	Spike value (SV) (mg $CaCO_3$/L)	Sample volume (ml)	Begin ml	End ml	Total ml	Multiplier	Spike hardness (A) (mg $CaCO_3$/L)
INSS919	40	50	12.9	17.9	5.0	20.4	100

Sample hardness (B) (mg $CaCO_3$/L)	Measured spike value (MV) MV = A - B (mg $CaCO_3$/L)	% R = MV / SV x 100 (acceptable range = 75 to 125%)
63	37	92.5%

Sample measurements:

Sample number	Sample ID	Sample volume (ml)	Begin ml	End ml	Total ml	Multiplier	Hardness (mg $CaCO_3$/L)
TV = ND	Blank (should be = 0 mg $CaCO_3$/L)						
110506.16	TVA SQN INT 3	50	17.9	21.2	3.3	20.4	67
05.02.11A	MHSW UV 1		21.2	25.9	4.7		96
05.02.11B	2		25.9	30.3	4.4		90
05.05.11	3		30.3	34.7	4.4		90
110502.01	TVASQN 101UV 1		34.7	37.8	3.1		63
110504.21	2		37.8	41.2	3.4		69
110506.15	3		41.2	44.9	3.7		~~75*~~ 76
110502.02	TVASQNINT UV 1		0.0	3.1	3.1		63
110504.22	2		3.1	6.5	3.4		69

Note: If >15ml of titrant is used, sample must be diluted. Reviewed by: KDL Date reviewed 05-09-11

ETS Environmental Testing Solutions, Inc.

Total Hardness (SM 2340 C)

RL = 1.0 mg $CaCO_3$/L

Analyst	BSL	Time initiated	
Date analyzed	05-03-11	Time completed	

Titrant normality and multiplier determination:

Titrant reference number	Normality check standard number	Begin ml	End ml	Total ml (E)	Normality (*N*) of EDTA = 0.2/E (acceptable range = 0.0180 - 0.0220)	pH Factor or Multiplier = (*N* x 50000)/ 50 ml sample = *N* x 1000

Laboratory control standard:

Reference standard number	True value (TV) (mg $CaCO_3$/L)	Sample volume (ml)	Begin ml	End ml	Total ml	Multiplier	Hardness (MV) (mg $CaCO_3$/L)	% RS = MV / TV x 100 (acceptable range = 90 to 110%)
INS5919	40	50	6.5	8.4	1.9	20.4	39	97.5%

Duplicate sample precision:

Sample number	Sample ID	Sample volume (ml)	Begin ml	End ml	Total ml	Multiplier	Hardness (mg $CaCO_3$/L)	%RPD = {(S - D) /[(S+D)/2]} x 100
110506.16	TVA-SQN INTUV3	50	8.4	12.1	3.7	20.4	S 75 76	
↓	Duplicate (B)	1	12.1	16.0	3.9	↓	D 80	~~6.4%~~ 5.1%

Matrix spike recovery:

Reference standard number	Spike value (SV) (mg $CaCO_3$/L)	Sample volume (ml)	Begin ml	End ml	Total ml	Multiplier	Spike hardness (A) (mg $CaCO_3$/L)
INS5919	40	50	12.1	18.1	6.0	20.4	120

Sample hardness (B) (mg $CaCO_3$/L)	Measured spike value (MV) MV = A - B (mg $CaCO_3$/L)	% R = MV / SV x 100 (acceptable range = 75 to 125%)
80	40	100.0%

Sample measurements:

Sample number	Sample ID	Sample volume (ml)	Begin ml	End ml	Total ml	Multiplier	Hardness (mg $CaCO_3$/L)
TV = ~~ND~~	Blank (should be ~~0 mg $CaCO_3$/L~~)						
110316.04	DMR dd AC	50	18.1	22.6	4.5	20.4	92
↓	PP AC	↓	22.6	27.0	4.4	↓	90
↓	PACR	↓	27.0	31.6	4.6	↓	94
						BSL	

Note: If >15ml of titrant is used, sample must be diluted. Reviewed by: KGR Date reviewed 05.09.11

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* SAMPLE RESULTS ON THIS PAGE WERE ORIGINALLY ANALYZED & REPORTED ON PAGE 34 OF THE HARDNESS LOG. SAMPLES WERE REANALYZED DUE TO A QC FAILURE & REPORTED HERE.

Total Hardness (SM 2340 C)

RL = 1.0 mg $CaCO_3$/L

Analyst	KDL	Time initiated	0935
Date analyzed	05.09.11	Time completed	0950

Titrant normality and multiplier determination:

Titrant reference number	Normality check standard number	Begin ml	End ml	Total ml (E)	Normality (*N*) of EDTA = 0.2/E (acceptable range = 0.0180 - 0.0220)	pH Factor or Multiplier = (*N* x 50000)/ 50 ml sample = *N* x 1000
INR423	INSS890	0.0	9.9	9.9	0.0202	20.2

Laboratory control standard:

Reference standard number	True value (TV) (mg $CaCO_3$/L)	Sample volume (ml)	Begin ml	End ml	Total ml	Multiplier	Hardness (MV) (mg $CaCO_3$/L)	% RS = MV / TV x 100 (acceptable range = 90 to 110%)
INSS919	40	50	9.9	11.9	2.0	20.2	~~2~~ 40	100.0%

Duplicate sample precision:

Sample number	Sample ID	Sample volume (ml)	Begin ml	End ml	Total ml	Multiplier	Hardness (mg $CaCO_3$/L)	%RPD = {(S - D) /[(S+D)/2]} x 100
05.05.11	SSW	50	11.9	14.0	2.1	20.2	S 42	
1	Duplicate (B)	1	14.0	16.1	2.1	1	D 42	0

Matrix spike recovery:

Reference standard number	Spike value (SV) (mg $CaCO_3$/L)	Sample volume (ml)	Begin ml	End ml	Total ml	Multiplier	Spike hardness (A) (mg $CaCO_3$/L)
INSS919	40	50	14.0	18.0	4.0	20.2	81

Sample hardness (B) (mg $CaCO_3$/L)	Measured spike value (MV) MV = A - B (mg $CaCO_3$/L)	% R = MV / SV x 100 (acceptable range = 75 to 125%)
42	39	97.5%

Sample measurements:

Sample number	Sample ID	Sample volume (ml)	Begin ml	End ml	Total ml	Multiplier	Hardness (mg $CaCO_3$/L)
TV = ND	Blank (should be = 0 mg $CaCO_3$/L)	50	0.0	0.0	0.0	20.2	ND
05.05.11	MHSW		18.0	22.5	4.5		91
05.07-11A			22.5	27.1	4.6		93
05.07.11B			27.1	31.6	4.5		91
04.21.11			31.6	36.0	4.4		89
04.26.11			36.0	40.4	4.4		89
05.02-11A			25.6	30.1	4.5		91
05.02.11B			30.1	34.5	4.4		89
05.03.11			34.5	39.2	4.7		95
05.02.11	SSW		39.5	41.6	2.1		42

Note: If >1.5ml of titrant is used, sample must be diluted. Reviewed by: [signature] Date reviewed 05-09-11

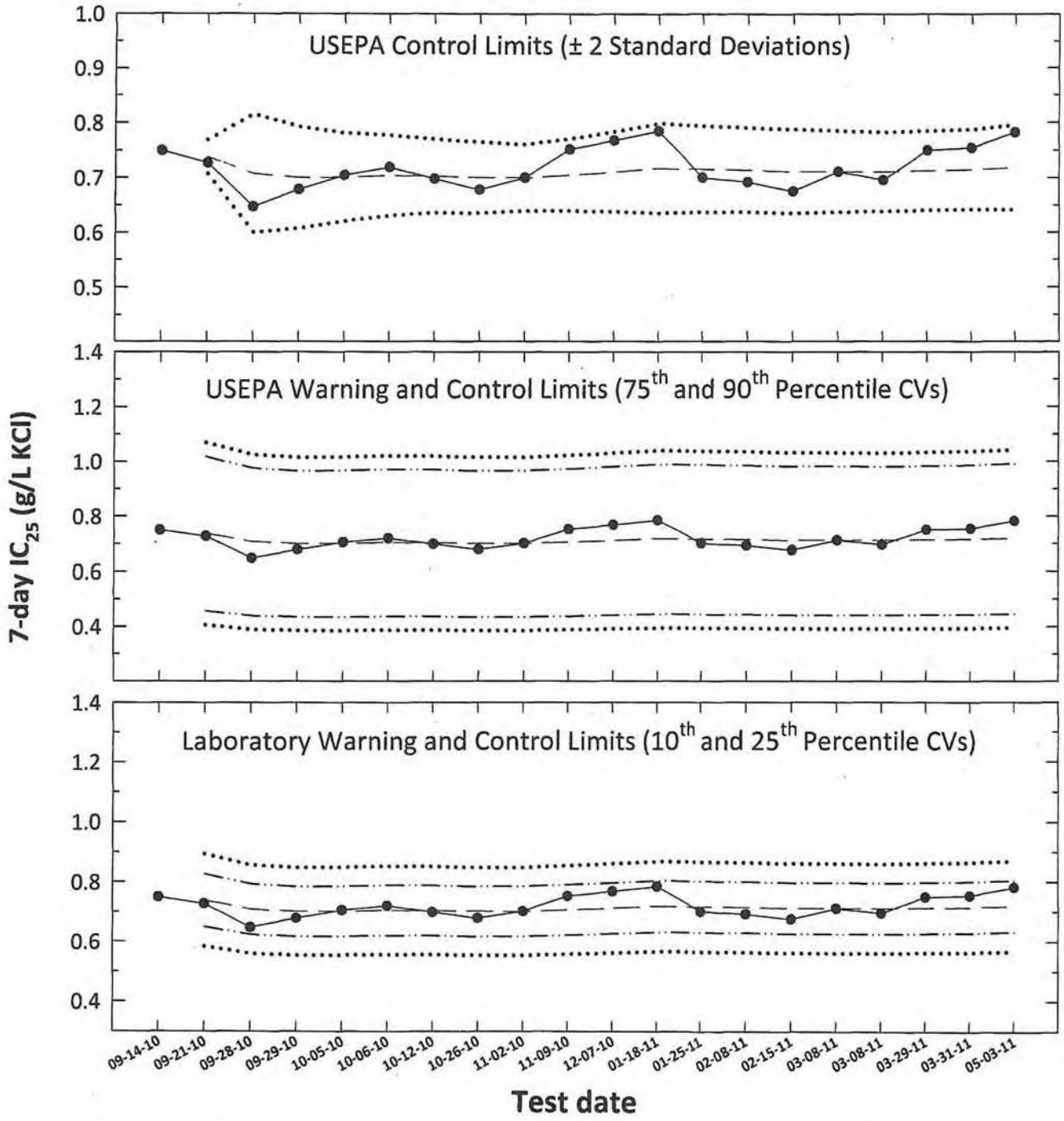
Sequoyah Nuclear Plant Biomonitoring
May 03 – 10, 2011

Appendix D

Reference Toxicant Test and Control Chart

Environmental Testing Solutions, Inc.

Pimephales promelas
Chronic Reference Toxicant Control Chart
Organism Source: Aquatox, Inc.



—●— **7-day IC_{25}** = 25% inhibition concentration. An estimation of the concentration of potassium chloride that would cause a 25% reduction in *Pimephales* growth for the test population.

— — **Central Tendency** (mean IC_{25})

—·—·· **Warning Limits** (mean $IC_{25} \pm S_{A.10}$ or $S_{A.75}$)

····· **Control Limits** (mean $IC_{25} \pm S_{A.25}$, $S_{A.90}$, or 2 Standard Deviations)

Graphs generated from associated excel spreadsheet.
Excel spreadsheet entered by: J. Sumner
Reviewed by: _____

Environmental Testing Solutions, Inc.

Pimephales promelas
Chronic Reference Toxicant Control Chart

Test number	Test date	7-day IC_{25} (g/L KCl)	CT (g/L KCl)	S	State and USEPA Control Limits CT - 2S	State and USEPA Control Limits CT + 2S	$S_{A.10}$	Laboratory Warning Limits CT - $S_{A.10}$	Laboratory Warning Limits CT + $S_{A.10}$	$S_{A.25}$	Laboratory Control Limits CT - $S_{A.25}$	Laboratory Control Limits CT + $S_{A.25}$	$S_{A.75}$	USEPA Warning Limits CT - $S_{A.75}$	USEPA Warning Limits CT + $S_{A.75}$	$S_{A.90}$	USEPA Control Limits CT - $S_{A.90}$	USEPA Control Limits CT + $S_{A.90}$	CV
1	09-14-10	0.75																	
2	09-21-10	0.73	0.74	0.02	0.71	0.77	0.09	0.65	0.83	0.16	0.58	0.89	0.28	0.46	1.02	0.33	0.41	1.07	0.02
3	09-28-10	0.65	0.71	0.05	0.60	0.82	0.08	0.62	0.79	0.15	0.56	0.86	0.27	0.44	0.98	0.32	0.39	1.03	0.08
4	09-29-10	0.68	0.70	0.05	0.61	0.79	0.08	0.62	0.78	0.15	0.55	0.85	0.27	0.43	0.97	0.32	0.39	1.02	0.07
5	10-05-10	0.70	0.70	0.04	0.62	0.78	0.08	0.62	0.79	0.15	0.55	0.85	0.27	0.43	0.97	0.32	0.39	1.02	0.06
6	10-06-10	0.72	0.70	0.04	0.63	0.78	0.08	0.62	0.79	0.15	0.56	0.85	0.27	0.44	0.97	0.32	0.39	1.02	0.05
7	10-12-10	0.70	0.70	0.03	0.64	0.77	0.08	0.62	0.79	0.15	0.56	0.85	0.27	0.44	0.97	0.32	0.39	1.02	0.05
8	10-26-10	0.68	0.70	0.03	0.64	0.76	0.08	0.62	0.78	0.15	0.55	0.85	0.27	0.43	0.97	0.32	0.39	1.02	0.05
9	11-02-10	0.70	0.70	0.03	0.64	0.76	0.08	0.62	0.78	0.15	0.55	0.85	0.27	0.43	0.97	0.32	0.39	1.02	0.04
10	11-09-10	0.75	0.71	0.03	0.64	0.77	0.08	0.62	0.79	0.15	0.56	0.85	0.27	0.44	0.97	0.32	0.39	1.02	0.05
11	12-07-10	0.77	0.71	0.04	0.64	0.78	0.09	0.63	0.80	0.15	0.56	0.86	0.27	0.44	0.98	0.32	0.39	1.03	0.05
12	01-18-11	0.78	0.72	0.04	0.64	0.80	0.09	0.63	0.80	0.15	0.57	0.87	0.27	0.44	0.99	0.32	0.39	1.04	0.06
13	01-25-11	0.70	0.72	0.04	0.64	0.79	0.09	0.63	0.80	0.15	0.57	0.87	0.27	0.44	0.99	0.32	0.39	1.04	0.05
14	02-08-11	0.69	0.71	0.04	0.64	0.79	0.09	0.63	0.80	0.15	0.56	0.86	0.27	0.44	0.99	0.32	0.39	1.04	0.05
15	02-15-11	0.68	0.71	0.04	0.64	0.79	0.09	0.63	0.80	0.15	0.56	0.86	0.27	0.44	0.98	0.32	0.39	1.03	0.05
16	03-08-11	0.71	0.71	0.04	0.64	0.79	0.09	0.63	0.80	0.15	0.56	0.86	0.27	0.44	0.98	0.32	0.39	1.03	0.05
17	03-08-11	0.70	0.71	0.04	0.64	0.78	0.09	0.63	0.80	0.15	0.56	0.86	0.27	0.44	0.98	0.32	0.39	1.03	0.05
18	03-29-11	0.75	0.71	0.04	0.64	0.78	0.09	0.63	0.80	0.15	0.56	0.86	0.27	0.44	0.98	0.32	0.39	1.03	0.05
19	03-31-11	0.75	0.71	0.04	0.64	0.79	0.09	0.63	0.80	0.15	0.56	0.87	0.27	0.44	0.99	0.32	0.39	1.04	0.05
20	05-03-11	0.78	0.72	0.04	0.64	0.80	0.09	0.63	0.80	0.15	0.57	0.87	0.27	0.45	0.99	0.32	0.40	1.04	0.05

Note: **7-d IC_{25}** = 7-day 25% inhibition concentration. An estimation of the concentration of potassium chloride that would cause a 25% reduction in Pimephales growth for the test population.

CT = Central tendency (mean IC_{25}).

S = Standard deviation of the IC_{25} values.

Laboratory Control and Warning Limits

Laboratory control and warning limits were established using the standard deviation of the IC_{25} values corresponding to the 10th and 25th percentile CVs. These ranges are more stringent than the control and warning limits recommended by USEPA for the test method and endpoint.

$S_{A.10}$ = Standard deviation corresponding to the 10th percentile CV. ($S_{A.10}$ = 0.12)

$S_{A.25}$ = Standard deviation corresponding to the 25th percentile CV. ($S_{A.25}$ = 0.21)

USEPA Control and Warning Limits

$S_{A.75}$ = Standard deviation corresponding to the 75th percentile CV. ($S_{A.75}$ = 0.38)

$S_{A.90}$ = Standard deviation corresponding to the 90th percentile CV. ($S_{A.90}$ = 0.45)

CV = Coefficient of variation of the IC_{25} values.

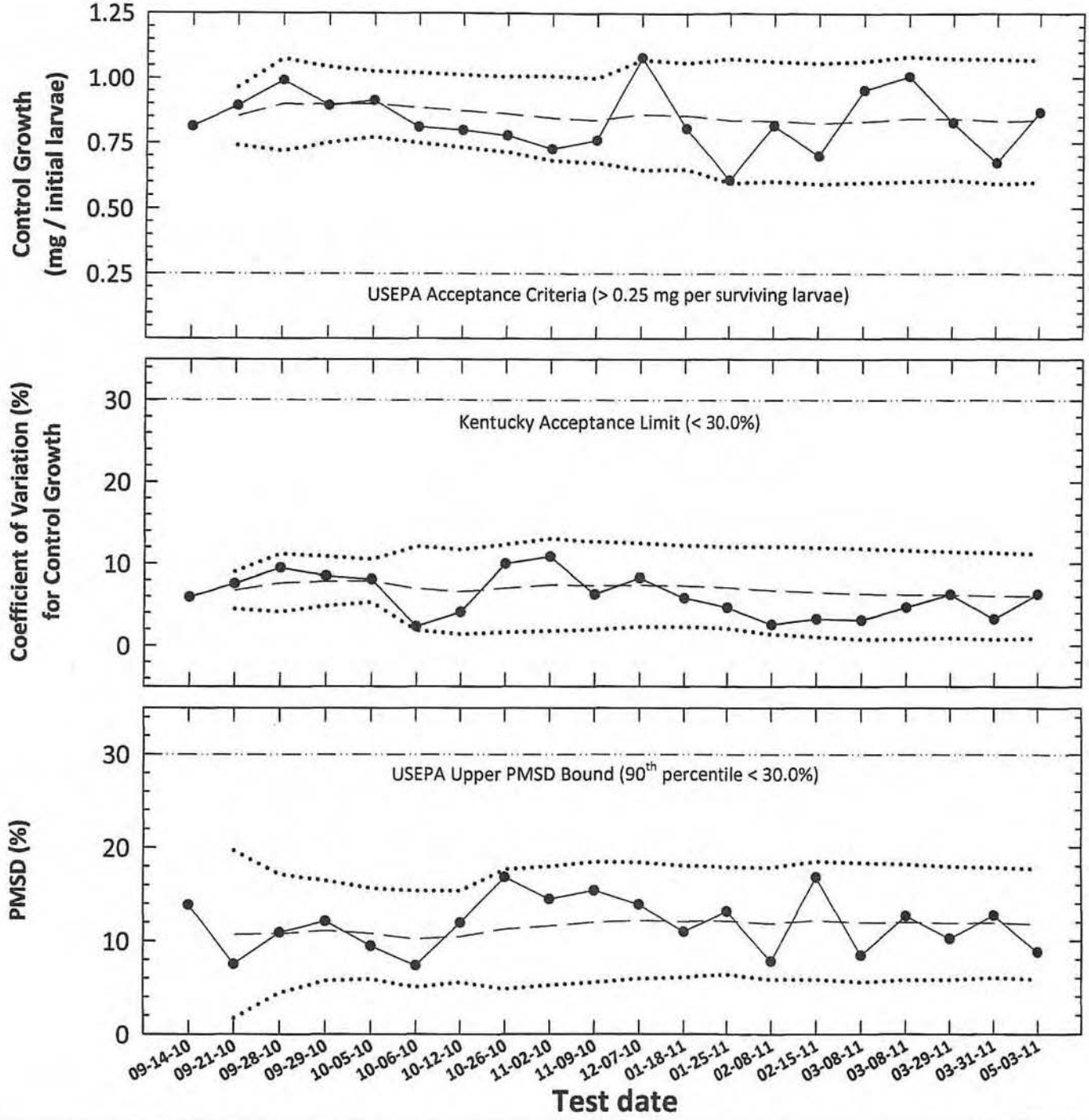
USEPA. 2000. Understanding and Accounting for Method Variability in Whole Effluent Toxicity Applications Under the National Pollutant Discharge Elimination Program. EPA-833-R-00-003. US Environmental Protection Agency, Cincinnati, OH.

Organisms obtained from Aquatox, Inc.

File: ppkcicr_050311.xlsx
Entered by: J. Sumner
Reviewed by: _____

Environmental Testing Solutions, Inc.

Pimephales promelas
Chronic Reference Toxicant Control Chart
Precision of Endpoint Measurements
Organism Source: Aquatox, Inc.



—●— **Control Reproduction, Coefficient of Variation (CV), or Percent Minimum Significant Difference (PMSD)** PMSD is the minimum significant difference between the control and treatment that can be declared statistically significant.

— — **Central Tendency** (mean Control Growth, CV, or PMSD)

····· **Control Limits** (mean Control Growth, CV, or PMSD ± 2 Standard Deviations)

Graphs generated from associated excel spreadsheet.
Excel spreadsheet entered by: J. Sumner
Reviewed by: _____

Environmental Testing Solutions, Inc.

Precision of Endpoint Measurements

Pimephales promelas
Chronic Reference Toxicant Data

Test number	Test date	Control Survival (%)	Control Mean Growth (mg/larvae)	CT for Control Growth (mg/larvae)	CV (%)	CT for Control Growth CV (%)	MSD	PMSD (%)	CT for PMSD (%)
1	09-14-10	97.5	0.813		5.9		0.11	13.9	
2	09-21-10	100	0.891	0.852	7.5	6.7	0.07	7.5	10.7
3	09-28-10	97.5	0.991	0.898	9.5	7.7	0.11	10.9	10.8
4	09-29-10	100	0.893	0.897	8.5	7.9	0.11	12.1	11.1
5	10-05-10	100	0.912	0.900	8.1	7.9	0.09	9.5	10.8
6	10-06-10	100	0.810	0.885	2.3	7.0	0.06	7.4	10.2
7	10-12-10	100	0.799	0.873	4.1	6.6	0.10	12.0	10.5
8	10-26-10	100	0.779	0.861	10.0	7.0	0.13	16.8	11.3
9	11-02-10	100	0.727	0.846	10.9	7.4	0.11	14.5	11.6
10	11-09-10	100	0.761	0.837	6.3	7.3	0.12	15.4	12.0
11	12-07-10	100	1.080	0.860	8.3	7.4	0.15	13.9	12.2
12	01-18-11	97.5	0.806	0.855	5.8	7.3	0.09	11.0	12.1
13	01-25-11	100	0.608	0.836	4.6	7.1	0.08	13.2	12.2
14	02-08-11	100	0.817	0.835	2.6	6.7	0.06	7.8	11.8
15	02-15-11	100	0.701	0.826	3.3	6.5	0.12	16.8	12.2
16	03-08-11	100	0.953	0.834	3.1	6.3	0.08	8.4	11.9
17	03-08-11	100	1.006	0.844	4.7	6.2	0.13	12.7	12.0
18	03-29-11	100	0.829	0.843	6.3	6.2	0.09	10.3	11.9
19	03-31-11	100	0.675	0.834	3.2	6.0	0.09	12.8	11.9
20	05-03-11	100	0.867	0.836	6.3	6.1	0.08	8.8	11.8

Note:

CV = Coefficient of variation for control growth.
Lower CV bound determined by USEPA (10th percentile) = 3.5%.
Upper CV bound determined by USEPA (90th percentile) = 20%

MSD = Minimum Significant Difference

PMSD = Percent Minimum Significant Difference
PMSD is a measure of test precision. The PMSD is the minimum percent difference between the control and treatment that can be declared statistically significant in a whole effluent toxicity test.
Lower PMSD bound determined by USEPA (10th percentile) = 12%.
Upper PMSD bound determined by USEPA (90th percentile) = 30%.

CT = Central Tendancy (mean Control Growth, CV, or PMSD)

USEPA. 2000. Understanding and Accounting for Method Variability in Whole Effluent Toxicity Applications Under the National Pollutant Discharge Elimination Program. EPA-833-R-00-003. US Environmental Protection Agency, Cincinnati, OH.
USEPA. 2001a, 2001b. Final Report: Interlaboratory Variability Study of EPA Short-term Chronic and Acute Whole Effluent Toxicity Test Methods, Volumes 1 and 2 Appendix. EPA-821-B-01-004 and EPA-821-B-01-005. US Environmental Protection Agency, Cincinnati, OH.

File: ppkclcr_050311.xlsx
Entered by: J. Sumner
Reviewed by: _____

Organisms obtained from Aquatox, Inc.

ETS
Environmental Testing Solutions, Inc.

Potassium Chloride Chronic Reference Toxicant Test
(EPA-821-R-02-013 Method 1000.0)
Species: *Pimephales promelas*

PpKClCR Test Number: 231

Dilution preparation information:						*Comments:*
KCl Stock INSS number:	INSS 928					
Stock preparation:	50 g KCl/L: Dissolve 50 g KCl in 1-L Milli-Q water.					
Dilution prep (mg/L)	450	600	750	900	1050	
Stock volume (mL)	9	12	15	18	21	
Diluent volume (mL)	991	988	985	982	979	
Total volume (mL)	1000	1000	1000	1000	1000	

Test organism information:		*Test information:*	
Organism age:	22.75 HOURS OLD	Randomizing template:	RED
Date and times organisms were born between:	05-02-11 1600	Incubator number and shelf location:	3F
Organism source:	ATOX BATCH Pp 05-02-11	*Artemia* CHM number:	CHM 593
		Drying information for weight determination:	
Transfer vessel information:	pH = 7.68 S.U. Temperature = 24.2 °C	Date / Time in oven:	05-10-11 1410
		Initial oven temperature:	60°C
Average transfer volume:	0.1776 ml	Date / Time out of oven:	05-11-11 1415
		Final oven temperature:	60°C
		Total drying time:	24-HOURS

Daily feeding and renewal information:

Day	Date	Morning feeding		Afternoon feeding		Test initiation, renewal, or termination		MHSW batch used
		Time	Analyst	Time	Analyst	Time	Analyst	
0	05-03-11	→	→	1630	JH	1445	JH	05-02-11 A
1	05-04-11	0900	JH	1500	JH	1346	JH	05-02-11 A
2	05-05-11	0900	JH	1500	JH	1347	JH	05-02-11 B
3	05-06-11	0900	JH	1500	JH	1345	JH	05-02-11 B
4	05-07-11	0900	JH	1500	JH	1345	JH	05-05-11
5	05-08-11	0800	JH	1400	JH	1349	JH	05-05-11
6	05-09-11	0800	JH	1400	JH	1347	JH	05-05-11
7	05-10-11					1408	JH	

Control information:		Acceptance criteria	*Summary of test endpoints:*	
% Mortality:	0%	≤ 20%	7-day LC_{50}	949.5
Average weight per initial larvae:	0.867		NOEC	<450
Average weight per surviving larvae:	0.867	≥ 0.25 mg/larvae	LOEC	450
			ChV	<450
			IC_{25}	782.2

ETS Environmental Testing Solutions, Inc.

Species: ***Pimephales promelas*** PpKClCR Test Number: 231

Survival and Growth Data

Day	Control				450 mg KCl/L				600 mg KCl/L			
	A	B	C	D	E	F	G	H	I	J	K	L
0	10	10	10	10	10	10	10	10	10	10	10	10
1	10	10	10	10	10	10	10	10	10	10	10	10
2	10	10	10	10	10	10	10	10	10	10	10	10
3	10	10	10	10	10	10	10	10	10	10	10	10
4	10	10	10	10	10	10	10	10	10	10	10	10
5	10	10	10	10	10	10	10	10	8 2d	9 1d	9 1d	9 1d
6	10	10	10	10	10	9 1d	10	10	8	8 1d	9	9
7	10	10	10 1lg	10	10	9 1lg	10	10	8	8	9	9 1lg
A = Pan weight (mg) Tray color code:: PLUM Analyst: MAC Date: ~~05-03-11~~ 05-04-11	13.77	14.05	14.20	14.09	14.53	13.74	13.71	14.10	14.95	14.41	13.99	14.42
B = Pan + Larvae weight (mg) Analyst: CDJ Date: 05.13.11	22.30	22.49	23.67	22.51	21.69	21.83	~~21.8~~ 21.30	22.54	21.24	21.05	21.50	22.48
C = Larvae weight (mg) = B – A Hand calculated. Analyst:	8.53	8.24	9.47	8.42	7.16	8.09	7.59	8.44	6.29	6.64	7.51	8.06
Weight per initial number of larvae (mg) = C / Initial number of larvae Hand calculated. Analyst:	0.853	0.824	0.947	0.842	0.716	0.809	0.759	0.844	0.629	0.664	0.751	0.806
Average weight per initial number of larvae (mg)	0.867				0.782				0.713			
Percent reduction from control (%)					9.8%				17.8%			

Comment codes: c = clear, d = dead, fg = fungus, k = killed, m = missing, sk = sick, sm = unusually small, lg = unusually large, d&r = decanted and returned, w = wounded.

Comments:

ETS Environmental Testing Solutions, Inc.

Species: ***Pimephales promelas*** PpKClCR Test Number: 231

Survival and Growth Data

Day	750 mg KCl/L				900 mg KCl/L				1050 mg KCl/L			
	M	N	O	P	Q	R	S	T	U	V	W	X
0	10	10	10	10	10	10	10	10	10	10	10	10
1	10	10	10	9 1d	10	10	9 1d	10	6 4d	8 2d	8 2d	6 4d
2	10	10	10	9	10	10	9	9 1d	6	8	7 1d	6
3	10	9 1d	9 1d	9	9 1d	9 1d	9	9	5 1d	5 2d	6 1d	5 1d
4	10	9	9	9	9	9	9	8 1d	4 1d	4 1d	6	5
5	10	9	9	9	6 3d	7 2d	8 1d	8	4	3 1d	5 1d	4 1d
6	9 1d	9	9	9	6	6 1d	6 2d	8	3 1d	3	4 1d	3
7	9 15M	9	9	9 15M	6	6 15M	6	8 1LG	3 15M	3 15M	2 2d 15M	2 1d
A = Pan weight (mg) Tray color code:: Plum Analyst: MHF Date: 05-04-11	14.85	13.07	14.42	14.44	13.56	14.48	13.92	13.84	14.42	13.71	15.45	13.08
B = Pan + Larvae weight (mg) Analyst: CJDJ Date: 05.13.11	20.71	20.67	22.15	20.68	17.90	18.51	18.85	21.28	16.17	15.59	16.67	14.76
C = Larvae weight (mg) = B – A Hand calculated. Analyst: [illegible]	5.86	7.60	7.73	6.24	4.34	4.03	4.93	7.44	1.75	1.88	1.22	1.68
Weight per initial number of larvae (mg) = C / Initial number of larvae Hand calculated. Analyst: [illegible]	0.586	0.760	0.773	0.624	0.434	0.403	0.493	0.744	0.175	0.188	0.122	0.168
Average weight per initial number of larvae (mg)	0.686				0.519				0.163			
Percent reduction from control (%)			20.9%				40.2%				81.2%	

Comment codes: c = clear, d = dead, fg = fungus, k = killed, m = missing, sk = sick, sm = unusually small, lg = unusually large, d&r = decanted and returned, w = wounded.

Comments:

Environmental Testing Solutions, Inc.

Pimephales promelas **Chronic Reference Toxicant Test**
EPA-821-R-02-013, Method 1000.0

Quality Control
Verification of Data Entry, Calculations, and Statistical Analyses

Test number: PpKClCR #231
Test dates: May 03-10, 2011

Concentration (mg/L KCl)	Replicate	Initial number of larvae	Final number of larvae	A = Pan weight (mg)	B = Pan + Larvae weight (mg)	Larvae weight (mg) = A - B	Weight / Surviving number of larvae (mg)	Mean weight/ Surviving number of larvae (mg)	Coefficient of variation (Mean weight per surviving number of larvae) (%)	Weight / Initial number of larvae (mg)	Mean survival (%)	Mean weight/ Initial number of larvae (mg)	Coefficient of variation (%)	Percent reduction from control (%)
Control	A	10	10	13.77	22.30	8.53	0.853	0.867	6.3	0.853	100.0	0.867	6.3	Not applicable
	B	10	10	14.25	22.49	8.24	0.824			0.824				
	C	10	10	14.20	23.67	9.47	0.947			0.947				
	D	10	10	14.09	22.51	8.42	0.842			0.842				
450	E	10	10	14.53	21.69	7.16	0.716	0.804	10.2	0.716	97.5	0.782	7.2	9.8
	F	10	9	13.74	21.83	8.09	0.899			0.809				
	G	10	10	13.71	21.30	7.59	0.759			0.759				
	H	10	10	14.10	22.54	8.44	0.844			0.844				
600	I	10	8	14.95	21.24	6.29	0.786	0.837	5.4	0.629	85.0	0.713	11.3	17.8
	J	10	8	14.41	21.05	6.64	0.830			0.664				
	K	10	9	13.99	21.50	7.51	0.834			0.751				
	L	10	9	14.42	22.48	8.06	0.896			0.806				
750	M	10	9	14.85	20.71	5.86	0.651	0.762	13.8	0.586	90.0	0.686	13.8	20.9
	N	10	9	13.07	20.67	7.60	0.844			0.760				
	O	10	9	14.42	22.15	7.73	0.859			0.773				
	P	10	9	14.44	20.68	6.24	0.693			0.624				
900	Q	10	6	13.56	17.90	4.34	0.723	0.787	14.5	0.434	65.0	0.519	29.9	40.2
	R	10	6	14.48	18.51	4.03	0.672			0.403				
	S	10	6	13.92	18.85	4.93	0.822			0.493				
	T	10	8	13.84	21.28	7.44	0.930			0.744				
1050	U	10	3	14.42	16.17	1.75	0.583	0.665	17.7	0.175	25.0	0.163	17.6	81.2
	V	10	3	13.71	15.59	1.88	0.627			0.188				
	W	10	2	15.45	16.67	1.22	0.610			0.122				
	X	10	2	13.08	14.76	1.68	0.840			0.168				

Dunnett's MSD value: 0.0764
PMSD: 8.8

MSD = Minimum Significant Difference
PMSD = Percent Minimum Significant Difference

PMSD is a measure of test precision. The PMSD is the minimum percent difference between the control and treatment that can be declared statistically significant in a whole effluent toxicity test.
Lower PMSD bound determined by USEPA (10th percentile) = 12%.
Upper PMSD bound determined by USEPA (90th percentile) = 30%.

Lower and upper PMSD bounds were determined from the 10th and 90th percentile, respectively, of PMSD data from EPA's WET Interlaboratory Variability Study (USEPA, 2001a; USEPA, 2001b).

USEPA. 2001a, 2001b. Final Report: Interlaboratory Variability Study of EPA Short-term Chronic and Acute Whole Effluent Toxicity Test Methods, Volumes 1 and 2-Appendix. EPA-821-B-01-004 and EPA-821-B-01-005. US Environmental Protection Agency, Cincinnati, OH.

Organisms obtained from Aquatox, Inc.

File: ppkclcr_050311.xlsx
Entered by: J. Sumner
Reviewed by: JS

ETS
Environmental Testing Solutions, Inc.

Statistical Analyses

Larval Fish Growth and Survival Test-7 Day Survival

Start Date:.	5/3/2011	Test ID:	PpKClCR	Sample ID:	REF-Ref Toxicant
End Date:	5/10/2011	Lab ID:	ETS-Envir. Testing Sol.	Sample Type:	KCL-Potassium chloride
Sample Date:		Protocol:	FWCHR-EPA-821-R-02-013	Test Species:	PP-Pimephales promelas
Comments:					

Conc-mg/L	1	2	3	4
D-Control	1.0000	1.0000	1.0000	1.0000
450	1.0000	0.9000	1.0000	1.0000
600	0.8000	0.8000	0.9000	0.9000
750	0.9000	0.9000	0.9000	0.9000
900	0.6000	0.6000	0.6000	0.8000
1050	0.3000	0.3000	0.2000	0.2000

			Transform: Arcsin Square Root					Rank	1-Tailed	Number	Total
Conc-mg/L	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical	Resp	Number
D-Control	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	4			0	40
450	0.9750	0.9750	1.3713	1.2490	1.4120	5.942	4	16.00	10.00	1	40
*600	0.8500	0.8500	1.1781	1.1071	1.2490	6.954	4	10.00	10.00	6	40
*750	0.9000	0.9000	1.2490	1.2490	1.2490	0.000	4	10.00	10.00	4	40
*900	0.6500	0.6500	0.9413	0.8861	1.1071	11.742	4	10.00	10.00	14	40
*1050	0.2500	0.2500	0.5216	0.4636	0.5796	12.838	4	10.00	10.00	30	40

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.94239873	0.884	0.46929573	0.83381121
Equality of variance cannot be confirmed				

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Steel's Many-One Rank Test	450	600	519.615242	
Treatments vs D-Control				

Trimmed Spearman-Karber

Trim Level	EC50	95% CL	
0.0%			
5.0%			
10.0%			
20.0%			
Auto-25.0%	**949.52**	**891.54**	**1011.26**

File: ppkclcr_050311.xlsx
Entered by: J. Sumner
Reviewed by: _____

Organisms obtained from Aquatox, Inc.

ETS
Environmental Testing Solutions, Inc.

Statistical Analyses

Larval Fish Growth and Survival Test-7 Day Growth

Start Date:	5/3/2011	Test ID:	PpKClCR	Sample ID:	REF-Ref Toxicant
End Date:	5/10/2011	Lab ID:	ETS-Envir. Testing Sol.	Sample Type:	KCL-Potassium chloride
Sample Date:		Protocol:	FWCHR-EPA-821-R-02-013	Test Species:	PP-Pimephales promelas
Comments:					

Conc-mg/L	1	2	3	4
D-Control	0.8530	0.8240	0.9470	0.8420
450	0.7160	0.8090	0.7590	0.8440
600	0.6290	0.6640	0.7510	0.8060
750	0.5860	0.7600	0.7730	0.6240
900	0.4340	0.4030	0.4930	0.7440
1050	0.1750	0.1880	0.1220	0.1680

			Transform: Untransformed						1-Tailed		Isotonic	
Conc-mg/L	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD	Mean	N-Mean
D-Control	0.8665	1.0000	0.8665	0.8240	0.9470	6.345	4				0.8665	1.0000
*450	0.7820	0.9025	0.7820	0.7160	0.8440	7.180	4	2.151	1.943	0.0764	0.7820	0.9025
600	0.7125	0.8223	0.7125	0.6290	0.8060	11.330	4				0.7125	0.8223
750	0.6858	0.7914	0.6858	0.5860	0.7730	13.806	4				0.6858	0.7914
900	0.5185	0.5984	0.5185	0.4030	0.7440	29.874	4				0.5185	0.5984
1050	0.1633	0.1884	0.1633	0.1220	0.1880	17.593	4				0.1633	0.1884

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.92959601	0.749	0.540073551	-0.97410495
F-Test indicates equal variances (p = 0.97)	1.04289341	47.46834564		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates significant differences Treatments vs D-Control	0.07635283	0.08811637	0.0142805	0.00308783	0.075051717	1, 6

Linear Interpolation (200 Resamples)

Point	mg/L	SD	95% CL(Exp)		Skew
IC05*	230.72	96.49	103.78	614.32	0.9507
IC10	454.64	81.89	211.64	691.81	-0.0365
IC15	548.15	86.58	396.44	894.38	0.7530
IC20	708.22	87.46	443.85	854.07	-0.1925
IC25	**782.17**	**55.25**	**523.40**	**935.70**	**-0.7858**
IC40	898.74	32.73	790.71	961.75	-0.2823
IC50	936.00	22.79	858.25	984.19	-0.3662

* indicates IC estimate less than the lowest concentration

Organisms obtained from Aquatox, Inc.

File: ppkclcr_050311.xlsx
Entered by: J. Sumner
Reviewed by: _____

ETS
Environmental Testing Solutions, Inc.

Species: ***Pimephales promelas*** PpKClCR Test Number: 231

Daily Chemistry:

		Day					
		0		1		2	
	Analyst	MOL	MAK	MAK	COJ	COJ	COJ
Concentration	Parameter						
CONTROL	pH (S.U.)	7.84	7.74	7.78	7.67	7.89	7.71
	DO (mg/L)	7.4	7.4	7.5	7.3	7.5	7.6
	Conductivity (µmhos/cm)	333		332		305	
	Alkalinity (mg $CaCO_3$/L)	59				59	
	Hardness (mg $CaCO_3$/L)	91				89	
	Temperature (°C)	24.7	24.5	25.0	24.3	24.9	24.5
450 mg KCl/L	pH (S.U.)	7.77	7.80	7.83	7.75	7.92	7.74
	DO (mg/L)	7.5	7.5	7.6	7.4	7.6	7.6
	Conductivity (µmhos/cm)	1110		1160		1070	
	Temperature (°C)	24.9	24.8	25.0	24.3	24.8	24.6
600 mg KCl/L	pH (S.U.)	7.81	7.81	7.87	7.72	7.96	7.73
	DO (mg/L)	7.5	7.5	7.6	7.4	7.6	7.6
	Conductivity (µmhos/cm)	1340		1430		1320	
	Temperature (°C)	24.9	24.8	25.1	24.2	24.9	24.6
750 mg KCl/L	pH (S.U.)	7.80	7.83	7.88	7.72	7.96	7.77
	DO (mg/L)	7.5	7.5	7.6	7.2	7.6	7.6, 7.4
	Conductivity (µmhos/cm)	1610		1700		1570	
	Temperature (°C)	24.9	24.6	25.0	24.5	24.9	24.4
900 mg KCl/L	pH (S.U.)	7.81	7.83	7.89	7.78	7.97	7.72
	DO (mg/L)	7.5	7.5	7.6	7.3	7.6	7.6
	Conductivity (µmhos/cm)	1850		1960		1810	
	Temperature (°C)	24.9	24.8	24.8	24.5	25.0	24.4
1050 mg KCl/L	pH (S.U.)	7.81	7.84	7.88	7.78	7.96	7.74
	DO (mg/L)	7.5	7.5	7.7	7.4	7.6	7.6, 7.4
	Conductivity (µmhos/cm)	2140		2190		2060	
	Temperature (°C)	24.9	24.8	25.0	24.5	25.0	24.4
STOCK	Conductivity (µmhos/cm)	62000					
		Initial	Final	Initial	Final	Initial	Final

ETS
Environmental Testing Solutions, Inc.

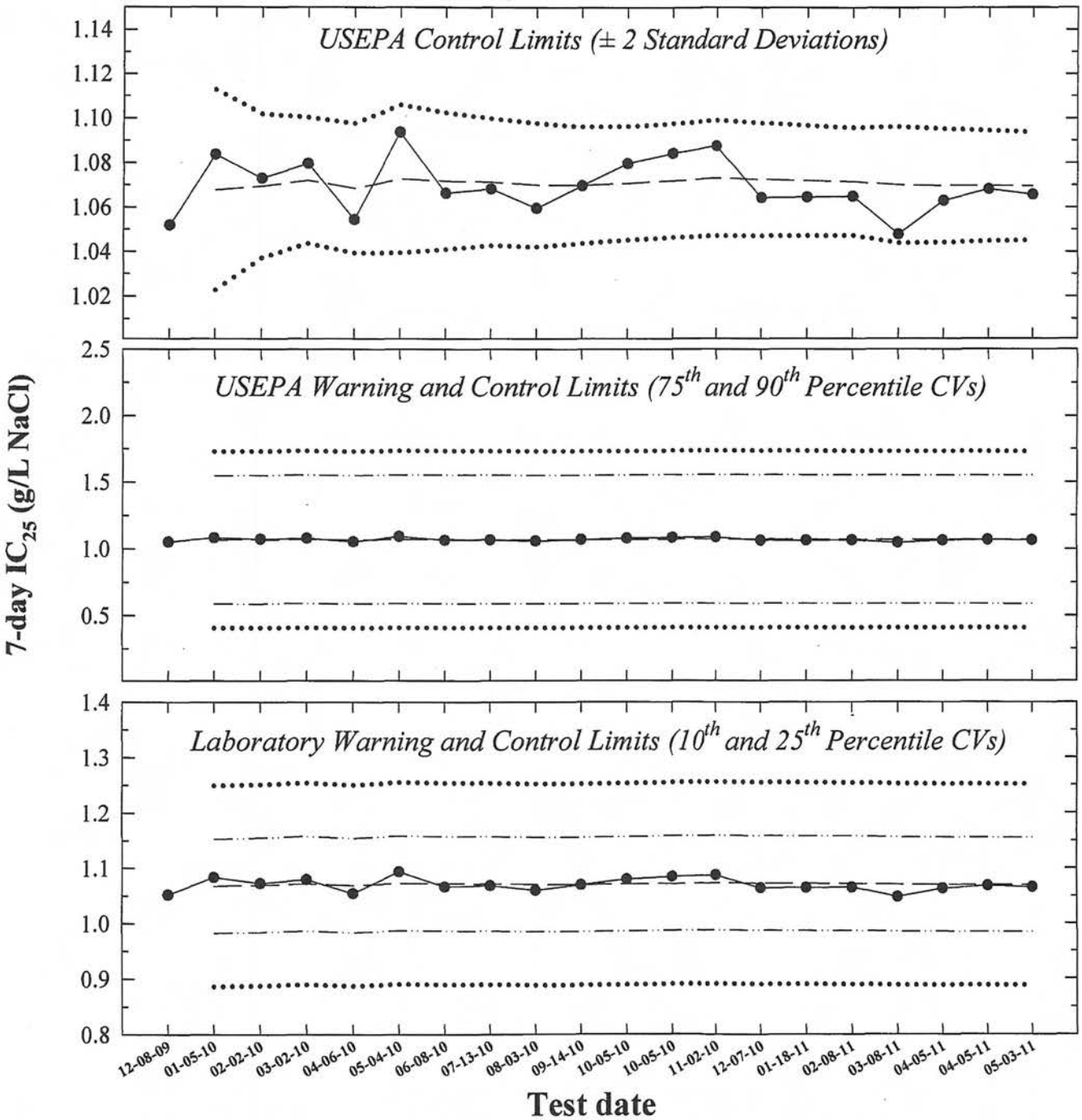
Species: ***Pimephales promelas***

PpKClCR Test Number: 231

		Day							
		3		4		5		6	
	Analyst	CDJ	MAF	MAF	BSL	BSL	LAB	LAB	CDJ
Concentration	Parameter								
CONTROL	pH (S.U.)	7.81	7.72	7.80	7.82	7.80	7.65	7.73	7.68
	DO (mg/L)	7.6	7.6	7.7	7.9	7.7	7.3	7.6	7.5
	Conductivity (µmhos/cm)	314		306		332		322	
	Alkalinity (mg $CaCO_3$/L)			58					
	Hardness (mg $CaCO_3$/L)			91					
	Temperature (°C)	24.9	24.5	24.8	24.5	24.8	24.7	24.8	24.6
450 mg KCl/L	pH (S.U.)	7.91	7.77	7.81	7.86	7.91	7.66	7.83	7.67
	DO (mg/L)	7.6	7.6	7.7	7.9	7.7	7.3	7.5	7.5
	Conductivity (µmhos/cm)	1080		1010		~~958~~ 1050		1000	
	Temperature (°C)	25.0	24.4	24.8	24.5	24.8	24.7	24.8	24.6
600 mg KCl/L	pH (S.U.)	7.92	7.79	7.90	7.88	7.94	7.65	7.87	7.73
	DO (mg/L)	7.6	7.6	7.7	7.9	7.8	7.2	7.5	7.6
	Conductivity (µmhos/cm)	1330		1390		1450		1420	
	Temperature (°C)	24.8	24.4	24.8	24.5	24.8	24.5	24.9	24.4
750 mg KCl/L	pH (S.U.)	7.94	7.78	7.93	7.86	7.94	7.69	7.88	7.74
	DO (mg/L)	7.6	7.6	7.7	7.9	7.8	7.2	7.5	7.6
	Conductivity (µmhos/cm)	1570		1590		1640		1600	
	Temperature (°C)	24.8	24.4	24.8	24.7	24.8	24.5	24.9	24.3
900 mg KCl/L	pH (S.U.)	7.95	7.83	7.94	7.85	7.95	7.68	7.89	7.74
	DO (mg/L)	7.6	7.6	7.7	7.8	7.9	7.3	7.6	7.6
	Conductivity (µmhos/cm)	1810		1830		1900		1880	
	Temperature (°C)	24.8	24.4	24.8	24.7	24.8	24.8	24.9	24.3
1050 mg KCl/L	pH (S.U.)	7.96	7.82	7.95	7.88	7.95	7.73	7.89	7.76
	DO (mg/L)	7.6	7.7	7.8	7.9	7.8	7.4	7.6	7.6
	Conductivity (µmhos/cm)	2060		2080		2170		2110	
	Temperature (°C)	24.9	24.4	24.8	24.6	24.8	24.6	24.9	24.4
		Initial	Final	Initial	Final	Initial	Final	Initial	Final

Environmental Testing Solutions, Inc.

Ceriodaphnia dubia
Chronic Reference Toxicant Control Chart



—●— **7-day IC_{25}** = 25% inhibition concentration. An estimation of the concentration of sodium chloride that would cause a 25% reduction in *Ceriodaphnia* reproduction for the test population.

— — · **Central Tendency** (mean IC_{25})

—··— **Warning Limits** (mean $IC_{25} \pm S_{A.10}$ or $S_{A.75}$)

····· **Control Limits** (mean $IC_{25} \pm S_{A.25}$, $S_{A.90}$, or 2 Standard Deviations)

Graphs generated from associated excel spreadsheet.
Excel spreadsheet entered by: J. Sumner
Reviewed by: _____

Environmental Testing Solutions, Inc.

Ceriodaphnia dubia
Chronic Reference Toxicant Control Chart

Test number	Test date	7-day IC_{25} (g/L NaCl)	CT (g/L NaCl)	S	State and USEPA Control Limits CT - 2S	CT + 2S	$S_{A.10}$	Laboratory Warning Limits CT - $S_{A.10}$	CT + $S_{A.10}$	$S_{A.25}$	Laboratory Control Limits CT - $S_{A.25}$	CT + $S_{A.25}$	$S_{A.75}$	USEPA Warning Limits CT - $S_{A.75}$	CT + $S_{A.75}$	$S_{A.90}$	USEPA Control Limits CT - $S_{A.90}$	CT + $S_{A.90}$	CV
1	12-08-09	1.05																	
2	01-05-10	1.08	1.07	0.02	1.02	1.11	0.09	0.98	1.15	0.18	0.89	1.25	0.48	0.59	1.55	0.66	0.41	1.73	0.02
3	02-02-10	1.07	1.07	0.02	1.04	1.10	0.09	0.98	1.16	0.18	0.89	1.25	0.48	0.59	1.55	0.66	0.41	1.73	0.02
4	03-02-10	1.08	1.07	0.01	1.04	1.10	0.09	0.99	1.16	0.18	0.89	1.25	0.48	0.59	1.55	0.66	0.41	1.74	0.01
5	04-06-10	1.05	1.07	0.01	1.04	1.10	0.09	0.98	1.15	0.18	0.89	1.25	0.48	0.59	1.55	0.66	0.41	1.73	0.01
6	05-04-10	1.09	1.07	0.02	1.04	1.11	0.09	0.99	1.16	0.18	0.89	1.26	0.48	0.59	1.56	0.67	0.41	1.74	0.02
7	06-08-10	1.07	1.07	0.02	1.04	1.10	0.09	0.99	1.16	0.18	0.89	1.25	0.48	0.59	1.55	0.66	0.41	1.74	0.01
8	07-13-10	1.07	1.07	0.01	1.04	1.10	0.09	0.99	1.16	0.18	0.89	1.25	0.48	0.59	1.55	0.66	0.41	1.74	0.01
9	08-03-10	1.06	1.07	0.01	1.04	1.10	0.09	0.98	1.16	0.18	0.89	1.25	0.48	0.59	1.55	0.66	0.41	1.73	0.01
10	09-14-10	1.07	1.07	0.01	1.04	1.10	0.09	0.98	1.16	0.18	0.89	1.25	0.48	0.59	1.55	0.66	0.41	1.73	0.01
11	10-05-10	1.08	1.07	0.01	1.05	1.10	0.09	0.99	1.16	0.18	0.89	1.25	0.48	0.59	1.55	0.66	0.41	1.73	0.01
12	10-05-10	1.08	1.07	0.01	1.05	1.10	0.09	0.99	1.16	0.18	0.89	1.25	0.48	0.59	1.55	0.66	0.41	1.74	0.01
13	11-02-10	1.09	1.07	0.01	1.05	1.10	0.09	0.99	1.16	0.18	0.89	1.26	0.48	0.59	1.56	0.67	0.41	1.74	0.01
14	12-07-10	1.06	1.07	0.01	1.05	1.10	0.09	0.99	1.16	0.18	0.89	1.25	0.48	0.59	1.56	0.66	0.41	1.74	0.01
15	01-18-11	1.06	1.07	0.01	1.05	1.10	0.09	0.99	1.16	0.18	0.89	1.25	0.48	0.59	1.55	0.66	0.41	1.74	0.01
16	02-08-11	1.06	1.07	0.01	1.05	1.10	0.09	0.99	1.16	0.18	0.89	1.25	0.48	0.59	1.55	0.66	0.41	1.74	0.01
17	03-08-11	1.05	1.07	0.01	1.04	1.10	0.09	0.98	1.16	0.18	0.89	1.25	0.48	0.59	1.55	0.66	0.41	1.73	0.01
18	04-05-11	1.06	1.07	0.01	1.04	1.10	0.09	0.98	1.16	0.18	0.89	1.25	0.48	0.59	1.55	0.66	0.41	1.73	0.01
19	04-05-11	1.07	1.07	0.01	1.04	1.09	0.09	0.98	1.16	0.18	0.89	1.25	0.48	0.59	1.55	0.66	0.41	1.73	0.01
20	05-03-11	1.07	1.07	0.01	1.05	1.09	0.09	0.98	1.16	0.18	0.89	1.25	0.48	0.59	1.55	0.66	0.41	1.73	0.01

Note: **7-d IC_{25}** = 7-day 25% inhibition concentration. An estimation of the concentration of sodium chloride that would cause a 25% reduction in *Ceriodaphnia* reproduction for the test population.

CT = Central tendency (mean IC_{25}).

S = Standard deviation of the IC_{25} values.

Laboratory Control and Warning Limits

Laboratory control and warning limits were established using the standard deviation of the IC_{25} values corresponding to the 10th and 25th percentile CVs. These ranges are more stringent than the control and warning limits recommended by USEPA for the test method and endpoint.

$S_{A.10}$ = Standard deviation corresponding to the 10th percentile CV. ($S_{A.10}$ = 0.08)

$S_{A.25}$ = Standard deviation corresponding to the 25th percentile CV. ($S_{A.25}$ = 0.17)

USEPA Control and Warning Limits

$S_{A.75}$ = Standard deviation corresponding to the 75th percentile CV. ($S_{A.75}$ = 0.45)

$S_{A.90}$ = Standard deviation corresponding to the 90th percentile CV. ($S_{A.90}$ = 0.62)

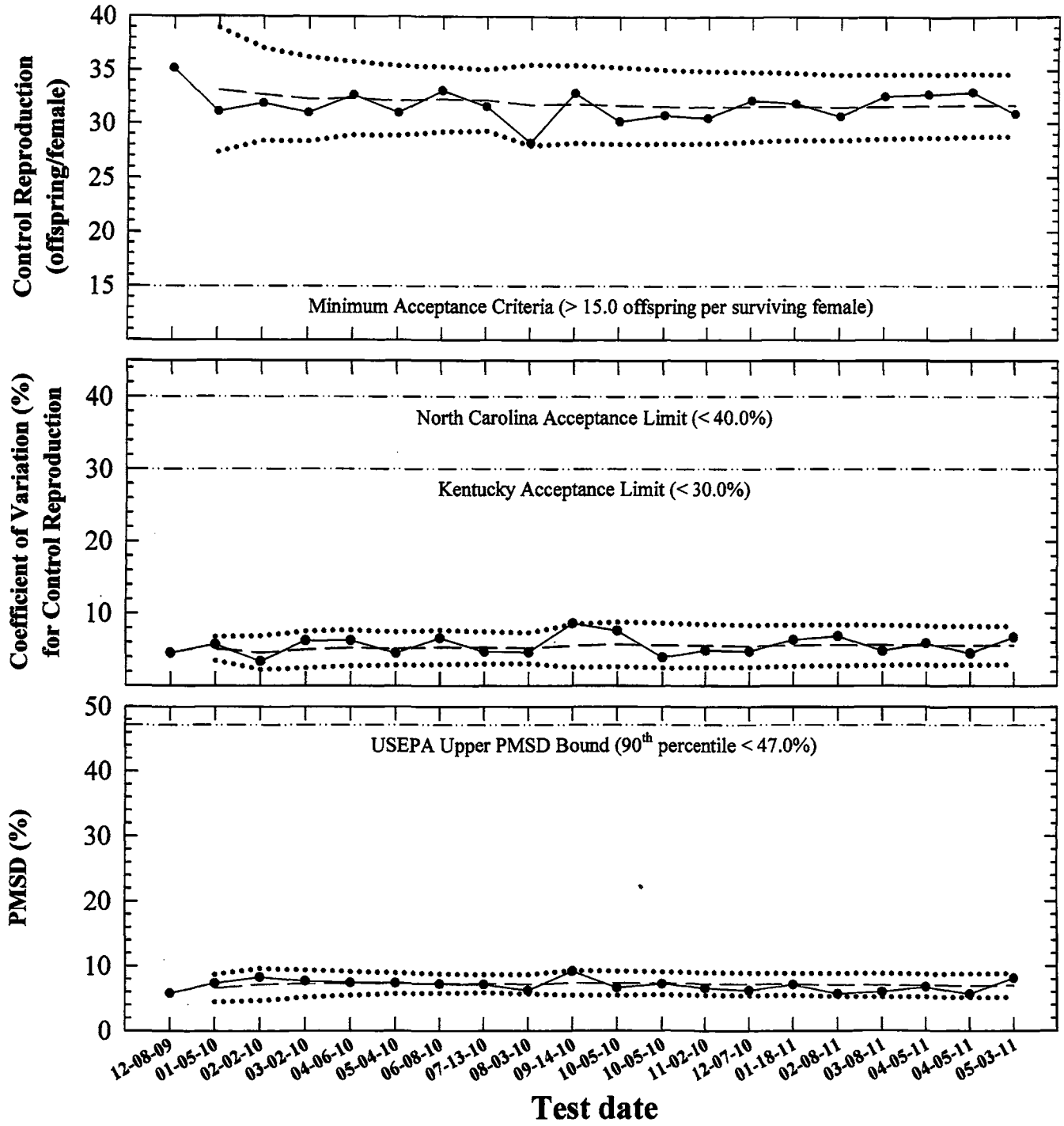
CV = Coefficient of variation of the IC_{25} values.

USEPA. 2000. Understanding and Accounting for Method Variability in Whole Effluent Toxicity Applications Under the National Pollutant Discharge Elimination Program. EPA-833-R-00-003. US Environmental Protection Agency, Cincinnati, OH.

File: CdNaCICR_050311.xlsx
Entered by: J. Sumner
Reviewed by:

Environmental Testing Solutions, Inc.

Ceriodaphnia dubia
Chronic Reference Toxicant Control Chart
Precision of Endpoint Measurements



—•— **Control Reproduction, Coefficient of Variation (CV), or Percent Minimum Significant Difference (PMSD)** PMSD is the minimum significant difference between the control and treatment that can be declared statistically significant.

— — · **Central Tendency** (mean Control Reproduction, CV, or PMSD)

····· **Control Limits** (mean Control Reproduction, CV, or PMSD ± 2 Standard Deviations)

Graphs generated from associated excel spreadsheet.
Excel spreadsheet entered by: J. Sumner
Reviewed by: JK

Environmental Testing Solutions, Inc.

Precision of Endpoint Measurements

Ceriodaphnia dubia
Chronic Reference Toxicant Data

Test number	Test date	Control Survival (%)	Control Mean Reproduction (offspring/female)	CT for Control Mean Reproduction (offspring/female)	CV (%)	CT for Control Reproduction CV (%)	MSD	PMSD (%)	CT for PMSD (%)
1	12-08-09	100	35.2		4.6		2.0	5.8	
2	01-05-10	100	31.1	33.2	5.8	5.2	2.3	7.3	6.6
3	02-02-10	100	31.9	32.7	3.5	4.6	2.6	8.3	7.1
4	03-02-10	100	31.0	32.3	6.3	5.0	2.4	7.7	7.3
5	04-06-10	100	32.7	32.4	6.3	5.3	2.4	7.4	7.3
6	05-04-10	100	31.0	32.2	4.6	5.2	2.3	7.4	7.3
7	06-08-10	100	33.1	32.3	6.6	5.4	2.4	7.2	7.3
8	07-13-10	100	31.6	32.2	4.8	5.3	2.3	7.2	7.3
9	08-03-10	100	28.2	31.8	4.7	5.2	1.8	6.2	7.2
10	09-14-10	100	32.9	31.9	8.7	5.6	3.0	9.2	7.4
11	10-05-10	100	30.2	31.7	7.6	5.7	2.0	6.6	7.3
12	10-05-10	100	30.8	31.6	4.0	5.6	2.2	7.2	7.3
13	11-02-10	100	30.5	31.6	4.9	5.6	2.0	6.6	7.2
14	12-07-10	100	32.2	31.6	4.8	5.5	2.0	6.2	7.2
15	01-18-11	100	31.9	31.6	6.3	5.6	2.3	7.1	7.2
16	02-08-11	100	30.7	31.6	6.9	5.6	1.8	5.7	7.1
17	03-08-11	100	32.6	31.6	4.8	5.6	2.0	6.0	7.0
18	04-05-11	100	32.8	31.7	5.9	5.6	2.2	6.8	7.0
19	04-05-11	100	33.0	31.8	4.5	5.6	1.9	5.7	6.9
20	05-03-11	100	30.9	31.7	6.7	5.6	2.5	8.1	7.0

Note:

CV = Coefficient of variation for control reproduction.
Lower CV bound determined by USEPA (10th percentile) = 8.9%.
Upper CV bound determined by USEPA (90th percentile) = 42%

MSD = Minimum Significant Difference

PMSD = Percent Minimum Significant Difference
PMSD is a measure of test precision. The PMSD is the minimum percent difference between the control and treatment that can be declared statistically significant in a whole effluent toxicity test.
Lower PMSD bound determined by USEPA (10th percentile) = 13%.
Upper PMSD bound determined by USEPA (90th percentile) = 47%.

CT = Central Tendancy (Mean Control Reproduction, CV, or PMSD)

USEPA. 2000. Understanding and Accounting for Method Variability in Whole Effluent Toxicity Applications Under the National Pollutant Discharge Elimination Program. EPA-833-R-00-003. US Environmental Protection Agency, Cincinnati, OH.

USEPA. 2001a, 2001b. Final Report: Interlaboratory Variability Study of EPA Short-term Chronic and Acute Whole Effluent Toxicity Test Methods, Volumes 1 and 2-Appendix. EPA-821-B-01-004 and EPA-821-B-01-005. US Environmental Protection Agency, Cincinnati, OH.

File: CdNaClCR_050311.xlsx
Entered by: J. Sumner
Reviewed by: _____

ETS Environmental Testing Solutions, Inc.

Sodium Chloride Chronic Reference Toxicant Test
(EPA-821-R-02-013 Method 1002.0)
Species: *Ceriodaphnia dubia*

CdNaClCR #: 120

Dilution preparation information:						***Comments:***
NaCl Stock INSS number:		INSS 937				
Stock preparation:		100 g NaCl/L: Dissolve 50 g NaCl in 500 mL Milli-Q water.				
Dilution prep (mg/L)	600	800	1000	1200	1400	
Stock volume (mL)	9	12	15	18	21	
Diluent volume (mL)	1491	1488	1485	1482	1479	
Total volume (mL)	1500	1500	1500	1500	1500	

Test organism source information:											***Test information:***	
Organism age:	< 24-hours old										Randomizing template color:	GOLD
Date and times organisms were born between:	05-03-11 0715 TO 1200										Incubator number and shelf location:	281
Culture board:	04-26-11 A											
Replicate number:	1	2	3	4	5	6	7	8	9	10	YWT batch:	04-21-11
Culture board cup number:	4	5	7	11	13	14	15	18	21	25		
Transfer vessel information:	pH = 8.00 S.U. Temperature = 24.9 °C										*Selenastrum* batch:	04-27-11
Average transfer volume (mL):	0.0415 mL											

Daily renewal information:

Day	Date	Test initiation and feeding, renewal and feeding, or termination time	MHSW batch used	Analyst
0	05-03-11	1255	05-02-11 A	~~05-02-11~~ JL
1	05-04-11	1156	05-02-11 A	JL
2	05-05-11	1155	05-02-11 B	JL
3	05-06-11	1200	05-02-11 B	JL
4	05-07-11	1156	05-05-11	JL
5	05-08-11	1200	05-05-11	JL
6	05-09-11	1157	05-05-11	JL
7	05-10-11	1158		JL

Control information:		Acceptance criteria	***Summary of test endpoints:***	
% of Male Adults:	0%	≤ 20%	7-day LC_{50}	>1400
% Adults having 3rd Broods:	100%	≥ 80%	NOEC	800
% Mortality:	0%	≤ 20%	LOEC	1000
Mean Offspring/Female:	30.9	≥ 15.0 offspring/female	ChV	894.4
% CV:	6.7%	< 40.0 %	IC_{25}	1065.6

ETS Environmental Testing Solutions, Inc.

Species: ***Ceriodaphnia dubia*** **CdNaClCR #:** 120

CONTROL ***Survival and Reproduction Data***

Day		Replicate number 1	2	3	4	5	6	7	8	9	10
1	Young produced	0	0	0	0	0	0	0	0	0	0
	Adult mortality	L	L	L	L	L	L	L	L	L	L
2	Young produced	0	0	0	0	0	0	0	0	0	0
	Adult mortality	L	L	L	L	L	L	L	L	L	L
3	Young produced	0	0	0	0	0	0	0	0	0	0
	Adult mortality	L	L	L	L	L	L	L	L	L	L
4	Young produced	4	4	3	5	4	4	6	4	4	3
	Adult mortality	L	L	L	L	L	L	L	L	L	L
5	Young produced	12	12	10	13	11	12	12	12	12	10
	Adult mortality	L	L	L	L	L	L	L	L	L	L
6	Young produced	0	0	0	0	0	0	0	0	0	0
	Adult mortality	L	L	L	L	L	L	L	L	L	L
7	Young produced	16	16	13	14	16	16	15	16	13	17
Total young produced		32	32	26	32	31	32	33	32	29	30
Final Adult Mortality		L	L	L	L	L	L	L	L	L	L
X for 3rd Broods		X	X	X	X	X	X	X	X	X	X

Note: Adult mortality (L = live, D = dead), SB = split brood (single brood split between two days), CO = carry over (offspring carried over with adult during transfer).

Concentration:	
% Mortality:	0%
Mean Offspring/Female:	30.9

600 mg NaCl/L ***Survival and Reproduction Data***

Day		Replicate number 1	2	3	4	5	6	7	8	9	10
1	Young produced	0	0	0	0	0	0	0	0	0	0
	Adult mortality	L	L	L	L	L	L	L	L	L	L
2	Young produced	0	0	0	0	0	0	0	0	0	0
	Adult mortality	L	L	L	L	L	L	L	L	L	L
3	Young produced	0	0	0	0	0	0	0	0	0	0
	Adult mortality	L	L	L	L	L	L	L	L	L	L
4	Young produced	5	3	3	4	3	4	5	4	4	4
	Adult mortality	L	L	L	L	L	L	L	L	L	L
5	Young produced	13	10	12	12	10	12	11	11	11	12
	Adult mortality	L	L	L	L	L	L	L	L	L	L
6	Young produced	0	0	0	0	0	0	0	0	0	0
	Adult mortality	L	L	L	L	L	L	L	L	L	L
7	Young produced	18	15	15	16	13	17	15	15	16	15
Total young produced		36	28	~~28~~ 30	32	26	33	31	30	31	31
Final Adult Mortality		L	L	L	L	L	L	L	L	L	L

Note: Adult mortality (L = live, D = dead), SB = split brood (single brood split between two days), CO = carry over (offspring carried over with adult during transfer).

Concentration:	
% Mortality:	0%
Mean Offspring/Female:	30.8
% Reduction from Control:	0.3%

ETS Environmental Testing Solutions, Inc.

Species: ***Ceriodaphnia dubia*** **CdNaClCR #:** 120

800 mg NaCl/L ***Survival and Reproduction Data***

Day		Replicate number 1	2	3	4	5	6	7	8	9	10
1	Young produced	0	0	0	0	0	0	0	0	0	0
	Adult mortality	L	L	L	L	L	L	L	L	L	L
2	Young produced	0	0	0	0	0	0	0	0	0	0
	Adult mortality	L	L	L	L	L	L	L	L	L	L
3	Young produced	0	0	0	0	0	0	0	0	0	0
	Adult mortality	L	L	L	L	L	L	L	L	L	L
4	Young produced	4	3	4	4	5	4	4	4	3	3
	Adult mortality	L	L	L	L	L	L	L	L	L	L
5	Young produced	12	10	10	11	10	12	10	10	10	13
	Adult mortality	L	L	L	L	L	L	L	L	L	L
6	Young produced	0	0	0	0	0	0	0	0	0	0
	Adult mortality	L	L	L	L	L	L	L	L	L	L
7	Young produced	15	15	17	15	13	16	16	17	14	15
Total young produced		31	28	31	30	28	32	30	31	27	31
Final Adult Mortality		L	L	L	L	L	L	L	L	L	L

Note: Adult mortality (L = live, D = dead), SB = split brood (single brood split between two days), CO = carry over (offspring carried over with adult during transfer).

Concentration:	
% Mortality:	0%
Mean Offspring/Female:	29.9
% Reduction from Control:	3.2%

1000 mg NaCl/L ***Survival and Reproduction Data***

Day		Replicate number 1	2	3	4	5	6	7	8	9	10
1	Young produced	0	0	0	0	0	0	0	0	0	0
	Adult mortality	L	L	L	L	L	L	L	L	L	L
2	Young produced	0	0	0	0	0	0	0	0	0	0
	Adult mortality	L	L	L	L	L	L	L	L	L	L
3	Young produced	0	0	0	0	0	0	0	0	0	0
	Adult mortality	L	L	L	L	L	L	L	L	L	L
4	Young produced	3	3	4	4	3	3	3	5	3	3
	Adult mortality	L	L	L	L	L	L	L	L	L	L
5	Young produced	10	12	9	12	10	10	9	11	10	10
	Adult mortality	L	L	L	L	L	L	L	L	L	L
6	Young produced	0	0	0	0	0	0	0	0	0	0
	Adult mortality	L	L	L	L	L	L	L	L	L	L
7	Young produced	16	15	13	13	15	14	14	14	15	14
Total young produced		29	30	26	29	28	27	26	30	28	27
Final Adult Mortality		L	L	L	L	L	L	L	L	L	L

Note: Adult mortality (L = live, D = dead), SB = split brood (single brood split between two days), CO = carry over (offspring carried over with adult during transfer).

Concentration:	
% Mortality:	0%
Mean Offspring/Female:	28.0
% Reduction from Control:	9.4%

Species: ***Ceriodaphnia dubia*** CdNaClCR #: 120

1200 mg NaCl/L ***Survival and Reproduction Data***

Day		Replicate number 1	2	3	4	5	6	7	8	9	10
1	Young produced	0	0	0	0	0	0	0	0	0	0
	Adult mortality	L	L	L	L	L	L	L	L	L	L
2	Young produced	0	0	0	0	0	0	0	0	0	0
	Adult mortality	L	L	L	L	L	L	L	L	L	L
3	Young produced	0	0	0	0	0	0	0	0	0	0
	Adult mortality	L	L	L	L	L	L	L	L	L	L
4	Young produced	2	3	3	4	3	1	3	2	2	4
	Adult mortality	L	L	L	L	L	L	L	L	L	L
5	Young produced	8	5	5	7	4	6	4	5	4	7
	Adult mortality	L	L	L	L	L	L	L	L	L	L
6	Young produced	0	0	0	0	0	0	0	0	0	0
	Adult mortality	L	L	L	L	L	L	L	L	L	L
7	Young produced	9	8	6	3	5	0	6	4	3	7
Total young produced		19	16	14	14	12	7	13	11	9	18
Final Adult Mortality		L	L	L	L	L	L	L	L	L	L

Note: Adult mortality (L = live, D = dead), SB = split brood (single brood split between two days), CO = carry over (offspring carried over with adult during transfer).

Concentration:	
% Mortality:	0%
Mean Offspring/Female:	13.3
% Reduction from Control:	57.0%

1400 mg NaCl/L ***Survival and Reproduction Data***

Day		Replicate number 1	2	3	4	5	6	7	8	9	10
1	Young produced	0	0	0	0	0	0	0	0	0	0
	Adult mortality	L	L	L	L	L	L	L	L	L	L
2	Young produced	0	0	0	0	0	0	0	0	0	0
	Adult mortality	L	L	L	L	L	L	L	L	L	L
3	Young produced	0	0	0	0	0	0	0	0	0	0
	Adult mortality	L	L	L	L	L	L	L	L	L	L
4	Young produced	1	0	0	1	0	0	0	2	0	0
	Adult mortality	L	L	L	L	L	L	L	L	L	L
5	Young produced	0	2	1	0	2	2	0	0	1	3
	Adult mortality	L	L	L	L	L	L	L	L	L	L
6	Young produced	3	0	0	0	0	0	3	0	0	0
	Adult mortality	L	L	L	L	L	L	L	L	L	L
7	Young produced	4	1	0	4	2	2	1	5	0	3
Total young produced		8	3	1	5	4	4	4	7	1	6
Final Adult Mortality		L	L	L	L	L	L	L	L	L	L

Note: Adult mortality (L = live, D = dead), SB = split brood (single brood split between two days), CO = carry over (offspring carried over with adult during transfer).

Concentration:	
% Mortality:	0%
Mean Offspring/Female:	4.3
% Reduction from Control:	86.1%

Environmental Testing Solutions, Inc.

Verification of *Ceriodaphnia* Reproduction Totals

Control

Day	Replicate number										Total
	1	2	3	4	5	6	7	8	9	10	
1	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0
4	4	4	3	5	4	4	6	4	4	3	41
5	12	12	10	13	11	12	12	12	12	10	116
6	0	0	0	0	0	0	0	0	0	0	0
7	16	16	13	14	16	16	15	16	13	17	152
Total	**32**	**32**	**26**	**32**	**31**	**32**	**33**	**32**	**29**	**30**	**309**

1000 mg NaCl/L

Day	Replicate number										Total
	1	2	3	4	5	6	7	8	9	10	
1	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0
4	3	3	4	4	3	3	3	5	3	3	34
5	10	12	9	12	10	10	9	11	10	10	103
6	0	0	0	0	0	0	0	0	0	0	0
7	16	15	13	13	15	14	14	14	15	14	143
Total	**29**	**30**	**26**	**29**	**28**	**27**	**26**	**30**	**28**	**27**	**280**

600 mg NaCl/L

Day	Replicate number										Total
	1	2	3	4	5	6	7	8	9	10	
1	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0
4	5	3	3	4	3	4	5	4	4	4	39
5	13	10	12	12	10	12	11	11	11	12	114
6	0	0	0	0	0	0	0	0	0	0	0
7	18	15	15	16	13	17	15	15	16	15	155
Total	**36**	**28**	**30**	**32**	**26**	**33**	**31**	**30**	**31**	**31**	**308**

1200 mg NaCl/L

Day	Replicate number										Total
	1	2	3	4	5	6	7	8	9	10	
1	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0
4	2	3	3	4	3	1	3	2	2	4	27
5	8	5	5	7	4	6	4	5	4	7	55
6	0	0	0	0	0	0	0	0	0	0	0
7	9	8	6	3	5	0	6	4	3	7	51
Total	**19**	**16**	**14**	**14**	**12**	**7**	**13**	**11**	**9**	**18**	**133**

800 mg NaCl/L

Day	Replicate number										Total
	1	2	3	4	5	6	7	8	9	10	
1	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0
4	4	3	4	4	5	4	4	4	3	3	38
5	12	10	10	11	10	12	10	10	10	13	108
6	0	0	0	0	0	0	0	0	0	0	0
7	15	15	17	15	13	16	16	17	14	15	153
Total	**31**	**28**	**31**	**30**	**28**	**32**	**30**	**31**	**27**	**31**	**299**

1400 mg NaCl/L

Day	Replicate number										Total
	1	2	3	4	5	6	7	8	9	10	
1	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0
4	1	0	0	1	0	0	0	2	0	0	4
5	0	2	1	0	2	2	0	0	1	3	11
6	3	0	0	0	0	0	3	0	0	0	6
7	4	1	0	4	2	2	1	5	0	3	22
Total	**8**	**3**	**1**	**5**	**4**	**4**	**4**	**7**	**1**	**6**	**43**

File: CdNaClCR_050311.xlsx
Entered by: J. Sumner
Reviewed by: _____

Environmental Testing Solutions, Inc.

Ceriodaphnia dubia Chronic Reference Toxicant Test
EPA-821-R-02-013, Method 1002.0

Quality Control
Verification of Data Entry, Calculations, and Statistical Analyses

Test number: CdNaClCR #120

Test dates: May 03-10, 2011

Concentration (mg/L NaCl)	Replicate number										Survival (%)	Average reproduction (offspring/female)	Coefficient of variation (%)	Percent reduction from control (%)
	1	2	3	4	5	6	7	8	9	10				
Control	32	32	26	32	31	32	33	32	29	30	100	30.9	6.7	Not applicable
600	36	28	30	32	26	33	31	30	31	31	100	30.8	8.8	0.3
800	31	28	31	30	28	32	30	31	27	31	100	29.9	5.6	3.2
1000	29	30	26	29	28	27	26	30	28	27	100	28.0	5.3	9.4
1200	19	16	14	14	12	7	13	11	9	18	100	13.3	28.4	57.0
1400	8	3	1	5	4	4	4	7	1	6	100	4.3	53.8	86.1

Dunnett's MSD value: 2.511

PMSD: 8.1

MSD = Minimum Significant Difference

PMSD = Percent Minimum Significant Difference

PMSD is a measure of test precision. The PMSD is the minimum percent difference between the control and treatment that can be declared statistically significant in a whole effluent toxicity test.

Lower PMSD bound determined by USEPA (10th percentile) = 13%.

Upper PMSD bound determined by USEPA (90th percentile) = 47%.

Lower and upper PMSD bounds were determined from the 10th and 90th percentile, respectively, of PMSD data from EPA's WET Interlaboratory Variability Study (USEPA, 2001a; USEPA, 2001b).

USEPA. 2001a, 2001b. Final Report: Interlaboratory Variability Study of EPA Short-term Chronic and Acute Whole Effluent Toxicity Test Methods, Volumes 1 and 2-Appendix. EPA-821-B-01-004 and EPA-821-B-01-005. US Environmental Protection Agency, Cincinnati, OH.

File: CdNaClCR_050311.xlsx

Table populated from associated "Verification of *Ceriodaphnia* Reproduction Totals" spreadsheet.

Spreadsheet entered by: J. Sumner

Reviewed by: JS

ETS Environmental Testing Solutions, Inc.

Statistical Analyses

Ceriodaphnia Survival and Reproduction Test-Reproduction

Start Date:	5/3/2011	Test ID:	CdNaClCR	Sample ID:	REF-Ref Toxicant
End Date:	5/10/2011	Lab ID:	ETS-Envir. Testing Sol.	Sample Type:	NACL-Sodium chloride
Sample Date:		Protocol:	FWCHR-EPA-821-R-02-013	Test Species:	CD-Ceriodaphnia dubia
Comments:					

Conc-mg/L	1	2	3	4	5	6	7	8	9	10
D-Control	32.000	32.000	26.000	32.000	31.000	32.000	33.000	32.000	29.000	30.000
600	36.000	28.000	30.000	32.000	26.000	33.000	31.000	30.000	31.000	31.000
800	31.000	28.000	31.000	30.000	28.000	32.000	30.000	31.000	27.000	31.000
1000	29.000	30.000	26.000	29.000	28.000	27.000	26.000	30.000	28.000	27.000
1200	19.000	16.000	14.000	14.000	12.000	7.000	13.000	11.000	9.000	18.000
1400	8.000	3.000	1.000	5.000	4.000	4.000	4.000	7.000	1.000	6.000

			Transform: Untransformed						1-Tailed		Isotonic	
Conc-mg/L	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD	Mean	N-Mean
D-Control	30.900	1.0000	30.900	26.000	33.000	6.728	10				30.900	1.0000
600	30.800	0.9968	30.800	26.000	36.000	8.766	10	0.091	2.287	2.511	30.800	0.9968
800	29.900	0.9676	29.900	27.000	32.000	5.563	10	0.911	2.287	2.511	29.900	0.9676
*1000	28.000	0.9061	28.000	26.000	30.000	5.324	10	2.641	2.287	2.511	28.000	0.9061
*1200	13.300	0.4304	13.300	7.000	19.000	28.366	10	16.027	2.287	2.511	13.300	0.4304
*1400	4.300	0.1392	4.300	1.000	8.000	53.763	10	24.223	2.287	2.511	4.300	0.1392

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Kolmogorov D Test indicates normal distribution (p > 0.01)	0.82175648	1.035	-0.1981616	0.65572311
Bartlett's Test indicates equal variances (p = 0.07)	10.1990776	15.0863171		

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU	MSDu	MSDp	MSB	MSE	F-Prob	df
Dunnett's Test	800	1000	894.427191		2.51109516	0.08126522	1279.06667	6.02962963	3.3E-34	5, 54
Treatments vs D-Control										

Linear Interpolation (200 Resamples)

Point	mg/L	SD	95% CL		Skew
IC05	857.368421	101.848477	536.115476	1000.42718	-1.5395
IC10	1002.58503	37.7430109	902.799145	1019.00076	-1.1222
IC15	1023.60544	9.16420366	1004.92346	1039.04671	0.1840
IC20	1044.62585	8.95991641	1027.21063	1060.90996	0.1797
IC25	**1065.64626**	**9.15526908**	**1047.78147**	**1082.77122**	**0.1921**
IC40	1128.70748	11.7423916	1107.58171	1149.34211	0.4319
IC50	1170.7483	14.442622	1144.89854	1199.51128	0.5658

File: CdNaClCR_050311.xlsx
Entered by: J. Sumner
Reviewed by: _____

ETS Environmental Testing Solutions, Inc.

Species: ***Ceriodaphnia dubia*** **CdNaClCR #:** 120

Daily Chemistry:

		Day					
		0		1		2	
	Analyst	MJL	MJL	MJL	CDJ	CDJ	CDJ
Concentration	Parameter						
CONTROL	pH (S.U.)	7.84	7.84	7.78	7.93	7.89	7.89
	DO (mg/L)	7.4	7.5	7.5	7.7	7.5	7.8
	Conductivity (µmhos/cm)	333		332		305	
	Alkalinity (mg $CaCO_3$/L)	59				59	
	Hardness (mg $CaCO_3$/L)	91		K		89	
	Temperature (°C)	24.9	24.9	24.9	25.2	24.9	25.0
600 mg NaCl/L	pH (S.U.)	7.86	7.86	7.87	7.96	7.98	7.94
	DO (mg/L)	7.6	7.5	7.5	7.8	7.6	7.8
	Conductivity (µmhos/cm)	1390		1450		1380	
	Temperature (°C)	24.9	24.9	25.0	24.9	24.8	25.0
800 mg NaCl/L	pH (S.U.)	7.84	7.87	7.87	7.97	7.99	7.95
	DO (mg/L)	7.5	7.5	7.5	7.8	7.7	7.7
	Conductivity (µmhos/cm)	1710		1830		1750	
	Temperature (°C)	25.0	25.0	24.9	24.9	24.8	25.0
1000 mg NaCl/L	pH (S.U.)	7.82	7.86	7.87	7.98	7.98	7.96
	DO (mg/L)	7.5	7.6	7.5	7.8	7.8	7.7
	Conductivity (µmhos/cm)	2120		2190		2090	
	Temperature (°C)	25.0	25.0	24.9	24.9	24.8	25.1
1200 mg NaCl/L	pH (S.U.)	7.83	7.86	7.87	7.98	7.99	7.96
	DO (mg/L)	7.5	7.6	7.5	7.9	7.8	7.8
	Conductivity (µmhos/cm)	2430		2540		2430	
	Temperature (°C)	25.0	24.8	24.9	25.0	24.9	25.0
1400 mg NaCl/L	pH (S.U.)	7.81	7.87	7.88	7.97	7.99	7.96
	DO (mg/L)	7.5	7.6	7.5	7.8	7.8	7.7
	Conductivity (µmhos/cm)	2830		2940		2790	
	Temperature (°C)	25.0	24.9	24.9	25.0	24.8	24.8
STOCK	Conductivity (µmhos/cm)	104000					
		Initial	Final	Initial	Final	Initial	Final

ETS Environmental Testing Solutions, Inc.

Species: ***Ceriodaphnia dubia*** **CdNaClCR #:** 120

		Day							
		3		4		5		6	
	Analyst	CDJ	MHF	MHF	BSL	BSL	UAB	UAB	CDJ
Concentration	Parameter								
CONTROL	pH (S.U.)	7.91	7.88	7.80	7.91	7.80	7.86	7.73	7.83
	DO (mg/L)	7.6	7.7	7.7	8.1	7.7	7.7	7.6	7.8
	Conductivity (µmhos/cm)	314		306		332		322	
	Alkalinity (mg $CaCO_3$/L)			58					
	Hardness (mg $CaCO_3$/L)			91					
	Temperature (°C)	24.9	25.2	24.7	24.9	24.9	25.1	24.7	24.8
600 mg NaCl/L	pH (S.U.)	7.91	7.95	7.91	7.94	7.95	7.89	7.93	7.84
	DO (mg/L)	7.7	7.8	7.8	8.0	8.0	7.6	7.7	7.9
	Conductivity (µmhos/cm)	1390		1380		1460		1440	
	Temperature (°C)	25.1	25.2	24.6	24.8	25.1	25.0	24.8	24.8
800 mg NaCl/L	pH (S.U.)	7.94	7.95	7.93	7.94	7.97	7.91	7.94	7.88
	DO (mg/L)	7.8	7.9	7.9	8.0	8.1	7.6	7.7	7.9
	Conductivity (µmhos/cm)	1710		1790		1790		1860	
	Temperature (°C)	25.0	24.9	24.8	24.8	24.9	25.0	24.8	24.9
1000 mg NaCl/L	pH (S.U.)	7.94	7.96	7.95	7.94	7.98	7.93	7.95	7.92
	DO (mg/L)	7.9	7.8	7.9	8.0	8.1	7.6	7.7	8.0
	Conductivity (µmhos/cm)	2030		2070		2160		2250	
	Temperature (°C)	25.1	24.9	24.8	24.8	24.9	25.2	24.8	25.2
1200 mg NaCl/L	pH (S.U.)	7.94	7.96	7.95	7.94	7.98	7.92	7.96	7.90
	DO (mg/L)	7.8	7.8	7.9	8.0	8.1	7.6	7.7	7.9
	Conductivity (µmhos/cm)	2390		2430		2580		2670	
	Temperature (°C)	25.1	24.9	24.8	24.8	24.9	25.1	24.8	25.1
1400 mg NaCl/L	pH (S.U.)	7.95	7.96	7.96	7.98	7.98	7.92	7.96	7.92
	DO (mg/L)	7.7	7.9	7.9	8.0	8.1	7.7	7.7	7.9
	Conductivity (µmhos/cm)	2750		2810		3000		3100	
	Temperature (°C)	25.1	24.9	24.7	24.8	24.9	25.1	24.8	25.1
		Initial	Final	Initial	Final	Initial	Final	Initial	Final

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if Different)*

Name TVA - SEQUOYAH NUCLEAR PLANT
Address P.O. BOX 2000
(INTEROFFICE OPS-5N-SQN)
SODDY - DAISY, TN 37384
Facility TVA - SEQUOYAH NUCLEAR PLANT
Locatio HAMILTON COUNTY

ATTN: Stephanie A. Howard

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*

TN0026450	103 G
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
From	11	05	01	To	11	05	31

MAJOR
(SUBR 01)
F - FINAL
LOW VOL. WASTE TREATMENT POND
EFFLUENT

*** NO DISCHARGE ☐ ***

Form Approved.
OMB No. 2040-0004

NOTE: Read instructions before completing this form.

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM	UNITS			
PH	SAMPLE MEASUREMENT	********	********	**	7	********	8	12	0	13 / 31	GRAB
00400 1 0 EFFLUENT GROSS	PERMIT REQUIREMENT	********	********	**	6 MINIMUM	********	9 MAXIMUM	SU		THREE/ WEEK	GRAB
SOLIDS, TOTAL SUSPENDED	SAMPLE MEASUREMENT	********	********	**	********	13	14	19	0	2 / 31	GRAB
00530 1 0 EFFLUENT GROSS	PERMIT REQUIREMENT	********	********	**	********	30 MO AVG	100 DAILY MX	MG/L		TWICE/ MONTH	GRAB
OIL AND GREASE	SAMPLE MEASUREMENT	********	********	**	********	<6	<6	19	0	2 / 31	GRAB
00556 1 0 EFFLUENT GROSS	PERMIT REQUIREMENT	********	********	**	********	15 MO AVG	20 DAILY MX	MG/L		TWICE/ MONTH	GRAB
FLOW, IN CONDUIT OR THRU TREATMENT PLANT	SAMPLE MEASUREMENT	0.985	1.303	03	********	********	********	**	0	31 / 31	RCORDR
50050 1 0 EFFLUENT GROSS	PERMIT REQUIREMENT	Req. Mon. MO AVG	Req. Mon DAILY MX	MGD	********	********	********	**		SEE PERMIT	RCORDR
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
Michael D. Skaggs Sequoyah Site Vice President	I Certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is , to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	M Skaggs Sequoyah Site Vice President	423	843-7001	11	06	07
TYPED OR PRINTED		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA CODE	NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here*

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if Different)*

Name TVA - SEQUOYAH NUCLEAR PLANT
Address P.O. BOX 2000
(INTEROFFICE OPS-5N-SQN)
SODDY - DAISY, TN 37384
Facility TVA - SEQUOYAH NUCLEAR PLANT
Locatio HAMILTON COUNTY

ATTN: Stephanie A. Howard

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*

TN0026450	110 G
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
From	11	05	01	To	11	05	31

MAJOR
(SUBR 01)
F - FINAL
RECYCLED COOLING WATER
EFFLUENT

*** NO DISCHARGE XX ***

Form Approved.
OMB No. 2040-0004

NOTE: Read instructions before completing this form.

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM	UNITS			
TEMPERATURE, WATER DEG. CENTIGRADE	SAMPLE MEASUREMENT	********	********	**	********	********		04			
00010 1 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	**	********	********	REPORT DAILY MX	DEG C		CONTIN UOUS	CALCTD
TEMPERATURE, WATER DEG. CENTIGRADE	SAMPLE MEASUREMENT	********	********	**	********	********		04			
00010 Z 0 INSTREAM MONITORING	PERMIT REQUIREMENT	********	********	**	********	********	30.5 DAILY MX	DEG C		CONTIN UOUS	CALCTD
TEMP. DIFF. BETWEEN SAMP. & UPSTRM DEG.C	SAMPLE MEASUREMENT	********	********	**	********	********		04			
00016 1 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	**	********	********	5 DAILY MX	DEG C		CONTIN UOUS	CALCTD
FLOW, IN CONDUIT OR THRU TREATMENT PLANT	SAMPLE MEASUREMENT	********		03	********	********	********	**			
50050 1 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	Req. Mon. DAILY MX	MGD	********	********	********	**		CONTIN UOUS	RCORDR
CHLORINE, TOTAL RESIDUAL	SAMPLE MEASUREMENT	********	********	**	********			19			
50060 1 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	**	********	0.1 MO AVG	0.1 DAILY MX	MG/L		Five per Week	CALCTD
TEMPERATURE - C, RATE OF CHANGE	SAMPLE MEASUREMENT	********		04	********	********	********	**			
82234 1 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	2 DAILY MX	DEG C	********	********	********	**		CONTIN UOUS	CALCTD
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
Michael D. Skaggs Sequoyah Site Vice President	I Certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is , to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	M Sk. 08 Sequoyah Site Vice President	423	843-7001	11	06	07
TYPED OR PRINTED		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA CODE	NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here*

No Discharge this Period

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if Different)*

Name TVA - SEQUOYAH NUCLEAR PLANT
Address P.O. BOX 2000
(INTEROFFICE OPS-5N-SQN)
SODDY - DAISY, TN 37384
Facility TVA - SEQUOYAH NUCLEAR PLANT
Locatio HAMILTON COUNTY

ATTN: Stephanie A. Howard

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*

TN0026450	110 T
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
From	11	05	01	To	11	05	31

MAJOR
(SUBR 01)
F - FINAL
RECYCLED COOLING WATER
EFFLUENT

*** NO DISCHARGE XX ***

Form Approved.
OMB No. 2040-0004

NOTE: Read instructions before completing this form.

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM	UNITS			
IC25 STATRE 7DAY CHR CERIODAPHNIA	SAMPLE MEASUREMENT	********	********	**		********	********	23			
TRP3B 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	****	43.2 MINIMUM	********	********	PERCENT		SEMI ANNUAL	COMPOS
IC25 STATRE 7DAY CHR PIMEPHALES	SAMPLE MEASUREMENT	********	********	**		********	********	23			
TRP6C 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	****	43.2 MINIMUM	********	********	PERCENT		SEMI ANNUAL	COMPOS
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
Michael D. Skaggs Sequoyah Site Vice President	I Certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is , to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	M Skaggs Sequoyah Site Vice President	423	843-7001	11	06	07
TYPED OR PRINTED		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA CODE	NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here*

No Discharge this Period

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if Different)*

Name TVA - SEQUOYAH NUCLEAR PLANT
Address P.O. BOX 2000
(INTEROFFICE OPS-5N-SQN)
SODDY - DAISY, TN 37384
Facility TVA - SEQUOYAH NUCLEAR PLANT
Locatio HAMILTON COUNTY

ATTN: Stephanie A. Howard

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*

TN0026450	118 G
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
From	11	05	01	To	11	05	31

MAJOR
(SUBR 01)
F - FINAL
WASTEWATER & STORM WATER
EFFLUENT

*** NO DISCHARGE XX ***

Form Approved.
OMB No. 2040-0004

NOTE: Read instructions before completing this form.

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM	UNITS			
OXYGEN, DISSOLVED (DO)	SAMPLE MEASUREMENT	********	********	**		********	********	19			
00300 1 0 EFFLUENT GROSS	PERMIT REQUIREMENT	********	********	****	2 MINIMUM	********	********	MG/L		TWICE/ WEEK	GRAB
SOLIDS, TOTAL SUSPENDED	SAMPLE MEASUREMENT	********	********	**	********	********		19			
00530 1 0 EFFLUENT GROSS	PERMIT REQUIREMENT	********	********	****	********	********	100 DAILY MX	MG/L		TWICE/ WEEK	GRAB
SOLIDS, SETTLEABLE	SAMPLE MEASUREMENT	********	********	**	********	********		25			
00545 1 0 EFFLUENT GROSS	PERMIT REQUIREMENT	********	********	****	********	********	1 DAILY MX	ML/L		ONCE/ MONTH	GRAB
FLOW, IN CONDUIT OR THRU TREATMENT PLANT	SAMPLE MEASUREMENT			03	********	********	********	**			
50050 1 0 EFFLUENT GROSS	PERMIT REQUIREMENT	Req. Mon. MO AVG	Req. Mon. DAILY MX	MGD	********	********	********	*		ONCE/ BATCH	ESTIMA
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
Michael D. Skaggs Sequoyah Site Vice President	I Certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is , to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	MSK 88 Sequoyah Site Vice President	423	843-7001	11	06	07
TYPED OR PRINTED		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA CODE	NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here*

During this reporting period, there has been no flow from the Dredge Pond other than that resulting from rainfall.

REVIEW/CONCURRENCE SHEET

DOCUMENT NAME: SEQUOYAH NUCLEAR PLANT – May 2011 DMR

ORGANIZATION: Environmental

DOCUMENT PREPARED BY: Brad Love

DATE: 06/07/2011

CONCURRENCES				
Name	RV	CN	Signature - Comment	Date
B.M. Love	X			6/07/11
S. A. Howard	X		Stephanie A. Howard	6/7/11
D.A. Day		X	D. Alan Day	6/8/11
M.D. Skaggs		X	M Skaggs	6/8/11

INSTRUCTIONS: Originator will determine the review/concurrence assignment.

REVIEW: Examine technical content and commitments made. A review (RV) should confirm the truth and accuracy of factual statements and indicate agreement with commitments made which are applicable to the reviewer's organization.

CONCURRENCE: Indication of agreement with the document as a whole. Concurrence (CN) signifies that the document is responsive to the intended purpose, logical in construction, and clear in meaning in the eyes of the recipient. A concurrence signature indicates that the individual would be willing to sign the document for the agency.

July 11, 2011

State of Tennessee
Department of Environment and Conservation
Division of Water Pollution Control
Enforcement & Compliance Section
6th Floor, L & C Annex
401 Church Street
Nashville, Tennessee 37243-1534

Dear Ms. Dana Waits:

SEQUOYAH NUCLEAR PLANT - DISCHARGE MONITORING REPORT FOR JUNE 2011

Enclosed is the June 2011 Discharge Monitoring Report for Sequoyah Nuclear Plant. If you have any questions or need additional information, please contact Brad Love at (423) 843-6714 or Stephanie Howard at (423) 843-6700 of Sequoyah's Environmental staff.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Sincerely,

MSkaggs

Michael D. Skaggs
Site Vice President
Sequoyah Nuclear Plant

Enclosures
cc (Enclosures):

Chattanooga Environmental Field Office
Division of Water Pollution Control
State Office Building, Suite 550
540 McCallie Avenue
Chattanooga, Tennessee 37402-2013

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

B. E. Brickhouse, LP 5U-C
G. M. Cook, OPS 4A-SQN
D. A. Day, POB 2A-SQN
S. A. Howard, OPS 5N-SQN
K. Langdon, POB 2B-SQN
D. B. Nida, LP 5U-C
A. A. Ray, WT 11A-K
G. R. Signer, WT 6A-K
M. D. Skaggs, OPS 4A-SQN
K. M. Hodges (EDMS), LP 2V-C

Tennessee Valley Authority, Post Office Box 2000, Soddy Daisy, Tennessee 37384-2000

July 11, 2011

State of Tennessee
Department of Environment and Conservation
Division of Water Pollution Control
Enforcement & Compliance Section
6th Floor, L & C Annex
401 Church Street
Nashville, Tennessee 37243-1534

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Sincerely,

M Skaggs

Michael D. Skaggs
Site Vice President
Sequoyah Nuclear Plant

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cc (Enclosures):

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Division of Water Pollution Control
State Office Building, Suite 550
540 McCallie Avenue
Chattanooga, Tennessee 37402-2013

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if Different)*

Name TVA - SEQUOYAH NUCLEAR PLANT
Address P.O. BOX 2000
(INTEROFFICE OPS-5N-SQN)
SODDY - DAISY, TN 37384
Facility TVA - SEQUOYAH NUCLEAR PLANT
Locatio HAMILTON COUNTY

ATTN: Stephanie A. Howard

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*

TN0026450	101 G
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
From	11	06	01	To	11	06	30

MAJOR
(SUBR 01)
F - FINAL
DIFFUSER DISCHARGE
EFFLUENT

*** NO DISCHARGE [ ] ***

Form Approved.
OMB No. 2040-0004

NOTE: Read instructions before completing this form.

PARAMETER		QUANTITY OR LOADING AVERAGE	QUANTITY OR LOADING MAXIMUM	UNITS	QUALITY OR CONCENTRATION MINIMUM	QUALITY OR CONCENTRATION AVERAGE	QUALITY OR CONCENTRATION MAXIMUM	UNITS	NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
TEMPERATURE, WATER DEG. CENTIGRADE	SAMPLE MEASUREMENT	********	********	**	********	********	41.7	04	0	30 / 30	RCORDR
00010 1 0 EFFLUENT GROSS	PERMIT REQUIREMENT	********	********	****	********	********	Req. Mon. DAILY MAX	DEG. C.		CONTI NUOUS	CALCTD
TEMPERATURE, WATER DEG. CENTIGRADE	SAMPLE MEASUREMENT	********	********	**	********	********	28.7	04	0	30 / 30	MODELD
00010 Z 0 INSTREAM MONITORING	PERMIT REQUIREMENT	********	********	****	********	********	30.5 DAILY MX	DEG. C.		CONTI NUOUS	CALCTD
TEMP. DIFF. BETWEEN SAMP. & UPSTRM DEG.C	SAMPLE MEASUREMENT	********	********	**	********	********	2	04	0	30 / 30	CALCTD
00016 1 S EFFLUENT GROSS	PERMIT REQUIREMENT	********	********	****.	********	********	3 DAILY MX	DEG. C.		CONTI NUOUS	CALCTD
FLOW, IN CONDUIT OR THRU TREATMENT PLANT	SAMPLE MEASUREMENT	********	1688	03	********	********	********	**	0	30 / 30	RCORDR
50050 1 0 EFFLUENT GROSS	PERMIT REQUIREMENT	********	Req. Mon. DAILY MAX	MGD	********	********	********	****		CONTI NUOUS	RCORDR
CHLORINE, TOTAL RESIDUAL	SAMPLE MEASUREMENT	********	********	**	********	~~0.025~~ 0.024 ~~BQ~~ 7/8/11	~~0.050~~ 0.037 ~~BQ~~ 7/8/11	19	0	~~37~~ 26 / 30 ~~BQ~~ 7/8/11	GRAB
50060 1 0 EFFLUENT GROSS	PERMIT REQUIREMENT	********	********	****	********	0.1 MO AVG	0.1 DAILY MAX	MG/L		FIVE PER WEEK	CALCTD
TEMPERATURE - C, RATE OF CHANGE	SAMPLE MEASUREMENT	********	1	62	********	********		**	0	30 / 30	CALCTD
82234 1 0 EFFLUENT GROSS	PERMIT REQUIREMENT	********	2 DAILY MX	DEG C/HR	********	********	*******	****		CONTI NUOUS	CALCTD
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
Michael D. Skaggs Sequoyah Site Vice President	I Certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is , to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	Sequoyah Site Vice President SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	423	843-7001	11	07	08
TYPED OR PRINTED			AREA CODE	NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here*

No closed mode operation. Veliger monitoring data is in included as an attachment. The following injections occurred: 1. Towerbrom 960 2. Floguard MS6236 (max. calc. conc. was 0.11mg/L--limit 0.2mg/L) 3. Biodetergent 73551 (max. calc. conc. was 0.06mg/L--limit 2.0mg/L) 4. Spectrus CT1300 (max. calc. conc. was 0.038mg/L--limit 0.050mg/L)

Sample Date	Mean # of ZM/m3	% Settlers	Water Temp. (°C)	Sample Date	Mean# of Asiatic Clams/m3	Water Temp. (°C)	LOCATION	SUB LOCATION	NOTES: % Gravid Asiatic Clam	COLLECTED BY
12/07/2010	6	100	23	12/07/2010	0	23	1-25-545			PB
12/14/2010	0	0	10	12/14/2010	0	10	1-25-545			RS
12/22/2010	0	0	10.5	12/22/2010	0	10.5	1-ISV-24-1234			WE
12/29/2010	0	0	26	12/29/2010	0	26	1-25-545			WDT
01/04/2011	0	0	13	01/04/2010	0	13	1-25-545			PB
01/11/2011	0	0	22	01/11/2010	0	22	1-25-545			RS
01/18/2011	0	0	9.5	01/18/2010	0	9.5	1-ISV-24-1234			CR
01/25/2011	0	0	23	01/25/2011	0	23	1-25-545			WDT
02/02/2011	0	0	10	02/02/2011	0	10	1-25-545			PB
02/08/2011	0	0	9	02/08/2011	0	9	1-25-545			MJW
02/15/2011	0	0	23	02/15/2011	0	23	1-25-545			MLW
02/22/2011	20	100	10	02/22/2011	0	10	1-25-545			PB
03/01/2011	0	0	11	03/01/2011	0	11	1-ISV-24-1236			PB
03/08/2011	0	0	11	03/08/2011	0	11	1-ISV-24-1236			WE
03/16/2011	22	0	11	03/16/2011	0	11	1-ISV-24-1234			MLW
03/23/2011	0	0	11	03/23/2011	0	11	1-ISV-24-1234			MLW
03/30/2011	0	0	12	03/30/2011	0	12	1-15v-24-1236			MLW
04/06/2011	18	100	15	04/06/2011	0	15	1-ISV-24-1234			HMW
04/08/2011	45	100	15.5	04/08/2011	0	15.5	1-1SV-24-1236			WAW/PB
04/20/2011	21	100	16	04/20/2011	0	16	1-1SV-24-1236			PB
May 2011										No Samples Collected
June 2011										No Samples Collected

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if Different)*

Name TVA - SEQUOYAH NUCLEAR PLANT
Address P.O. BOX 2000
(INTEROFFICE OPS-5N-SQN)
SODDY - DAISY, TN 37384
Facility TVA - SEQUOYAH NUCLEAR PLANT
Locatio HAMILTON COUNTY

ATTN: Stephanie A. Howard

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*

TN0026450	101 T
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
From	11	06	01	To	11	06	30

MAJOR
(SUBR 01)
F - FINAL
BIOMONITORING FOR OUTFALL 101
EFFLUENT

*** NO DISCHARGE ☐ ***

Form Approved.
OMB No. 2040-0004

NOTE: Read instructions before completing this form.

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM	UNITS			
IC25 STATRE 7DAY CHR CERIODAPHNIA	SAMPLE MEASUREMENT	********	********	**	Monitoring Not Required	********	********	23			
TRP3B 1 0 EFFLUENT GROSS	PERMIT REQUIREMENT	********	********	****	43.2 MINIMUM	********	********	PERCENT		SEMI ANNUAL	COMPOS
IC25 STATRE 7DAY CHR PIMEPHALES	SAMPLE MEASUREMENT	********	********	**	Monitoring Not Required	********	********	23			
TRP6C 1 0 EFFLUENT GROSS	PERMIT REQUIREMENT	********	********	****	43.2 MIMINUM	********	********	PERCENT		SEMI ANNUAL	COMPOS
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
Michael D. Skaggs Sequoyah Site Vice President	I Certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is , to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	M Sk. 8/8 Sequoyah Site Vice President SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	423	843-7001	11	07	08
TYPED OR PRINTED			AREA CODE	NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here*

Toxicity was not sampled in June 2011.

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if Different)*

Name TVA - SEQUOYAH NUCLEAR PLANT
Address P.O. BOX 2000
(INTEROFFICE OPS-5N-SQN)
SODDY - DAISY, TN 37384
Facility TVA - SEQUOYAH NUCLEAR PLANT
Locatio HAMILTON COUNTY

ATTN: Stephanie A. Howard

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*

TN0026450	103 G
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
From	11	06	01	To	11	06	30

MAJOR
(SUBR 01)
F - FINAL
LOW VOL. WASTE TREATMENT POND
EFFLUENT

*** NO DISCHARGE [ ] ***

Form Approved.
OMB No. 2040-0004

NOTE: Read instructions before completing this form.

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM	UNITS			
PH	SAMPLE MEASUREMENT	********	********	**	7	********	8	12	0	13 / 30	GRAB
00400 1 0 EFFLUENT GROSS	PERMIT REQUIREMENT	********	********	**	6 MINIMUM	********	9 MAXIMUM	SU		THREE/ WEEK	GRAB
SOLIDS, TOTAL SUSPENDED	SAMPLE MEASUREMENT	********	********	**	********	6	8	19	0	2 / 30	GRAB
00530 1 0 EFFLUENT GROSS	PERMIT REQUIREMENT	********	********	**	********	30 MO AVG	100 DAILY MX	MG/L		TWICE/ MONTH	GRAB
OIL AND GREASE	SAMPLE MEASUREMENT	********	********	**	********	<6	<6	19	0	2 / 30	GRAB
00556 1 0 EFFLUENT GROSS	PERMIT REQUIREMENT	********	********	**	********	15 MO AVG	20 DAILY MX	MG/L		TWICE/ MONTH	GRAB
FLOW, IN CONDUIT OR THRU TREATMENT PLANT	SAMPLE MEASUREMENT	1.044	1.186	03	********	********	********	**	0	30 / 30	RCORDR
50050 1 0 EFFLUENT GROSS	PERMIT REQUIREMENT	Req. Mon. MO AVG	Req. Mon DAILY MX	MGD	********	********	********	**		SEE PERMIT	RCORDR
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
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TYPED OR PRINTED			AREA CODE	NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here*

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if Different)*

Name TVA - SEQUOYAH NUCLEAR PLANT
Address P.O. BOX 2000
(INTEROFFICE OPS-5N-SQN)
SODDY - DAISY, TN 37384
Facility TVA - SEQUOYAH NUCLEAR PLANT
Locatio HAMILTON COUNTY

ATTN: Stephanie A. Howard

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*

TN0026450	110 G
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
From	11	06	01	TO	11	06	30

MAJOR
(SUBR 01)
F - FINAL
RECYCLED COOLING WATER
EFFLUENT

*** NO DISCHARGE XX ***

Form Approved.
OMB No. 2040-0004

NOTE: Read instructions before completing this form.

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM	UNITS			
TEMPERATURE, WATER DEG. CENTIGRADE	SAMPLE MEASUREMENT	********	********	**	********	********		04			
00010 1 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	**	********	********	REPORT DAILY MX	DEG C		CONTIN UOUS	CALCTD
TEMPERATURE, WATER DEG. CENTIGRADE	SAMPLE MEASUREMENT	********	********	**	********	********		04			
00010 Z 0 INSTREAM MONITORING	PERMIT REQUIREMENT	********	********	**	********	********	30.5 DAILY MX	DEG C		CONTIN UOUS	CALCTD
TEMP. DIFF. BETWEEN SAMP. & UPSTRM DEG.C	SAMPLE MEASUREMENT	********	********	**	********	********		04			
00016 1 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	**	********	********	5 DAILY MX	DEG C		CONTIN UOUS	CALCTD
FLOW, IN CONDUIT OR THRU TREATMENT PLANT	SAMPLE MEASUREMENT	********		03	********	********	********	**			
50050 1 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	Req. Mon. DAILY MX	MGD	********	********	********	**		CONTIN UOUS	RCORDR
CHLORINE, TOTAL RESIDUAL	SAMPLE MEASUREMENT	********	********	**	********			19			
50060 1 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	**	********	0.1 MO AVG	0.1 DAILY MX	MG/L		Five per Week	CALCTD
TEMPERATURE - C, RATE OF CHANGE	SAMPLE MEASUREMENT	********		04	********	********	********	**			
82234 1 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	2 DAILY MX	DEG C	********	********	********	**		CONTIN UOUS	CALCTD
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
Michael D. Skaggs Sequoyah Site Vice President	I Certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is , to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	Sequoyah Site Vice President SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	423	843-7001	11	07	08
TYPED OR PRINTED			AREA CODE	NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here*

No Discharge this Period

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if Different)*

Name TVA - SEQUOYAH NUCLEAR PLANT
Address P.O. BOX 2000
(INTEROFFICE OPS-5N-SQN)
SODDY - DAISY, TN 37384
Facility TVA - SEQUOYAH NUCLEAR PLANT
Locatio HAMILTON COUNTY

ATTN: Stephanie A. Howard

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*

TN0026450	110 T
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
From	11	06	01	To	11	06	30

MAJOR
(SUBR 01)
F - FINAL
RECYCLED COOLING WATER
EFFLUENT

*** NO DISCHARGE XX ***

Form Approved.
OMB No. 2040-0004

NOTE: Read instructions before completing this form.

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM	UNITS			
IC25 STATRE 7DAY CHR CERIODAPHNIA	SAMPLE MEASUREMENT	********	********	**		********	********	23			
TRP3B 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	****	43.2 MINIMUM	********	********	PERCENT		SEMI ANNUAL	COMPOS
IC25 STATRE 7DAY CHR PIMEPHALES	SAMPLE MEASUREMENT	********	********	**		********	********	23			
TRP6C 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	********	********	****	43.2 MINIMUM	********	********	PERCENT		SEMI ANNUAL	COMPOS
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

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TYPED OR PRINTED		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA CODE	NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here*

No Discharge this Period

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if Different)*

Name TVA - SEQUOYAH NUCLEAR PLANT
Address P.O. BOX 2000
(INTEROFFICE OPS-5N-SQN)
SODDY - DAISY, TN 37384
Facility TVA - SEQUOYAH NUCLEAR PLANT
Locatio HAMILTON COUNTY

ATTN: Stephanie A. Howard

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*

TN0026450	118 G
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
From	11	06	01	To	11	06	30

MAJOR
(SUBR 01)
F - FINAL
WASTEWATER & STORM WATER
EFFLUENT

*** NO DISCHARGE XX ***

Form Approved.
OMB No. 2040-0004

NOTE: Read instructions before completing this form.

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM	UNITS			
OXYGEN, DISSOLVED (DO)	SAMPLE MEASUREMENT	********	********	**		********	********	19			
00300 1 0 EFFLUENT GROSS	PERMIT REQUIREMENT	********	********	****	2 MINIMUM	********	********	MG/L		TWICE/ WEEK	GRAB
SOLIDS, TOTAL SUSPENDED	SAMPLE MEASUREMENT	********	********	**	********	********		19			
00530 1 0 EFFLUENT GROSS	PERMIT REQUIREMENT	********	********	****	********	********	100 DAILY MX	MG/L		TWICE/ WEEK	GRAB
SOLIDS, SETTLEABLE	SAMPLE MEASUREMENT	********	********	**	********	********		25			
00545 1 0 EFFLUENT GROSS	PERMIT REQUIREMENT	********	********	****	********	********	1 DAILY MX	ML/L		ONCE/ MONTH	GRAB
FLOW, IN CONDUIT OR THRU TREATMENT PLANT	SAMPLE MEASUREMENT			03	********	********	********	**			
50050 1 0 EFFLUENT GROSS	PERMIT REQUIREMENT	Req. Mon. MO AVG	Req. Mon. DAILY MX	MGD	********	********	********	*		ONCE/ BATCH	ESTIMA
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
Michael D. Skaggs Sequoyah Site Vice President	I Certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is , to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	Sequoyah Site Vice President SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	423	843-7001	11	07	08
TYPED OR PRINTED			AREA CODE	NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here*

During this reporting period, there has been no flow from the Dredge Pond other than that resulting from rainfall.

REVIEW/CONCURRENCE SHEET

DOCUMENT NAME: SEQUOYAH NUCLEAR PLANT – June 2011 DMR

ORGANIZATION: Environmental

DOCUMENT PREPARED BY: Brad Love

DATE: 07/07/2011

CONCURRENCES				
Name	RV	CN	Signature - Comment	Date
B.M. Love	X			7/07/11
S. A. Howard	X		Stephanie A. Howard	7/7/11
D.A. Day		X		7/8/11

INSTRUCTIONS: Originator will determine the review/concurrence assignment.

REVIEW: Examine technical content and commitments made. A review (RV) should confirm the truth and accuracy of factual statements and indicate agreement with commitments made which are applicable to the reviewer's organization.

CONCURRENCE: Indication of agreement with the document as a whole. Concurrence (CN) signifies that the document is responsive to the intended purpose, logical in construction, and clear in meaning in the eyes of the recipient. A concurrence signature indicates that the individual would be willing to sign the document for the agency.