Virginia Pollutant Discharge Elimination System

Permit Application

Storm Water Impoundment Basin
Fairfax Bulk Oil Terminal
Fairfax, Virginia

Prepared for:

Joint Basin Corporation
9601 Colonial Avenue
Fairfax, Virginia 22031

Submitted to:

Commonwealth of Virginia
Department of Environmental Quality
Northern Regional Office
13901 Crown Court
Woodbridge, Virginia 22193

Prepared by:

URS Corporation
13825 Sunrise Valley Drive, Suite 250
Herndon, Virginia 20171

June 2009

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1.0 FORM 1

Please print or type in the unshaded areas only.

Form Approved. OMB No. 2040-0086.

FORM 1 GENERAL

EPA

U.S. ENVIRONMENTAL PROTECTION AGENCY

GENERAL INFORMATION

Consolidated Permits Program

(Read the "General Instructions" before starting.)

I. EPA I.D. NUMBER

S		T/A	C
F	N/A		D
1	2 — 13	14	15

LABEL ITEMS

- I. EPA I.D. NUMBER
- III. FACILITY NAME
- V. FACILITY MAILING ADDRESS
- VI. FACILITY LOCATION

PLEASE PLACE LABEL IN THIS SPACE

GENERAL INSTRUCTIONS

If a preprinted label has been provided, affix it in the designated space. Review the information carefully; if any of it is incorrect, cross through it and enter the correct data in the appropriate fill-in area below. Also, if any of the preprinted data is absent *(the area to the left of the label space lists the information that should appear)*, please provide it in the proper fill-in area(s) below. If the label is complete and correct, you need not complete Items I, III, V, and VI *(except VI-B which must be completed regardless)*. Complete all items if no label has been provided. Refer to the instructions for detailed item descriptions and for the legal authorizations under which this data is collected.

II. POLLUTANT CHARACTERISTICS

INSTRUCTIONS: Complete A through J to determine whether you need to submit any permit application forms to the EPA. If you answer "yes" to any questions, you must submit this form and the supplemental form listed in the parenthesis following the question. Mark "X" in the box in the third column if the supplemental form is attached. If you answer "no" to each question, you need not submit any of these forms. You may answer "no" if your activity is excluded from permit requirements; see Section C of the instructions. See also, Section D of the instructions for definitions of **bold-faced terms.**

SPECIFIC QUESTIONS	Mark "X" YES	NO	FORM ATTACHED	SPECIFIC QUESTIONS	Mark "X" YES	NO	FORM ATTACHED
A. Is this facility a **publicly owned treatment works** which results in a **discharge** to **waters of the U.S.**? (FORM 2A)		X		B. Does or will this facility *(either existing or proposed)* include a **concentrated animal feeding operation** or **aquatic animal production facility** which results in a **discharge** to **waters of the U.S.**? (FORM 2B)		X	
	16	17	18		19	20	21
C. Is this a facility which currently results in **discharges** to **waters of the U.S.** other than those described in A or B above? (FORM 2C)	X		X	D. Is this a proposed facility *(other than those described in A or B above)* which will result in a **discharge** to **waters of the U.S.**? (FORM 2D)		X	
	22	23	24		25	26	27
E. Does or will this facility treat, store, or dispose of **hazardous wastes**? (FORM 3)		X		F. Do you or will you inject at this facility industrial or municipal effluent below the lowermost stratum containing, within one quarter mile of the well bore, underground sources of drinking water? (FORM 4)		X	
	28	29	30		31	32	33
G. Do you or will you inject at this facility any produced water or other fluids which are brought to the surface in connection with conventional oil or natural gas production, inject fluids used for enhanced recovery of oil or natural gas, or inject fluids for storage of liquid hydrocarbons? (FORM 4)		X		H. Do you or will you inject at this facility fluids for special processes such as mining of sulfur by the Frasch process, solution mining of minerals, in situ combustion of fossil fuel, or recovery of geothermal energy? (FORM 4)		X	
	34	35	36		37	38	39
I. Is this facility a proposed **stationary source** which is one of the 28 industrial categories listed in the instructions and which will potentially emit 100 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an attainment area? (FORM 5)		X		J. Is this facility a proposed **stationary source** which is NOT one of the 28 industrial categories listed in the instructions and which will potentially emit 250 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an **attainment area**? (FORM 5)		X	
	40	41	42		43	44	45

III. NAME OF FACILITY

C	SKIP	
1		JOINT BASIN CORPORATION
15	16 – 29	30 — 69

IV. FACILITY CONTACT

C	A. NAME & TITLE *(last, first, & title)*	B. PHONE *(area code & no.)*
2	BARNES, ANDREW, Vice President	(703) 503-3687
15	16 — 45	46 — 48 / 49 — 51 / 52 — 55

V. FACILTY MAILING ADDRESS

C	A. STREET OR P.O. BOX
3	9601 COLONIAL AVENUE
15	16 — 45

C	B. CITY OR TOWN	C. STATE	D. ZIP CODE
4	FAIRFAX	VA	22031
15	16 — 40	41 — 42	47 — 51

VI. FACILITY LOCATION

C	A. STREET, ROUTE NO. OR OTHER SPECIFIC IDENTIFIER
5	COLONIAL AVENUE
15	16 — 45

B. COUNTY NAME
FAIRFAX
46 — 70

C	C. CITY OR TOWN	D. STATE	E. ZIP CODE	F. COUNTY CODE *(if known)*
6	FAIRFAX	VA	22031	N/A
15	16 — 40	41 — 42	47 — 51	52 — 54

CONTINUE ON REVERSE

CONTINUED FROM THE FRONT

VII. SIC CODES *(4-digit, in order of priority)*

A. FIRST	B. SECOND
C 7 5171 (specify) Petroleum Terminal Wholesale	C 7 N/A (specify) N/A
C. THIRD	**D. FOURTH**
C 7 N/A (specify) N/A	C 7 N/A (specify) N/A

VIII. OPERATOR INFORMATION

A. NAME: C 8 JOINT BASIN CORPORATION

B. Is the name listed in Item VIII-A also the owner? ☑ YES ☐ NO

C. STATUS OF OPERATOR *(Enter the appropriate letter into the answer box: if "Other," specify.)*

F = FEDERAL
S = STATE
P = PRIVATE
M = PUBLIC *(other than federal or state)*
O = OTHER *(specify)*

P (specify) N/A

D. PHONE *(area code & no.)*: C A (703) 503-3685

E. STREET OR P.O. BOX: 9601 COLONIAL AVENUE

F. CITY OR TOWN: C B FAIRFAX

G. STATE: VA

H. ZIP CODE: 22031

IX. INDIAN LAND

Is the facility located on Indian lands? ☐ YES ☑ NO

X. EXISTING ENVIRONMENTAL PERMITS

	C	T	I	
A. NPDES *(Discharges to Surface Water)*	9	N		VA 0001872
D. PSD *(Air Emissions from Proposed Sources)*	9	P		N/A
B. UIC *(Underground Injection of Fluids)*	9	U		N/A
E. OTHER *(specify)*	9			N/A (specify)
C. RCRA *(Hazardous Wastes)*	9	R		N/A
E. OTHER *(specify)*	9			N/A (specify)

XI. MAP

Attach to this application a topographic map of the area extending to at least one mile beyond property boundaries. The map must show the outline of the facility, the location of each of its existing and proposed intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all springs, rivers, and other surface water bodies in the map area. See instructions for precise requirements.

XII. NATURE OF BUSINESS *(provide a brief description)*

The Joint Basin Corporation is co-owned by the four oil companies (BP, TransMontaigne, CITGO, and MOTIVA) that operate at the Fairfax Terminal Bulk Petroleum Storage Complex. Operations consist of receiving product from the Colonial Pipeline and distributing product by tanker truck and via the Colonial Pipeline.

XIII. CERTIFICATION *(see instructions)*

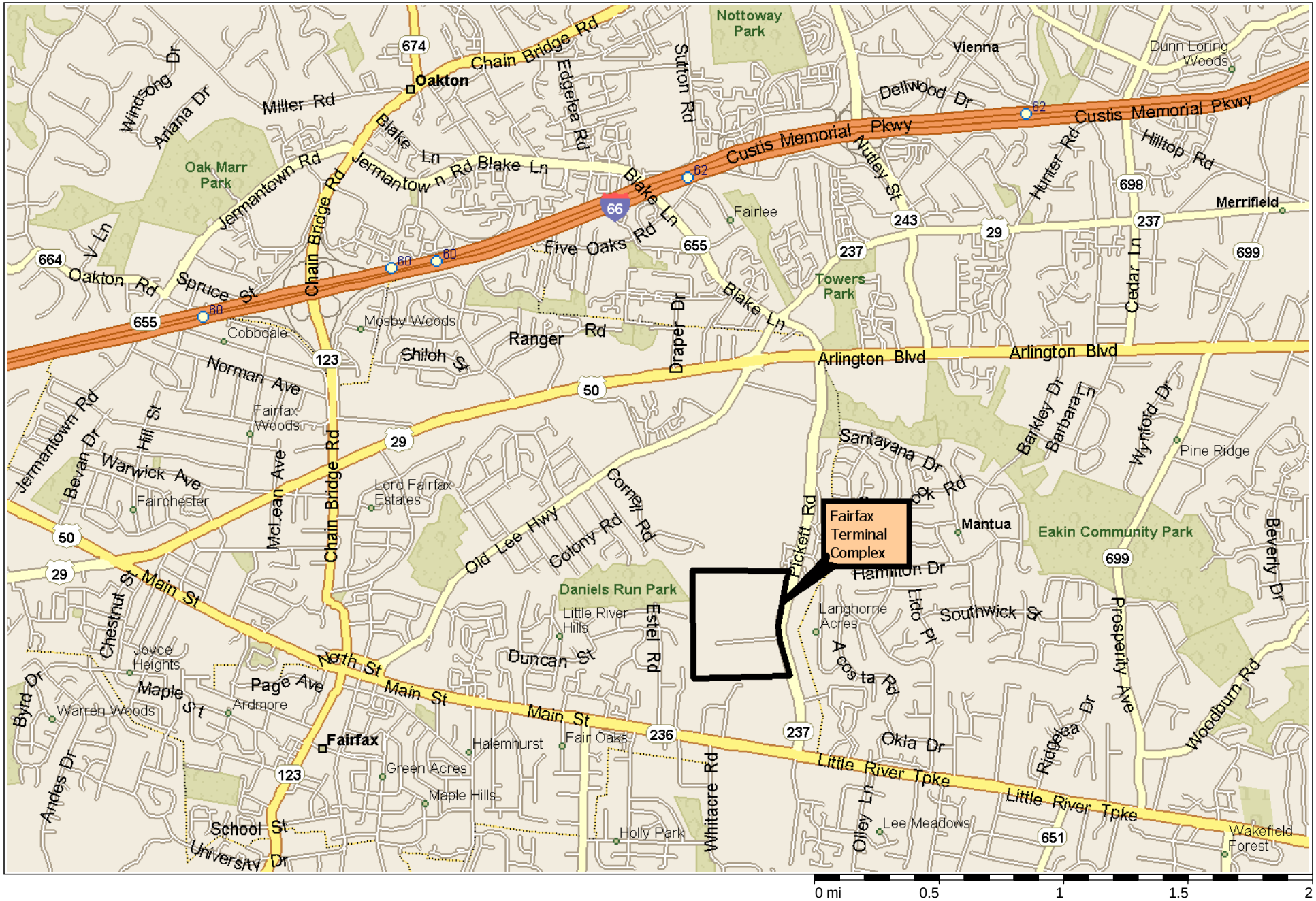
I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of those persons immediately responsible for obtaining the information contained in the application, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME & OFFICIAL TITLE *(type or print)*	B. SIGNATURE	C. DATE SIGNED
Andrew Barnes, Vice President		6/25/09

COMMENTS FOR OFFICIAL USE ONLY

C

Figure 1-1 Location of Fairfax Terminal Bulk Petroleum Storage Complex, Fairfax, VA



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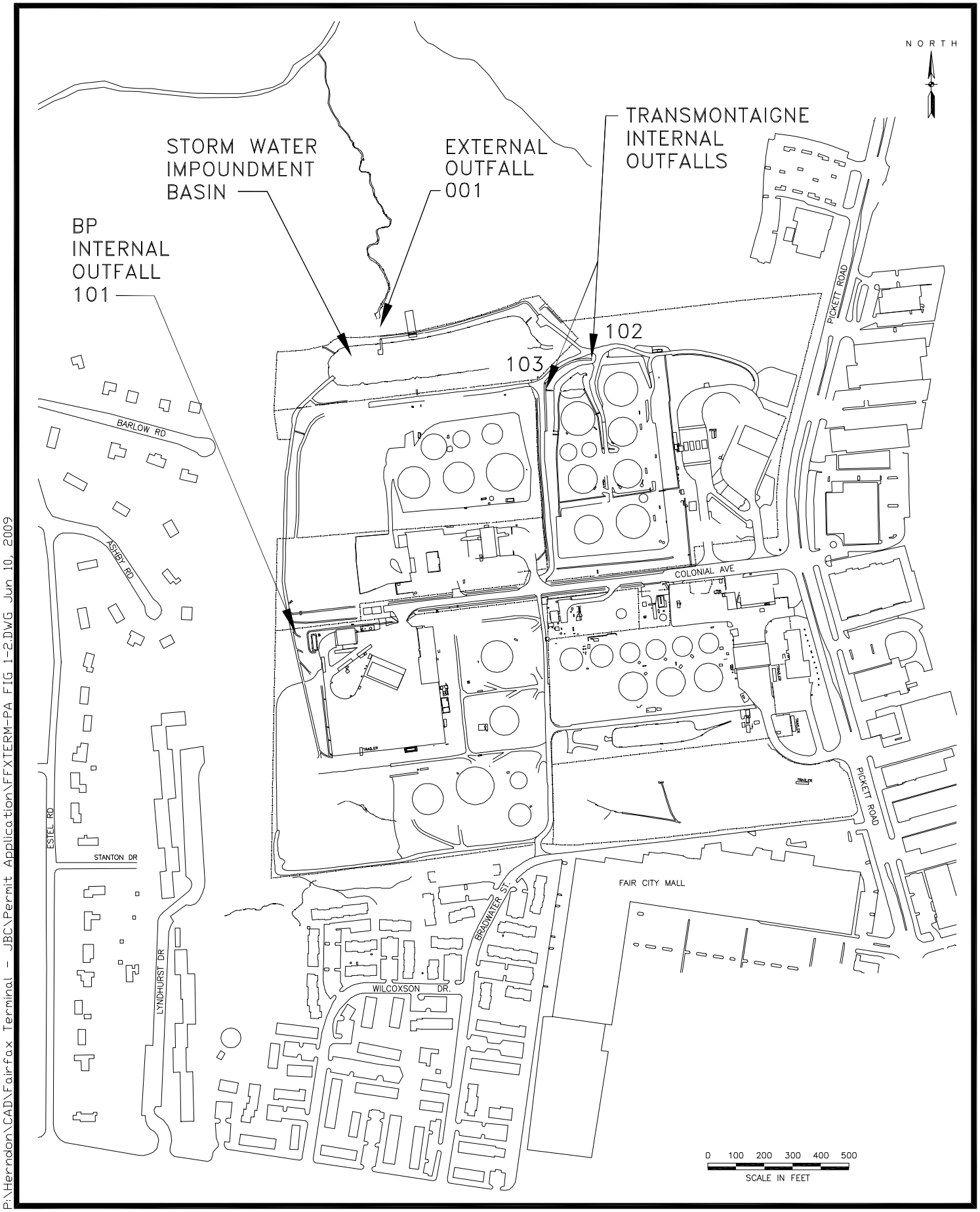


P:\Herndon\CAD\Fairfax Terminal - JBC\Permit Application\FFXTERM-PA FIG 1-2.DWG Jun 10, 2009

FIGURE 1-2. EXTERNAL AND INTERNAL STORM WATER OUTFALL LOCATIONS, FAIRFAX TERMINAL COMPLEX, FAIRFAX, VIRGINIA

2.0 FORM 2C

Please print or type in the unshaded areas only.

EPA I.D. NUMBER (*copy from Item 1 of Form 1*)
N/A

Form Approved.
OMB No. 2040-0086.
Approval expires 3-31-98.

FORM **2C** NPDES

EPA

U.S. ENVIRONMENTAL PROTECTION AGENCY
APPLICATION FOR PERMIT TO DISCHARGE WASTEWATER
EXISTING MANUFACTURING, COMMERCIAL, MINING AND SILVICULTURE OPERATIONS
Consolidated Permits Program

I. OUTFALL LOCATION

For each outfall, list the latitude and longitude of its location to the nearest 15 seconds and the name of the receiving water.

A. OUTFALL NUMBER (*list*)	B. LATITUDE			C. LONGITUDE			D. RECEIVING WATER (*name*)
	1. DEG.	2. MIN.	3. SEC.	1. DEG.	2. MIN.	3. SEC.	
001	38	51	03	77	16	30	Unnamed tributary to Daniels Run

II. FLOWS, SOURCES OF POLLUTION, AND TREATMENT TECHNOLOGIES

A. Attach a line drawing showing the water flow through the facility. Indicate sources of intake water, operations contributing wastewater to the effluent, and treatment units labeled to correspond to the more detailed descriptions in Item B. Construct a water balance on the line drawing by showing average flows between intakes, operations, treatment units, and outfalls. If a water balance cannot be determined (*e.g., for certain mining activities*), provide a pictorial description of the nature and amount of any sources of water and any collection or treatment measures.

B. For each outfall, provide a description of: (1) All operations contributing wastewater to the effluent, including process wastewater, sanitary wastewater, cooling water, and storm water runoff; (2) The average flow contributed by each operation; and (3) The treatment received by the wastewater. Continue on additional sheets if necessary.

1. OUT-FALL NO. (*list*)	2. OPERATION(S) CONTRIBUTING FLOW		3. TREATMENT		
	a. OPERATION (*list*)	b. AVERAGE FLOW (*include units*)	a. DESCRIPTION	b. LIST CODES FROM TABLE 2C-1	
001	Please see Figures 2-1 through 2-5	Please see Appendix B	Sedimentation	1	U

OFFICIAL USE ONLY (*effluent guidelines sub-categories*)

CONTINUED FROM THE FRONT

C. Except for storm runoff, leaks, or spills, are any of the discharges described in Items II-A or B intermittent or seasonal?

☑ YES (*complete the following table*) ☐ NO (*go to Section III*)

1. OUTFALL NUMBER (*list*)	2. OPERATION(s) CONTRIBUTING FLOW (*list*)	3. FREQUENCY		4. FLOW				
		a. DAYS PER WEEK (*specify average*)	b. MONTHS PER YEAR (*specify average*)	a. FLOW RATE (*in mgd*)		B. TOTAL VOLUME (*specify with units*)		C. DURATION (*in days*)
				1. LONG TERM AVERAGE	2. MAXIMUM DAILY	1. LONG TERM AVERAGE	2. MAXIMUM DAILY	
	Please see Table 2-1							

III. PRODUCTION

A. Does an effluent guideline limitation promulgated by EPA under Section 304 of the Clean Water Act apply to your facility?

☐ YES (*complete Item III-B*) ☑ NO (*go to Section IV*)

B. Are the limitations in the applicable effluent guideline expressed in terms of production (*or other measure of operation*)?

☐ YES (*complete Item III-C*) N/A ☐ NO (*go to Section IV*)

C. If you answered "yes" to Item III-B, list the quantity which represents an actual measurement of your level of production, expressed in the terms and units used in the applicable effluent guideline, and indicate the affected outfalls.

1. AVERAGE DAILY PRODUCTION			2. AFFECTED OUTFALLS (*list outfall numbers*)
a. QUANTITY PER DAY	b. UNITS OF MEASURE	c. OPERATION, PRODUCT, MATERIAL, ETC. (*specify*)	
N/A	N/A	N/A	N/A

IV. IMPROVEMENTS

A. Are you now required by any Federal, State or local authority to meet any implementation schedule for the construction, upgrading or operations of wastewater treatment equipment or practices or any other environmental programs which may affect the discharges described in this application? This includes, but is not limited to, permit conditions, administrative or enforcement orders, enforcement compliance schedule letters, stipulations, court orders, and grant or loan conditions.

☐ YES (*complete the following table*) ☑ NO (*go to Item IV-B*)

1. IDENTIFICATION OF CONDITION, AGREEMENT, ETC.	2. AFFECTED OUTFALLS		3. BRIEF DESCRIPTION OF PROJECT	4. FINAL COMPLIANCE DATE	
	a. NO.	b. SOURCE OF DISCHARGE		a. REQUIRED	b. PROJECTED
N/A	N/A	N/A	N/A	N/A	N/A

B. OPTIONAL: You may attach additional sheets describing any additional water pollution control programs (*or other environmental projects which may affect your discharges*) you now have underway or which you plan. Indicate whether each program is now underway or planned, and indicate your actual or planned schedules for construction.

☐ MARK "X" IF DESCRIPTION OF ADDITIONAL CONTROL PROGRAMS IS ATTACHED

 CONTINUE ON PAGE 3

EPA I.D. NUMBER (*copy from Item 1 of Form 1*)

N/A

CONTINUED FROM PAGE 2

V. INTAKE AND EFFLUENT CHARACTERISTICS

A, B, & C: See instructions before proceeding – Complete one set of tables for each outfall – Annotate the outfall number in the space provided.
NOTE: Tables V-A, V-B, and V-C are included on separate sheets numbered V-1 through V-9.

D. Use the space below to list any of the pollutants listed in Table 2c-3 of the instructions, which you know or have reason to believe is discharged or may be discharged from any outfall. For every pollutant you list, briefly describe the reasons you believe it to be present and report any analytical data in your possession.

1. POLLUTANT	2. SOURCE	1. POLLUTANT	2. SOURCE
Please see Form 2F for Intake	and Effluent Characteristics		

VI. POTENTIAL DISCHARGES NOT COVERED BY ANALYSIS

Is any pollutant listed in Item V-C a substance or a component of a substance which you currently use or manufacture as an intermediate or final product or byproduct?

☐ YES (*list all such pollutants below*) ☑ NO (*go to Item VI-B*)

N/A

CONTINUED FROM THE FRONT

VII. BIOLOGICAL TOXICITY TESTING DATA

Do you have any knowledge or reason to believe that any biological test for acute or chronic toxicity has been made on any of your discharges or on a receiving water in relation to your discharge within the last 3 years?

☑ YES (*identify the test(s) and describe their purposes below*) ☐ NO (*go to Section VIII*)

Please see Form 2F for Biological Toxicity Testing Data

VIII. CONTRACT ANALYSIS INFORMATION

Were any of the analyses reported in Item V performed by a contract laboratory or consulting firm?

☐ YES (*list the name, address, and telephone number of, and pollutants analyzed by, each such laboratory or firm below*) ☑ NO (*go to Section IX*)

A. NAME	B. ADDRESS	C. TELEPHONE (*area code & no.*)	D. POLLUTANTS ANALYZED (*list*)
No analyses were reported in	Item V; Please see Form 2F for	Contract Laboratory	

IX. CERTIFICATION

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.

A. NAME & OFFICIAL TITLE (*type or print*)	B. PHONE NO. (*area code & no.*)
Andrew Barnes, Vice President	(703) 503-3687
C. SIGNATURE	D. DATE SIGNED
	6/25/09

PLEASE PRINT OR TYPE IN THE UNSHADED AREAS ONLY. You may report some or all of this information on separate sheets (*use the same format*) instead of completing these pages. SEE INSTRUCTIONS.

EPA I.D. NUMBER (*copy from Item 1 of Form 1*)
N/A

V. INTAKE AND EFFLUENT CHARACTERISTICS *(continued from page 3 of Form 2-C)*

OUTFALL NO.

PART A –You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

1. POLLUTANT	2. EFFLUENT							3. UNITS (*specify if blank*)		4. INTAKE (*optional*)		
	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (*if available*)		c. LONG TERM AVRG. VALUE (*if available*)		d. NO. OF ANALYSES	a. CONCEN-TRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
a. Biochemical Oxygen Demand (*BOD*)												
b. Chemical Oxygen Demand (*COD*)												
c. Total Organic Carbon (*TOC*)												
d. Total Suspended Solids (*TSS*)												
e. Ammonia (*as N*)												
f. Flow	VALUE		VALUE		VALUE					VALUE		
g. Temperature (*winter*)	VALUE		VALUE		VALUE			°C		VALUE		
h. Temperature (*summer*)	VALUE		VALUE		VALUE			°C		VALUE		
i. pH	MINIMUM	MAXIMUM	MINIMUM	MAXIMUM				STANDARD UNITS				

PART B – Mark "X" in column 2-a for each pollutant you know or have reason to believe is present. Mark "X" in column 2-b for each pollutant you believe to be absent. If you mark column 2a for any pollutant which is limited either directly, or indirectly but expressly, in an effluent limitations guideline, you must provide the results of at least one analysis for that pollutant. For other pollutants for which you mark column 2a, you must provide quantitative data or an explanation of their presence in your discharge. Complete one table for each outfall. See the instructions for additional details and requirements.

1. POLLUTANT AND CAS NO. (*if available*)	2. MARK "X"		3. EFFLUENT							4. UNITS		5. INTAKE (*optional*)		
	a. BELIEVED PRESENT	b. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (*if available*)		c. LONG TERM AVRG. VALUE (*if available*)		d. NO. OF ANALYSES	a. CONCEN-TRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
			(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
a. Bromide (24959-67-9)														
b. Chlorine, Total Residual														
c. Color														
d. Fecal Coliform														
e. Fluoride (16984-48-8)														
f. Nitrate-Nitrite (*as N*)														

 CONTINUE ON REVERSE

ITEM V-B CONTINUED FROM FRONT

1. POLLUTANT AND CAS NO. (*if available*)	2. MARK "X"		3. EFFLUENT							4. UNITS		5. INTAKE (*optional*)		
	a. BELIEVED PRESENT	b. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (*if available*)		c. LONG TERM AVRG. VALUE (*if available*)		d. NO. OF ANALYSES	a. CONCEN-TRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
			(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
g. Nitrogen, Total Organic (*as N*)														
h. Oil and Grease														
i. Phosphorus (as P), Total (7723-14-0)														
j. Radioactivity														
(1) Alpha, Total														
(2) Beta, Total														
(3) Radium, Total														
(4) Radium 226, Total														
k. Sulfate (*as* SO_4) (14808-79-8)														
l. Sulfide (*as S*)														
m. Sulfite (*as* SO_3) (14265-45-3)														
n. Surfactants														
o. Aluminum, Total (7429-90-5)														
p. Barium, Total (7440-39-3)														
q. Boron, Total (7440-42-8)														
r. Cobalt, Total (7440-48-4)														
s. Iron, Total (7439-89-6)														
t. Magnesium, Total (7439-95-4)														
u. Molybdenum, Total (7439-98-7)														
v. Manganese, Total (7439-96-5)														
w. Tin, Total (7440-31-5)														
x. Titanium, Total (7440-32-6)														

CONTINUE ON PAGE V-3

EPA I.D. NUMBER (*copy from Item 1 of Form 1*)	OUTFALL NUMBER
N/A	

CONTINUED FROM PAGE 3 OF FORM 2-C

PART C - If you are a primary industry and this outfall contains process wastewater, refer to Table 2c-2 in the instructions to determine which of the GC/MS fractions you must test for. Mark "X" in column 2-a for all such GC/MS fractions that apply to your industry and for ALL toxic metals, cyanides, and total phenols. If you are not required to mark column 2-a (*secondary industries, nonprocess wastewater outfalls, and nonrequired GC/MS fractions*), mark "X" in column 2-b for each pollutant you know or have reason to believe is present. Mark "X" in column 2-c for each pollutant you believe is absent. If you mark column 2a for any pollutant, you must provide the results of at least one analysis for that pollutant. If you mark column 2b for any pollutant, you must provide the results of at least one analysis for that pollutant if you know or have reason to believe it will be discharged in concentrations of 10 ppb or greater. If you mark column 2b for acrolein, acrylonitrile, 2,4 dinitrophenol, or 2-methyl-4, 6 dinitrophenol, you must provide the results of at least one analysis for each of these pollutants which you know or have reason to believe that you discharge in concentrations of 100 ppb or greater. Otherwise, for pollutants for which you mark column 2b, you must either submit at least one analysis or briefly describe the reasons the pollutant is expected to be discharged. Note that there are 7 pages to this part; please review each carefully. Complete one table (*all 7 pages*) for each outfall. See instructions for additional details and requirements.

1. POLLUTANT AND CAS NUMBER (*if available*)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (*optional*)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (*if available*)		c. LONG TERM AVRG. VALUE (*if available*)		d. NO. OF ANALYSES	a. CONCEN-TRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
METALS, CYANIDE, AND TOTAL PHENOLS															
1M. Antimony, Total (7440-36-0)															
2M. Arsenic, Total (7440-38-2)															
3M. Beryllium, Total (7440-41-7)															
4M. Cadmium, Total (7440-43-9)															
5M. Chromium, Total (7440-47-3)															
6M. Copper, Total (7440-50-8)															
7M. Lead, Total (7439-92-1)															
8M. Mercury, Total (7439-97-6)															
9M. Nickel, Total (7440-02-0)															
10M. Selenium, Total (7782-49-2)															
11M. Silver, Total (7440-22-4)															
12M. Thallium, Total (7440-28-0)															
13M. Zinc, Total (7440-66-6)															
14M. Cyanide, Total (57-12-5)															
15M. Phenols, Total															
DIOXIN															
2,3,7,8-Tetra-chlorodibenzo-P-Dioxin (1764-01-6)				DESCRIBE RESULTS											

CONTINUE ON REVERSE

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (*if available*)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (*optional*)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (*if available*)		c. LONG TERM AVRG. VALUE (*if available*)		d. NO. OF ANALYSES	a. CONCEN-TRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION – VOLATILE COMPOUNDS															
1V. Accrolein (107-02-8)															
2V. Acrylonitrile (107-13-1)															
3V. Benzene (71-43-2)															
4V. Bis (*Chloro-methyl*) Ether (542-88-1)															
5V. Bromoform (75-25-2)															
6V. Carbon Tetrachloride (56-23-5)															
7V. Chlorobenzene (108-90-7)															
8V. Chlorodi-bromomethane (124-48-1)															
9V. Chloroethane (75-00-3)															
10V. 2-Chloro-ethylvinyl Ether (110-75-8)															
11V. Chloroform (67-66-3)															
12V. Dichloro-bromomethane (75-27-4)															
13V. Dichloro-difluoromethane (75-71-8)															
14V. 1,1-Dichloro-ethane (75-34-3)															
15V. 1,2-Dichloro-ethane (107-06-2)															
16V. 1,1-Dichloro-ethylene (75-35-4)															
17V. 1,2-Dichloro-propane (78-87-5)															
18V. 1,3-Dichloro-propylene (542-75-6)															
19V. Ethylbenzene (100-41-4)															
20V. Methyl Bromide (74-83-9)															
21V. Methyl Chloride (74-87-3)															

CONTINUE ON PAGE V-5

CONTINUED FROM PAGE V-4

1. POLLUTANT AND CAS NUMBER (*if available*)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (*optional*)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (*if available*)		c. LONG TERM AVRG. VALUE (*if available*)		d. NO. OF ANALYSES	a. CONCEN-TRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION – VOLATILE COMPOUNDS (*continued*)															
22V. Methylene Chloride (75-09-2)															
23V. 1,1,2,2-Tetrachloroethane (79-34-5)															
24V. Tetrachloro-ethylene (127-18-4)															
25V. Toluene (108-88-3)															
26V. 1,2-Trans-Dichloroethylene (156-60-5)															
27V. 1,1,1-Trichloro-ethane (71-55-6)															
28V. 1,1,2-Trichloro-ethane (79-00-5)															
29V Trichloro-ethylene (79-01-6)															
30V. Trichloro-fluoromethane (75-69-4)															
31V. Vinyl Chloride (75-01-4)															
GC/MS FRACTION – ACID COMPOUNDS															
1A. 2-Chlorophenol (95-57-8)															
2A. 2,4-Dichloro-phenol (120-83-2)															
3A. 2,4-Dimethyl-phenol (105-67-9)															
4A. 4,6-Dinitro-O-Cresol (534-52-1)															
5A. 2,4-Dinitro-phenol (51-28-5)															
6A. 2-Nitrophenol (88-75-5)															
7A. 4-Nitrophenol (100-02-7)															
8A. P-Chloro-M-Cresol (59-50-7)															
9A. Pentachloro-phenol (87-86-5)															
10A. Phenol (108-95-2)															
11A. 2,4,6-Trichloro-phenol (88-05-2)															

CONTINUE ON REVERSE

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (*if available*)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (*optional*)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (*if available*)		c. LONG TERM AVRG. VALUE (*if available*)		d. NO. OF ANALYSES	a. CONCEN-TRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS															
1B. Acenaphthene (83-32-9)															
2B. Acenaphtylene (208-96-8)															
3B. Anthracene (120-12-7)															
4B. Benzidine (92-87-5)															
5B. Benzo (*a*) Anthracene (56-55-3)															
6B. Benzo (*a*) Pyrene (50-32-8)															
7B. 3,4-Benzo-fluoranthene (205-99-2)															
8B. Benzo (*ghi*) Perylene (191-24-2)															
9B. Benzo (*k*) Fluoranthene (207-08-9)															
10B. Bis (*2-Chloro-ethoxy*) Methane (111-91-1)															
11B. Bis (*2-Chloro-ethyl*) Ether (111-44-4)															
12B. Bis (*2-Chloroisopropyl*) Ether (102-80-1)															
13B. Bis (*2-Ethyl-hexyl*) Phthalate (117-81-7)															
14B. 4-Bromophenyl Phenyl Ether (101-55-3)															
15B. Butyl Benzyl Phthalate (85-68-7)															
16B. 2-Chloro-naphthalene (91-58-7)															
17B. 4-Chloro-phenyl Phenyl Ether (7005-72-3)															
18B. Chrysene (218-01-9)															
19B. Dibenzo (*a,h*) Anthracene (53-70-3)															
20B. 1,2-Dichloro-benzene (95-50-1)															
21B. 1,3-Di-chloro-benzene (541-73-1)															

CONTINUE ON PAGE V-7

CONTINUED FROM PAGE V-6

1. POLLUTANT AND CAS NUMBER (*if available*)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (*optional*)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (*if available*)		c. LONG TERM AVRG. VALUE (*if available*)		d. NO. OF ANALYSES	a. CONCEN-TRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS (*continued*)															
22B. 1,4-Dichloro-benzene (106-46-7)															
23B. 3,3-Dichloro-benzidine (91-94-1)															
24B. Diethyl Phthalate (84-66-2)															
25B. Dimethyl Phthalate (131 -11-3)															
26B. Di-N-Butyl Phthalate (84-74-2)															
27B. 2,4-Dinitro-toluene (121-14-2)															
28B. 2,6-Dinitro-toluene (606-20-2)															
29B. Di-N-Octyl Phthalate (117-84-0)															
30B. 1,2-Diphenyl-hydrazine (*as Azo-benzene*) (122-66-7)															
31B. Fluoranthene (206-44-0)															
32B. Fluorene (86-73-7)															
33B. Hexachloro-benzene (118-74-1)															
34B. Hexachloro-butadiene (87-68-3)															
35B. Hexachloro-cyclopentadiene (77-47-4)															
36B Hexachloro-ethane (67-72-1)															
37B. Indeno (*1,2,3-cd*) Pyrene (193-39-5)															
38B. Isophorone (78-59-1)															
39B. Naphthalene (91-20-3)															
40B. Nitrobenzene (98-95-3)															
41B. N-Nitro-sodimethylamine (62-75-9)															
42B. N-Nitrosodi-N-Propylamine (621-64-7)															

CONTINUE ON REVERSE

CONTINUED FROM THE FRONT

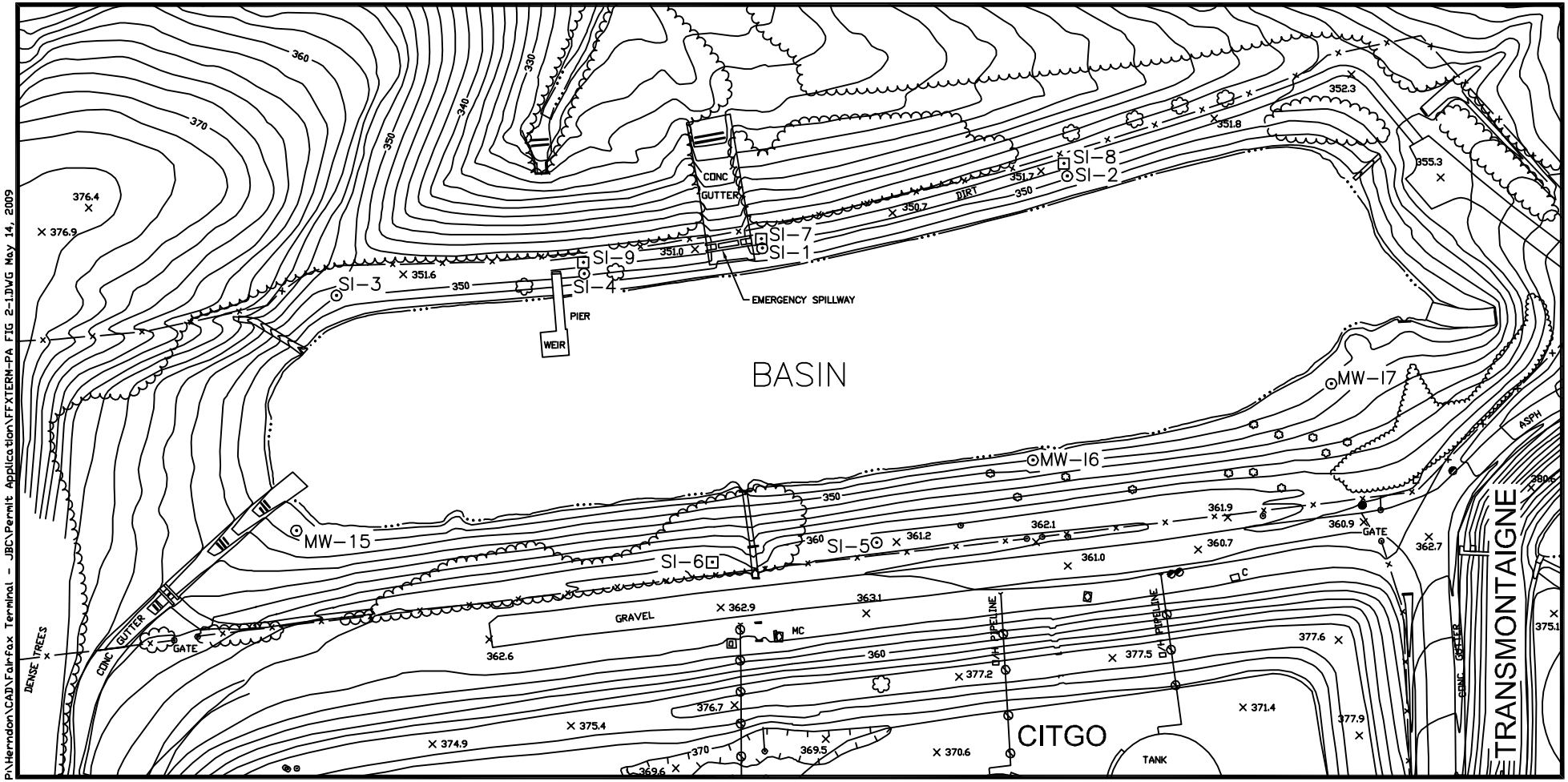
1. POLLUTANT AND CAS NUMBER (*if available*)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (*optional*)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (*if available*)		c. LONG TERM AVRG. VALUE (*if available*)		d. NO. OF ANALYSES	a. CONCEN-TRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS (*continued*)															
43B. N-Nitro-sodiphenylamine (86-30-6)															
44B. Phenanthrene (85-01-8)															
45B. Pyrene (129-00-0)															
46B. 1,2,4-Tri-chlorobenzene (120-82-1)															
GC/MS FRACTION – PESTICIDES															
1P. Aldrin (309-00-2)															
2P. α-BHC (319-84-6)															
3P. β-BHC (319-85-7)															
4P. γ-BHC (58-89-9)															
5P. δ-BHC (319-86-8)															
6P. Chlordane (57-74-9)															
7P. 4,4'-DDT (50-29-3)															
8P. 4,4'-DDE (72-55-9)															
9P. 4,4'-DDD (72-54-8)															
10P. Dieldrin (60-57-1)															
11P. α-Enosulfan (115-29-7)															
12P. β-Endosulfan (115-29-7)															
13P. Endosulfan Sulfate (1031-07-8)															
14P. Endrin (72-20-8)															
15P. Endrin Aldehyde (7421-93-4)															
16P. Heptachlor (76-44-8)															

CONTINUE ON PAGE V-9

EPA I.D. NUMBER (*copy from Item 1 of Form 1*)	OUTFALL NUMBER
N/A	

CONTINUED FROM PAGE V-8

1. POLLUTANT AND CAS NUMBER (*if available*)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (*optional*)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (*if available*)		c. LONG TERM AVRG. VALUE (*if available*)		d. NO. OF ANALYSES	a. CONCEN-TRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION – PESTICIDES (*continued*)															
17P. Heptachlor Epoxide (1024-57-3)															
18P. PCB-1242 (53469-21-9)															
19P. PCB-1254 (11097-69-1)															
20P. PCB-1221 (11104-28-2)															
21P. PCB-1232 (11141-16-5)															
22P. PCB-1248 (12672-29-6)															
23P. PCB-1260 (11096-82-5)															
24P. PCB-1016 (12674-11-2)															
25P. Toxaphene (8001-35-2)															



LEGEND	
— x —	FENCE
SI-1 ⊙	HANDEX-INSTALLED WELL
SI-7 ⊡	RADIAN-INSTALLED WELL
MW-17 ⊙	CITGO MONITORING WELL
X 374.9	ELEVATION POINT

NORTH

0 25 50
FEET

FIGURE 2-1
FAIRFAX TERMINAL STORM WATER IMPOUNDMENT BASIN,
FAIRFAX, VA.

TOPOGRAPHY FROM AIR SURVEY CORPORATION (1992)

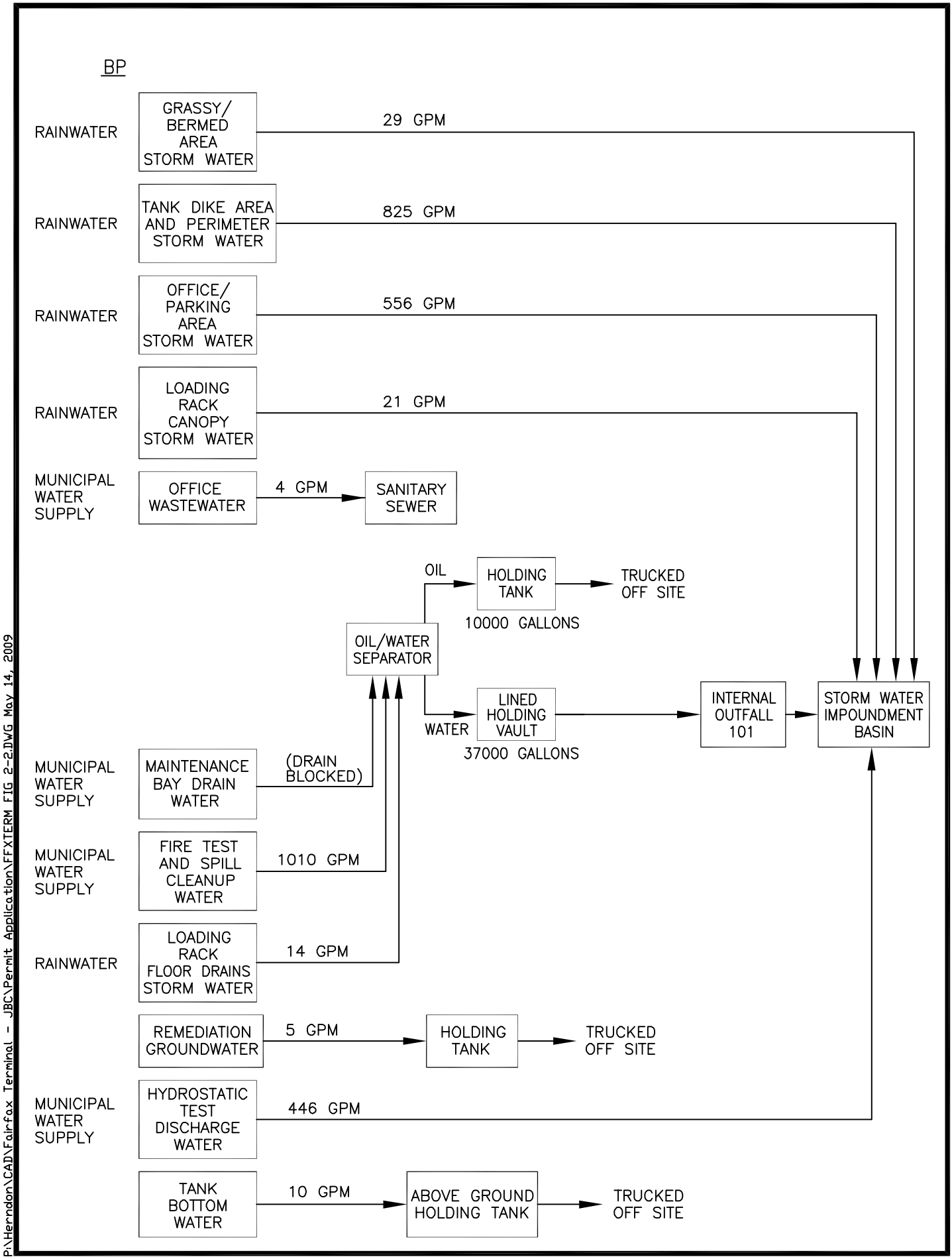
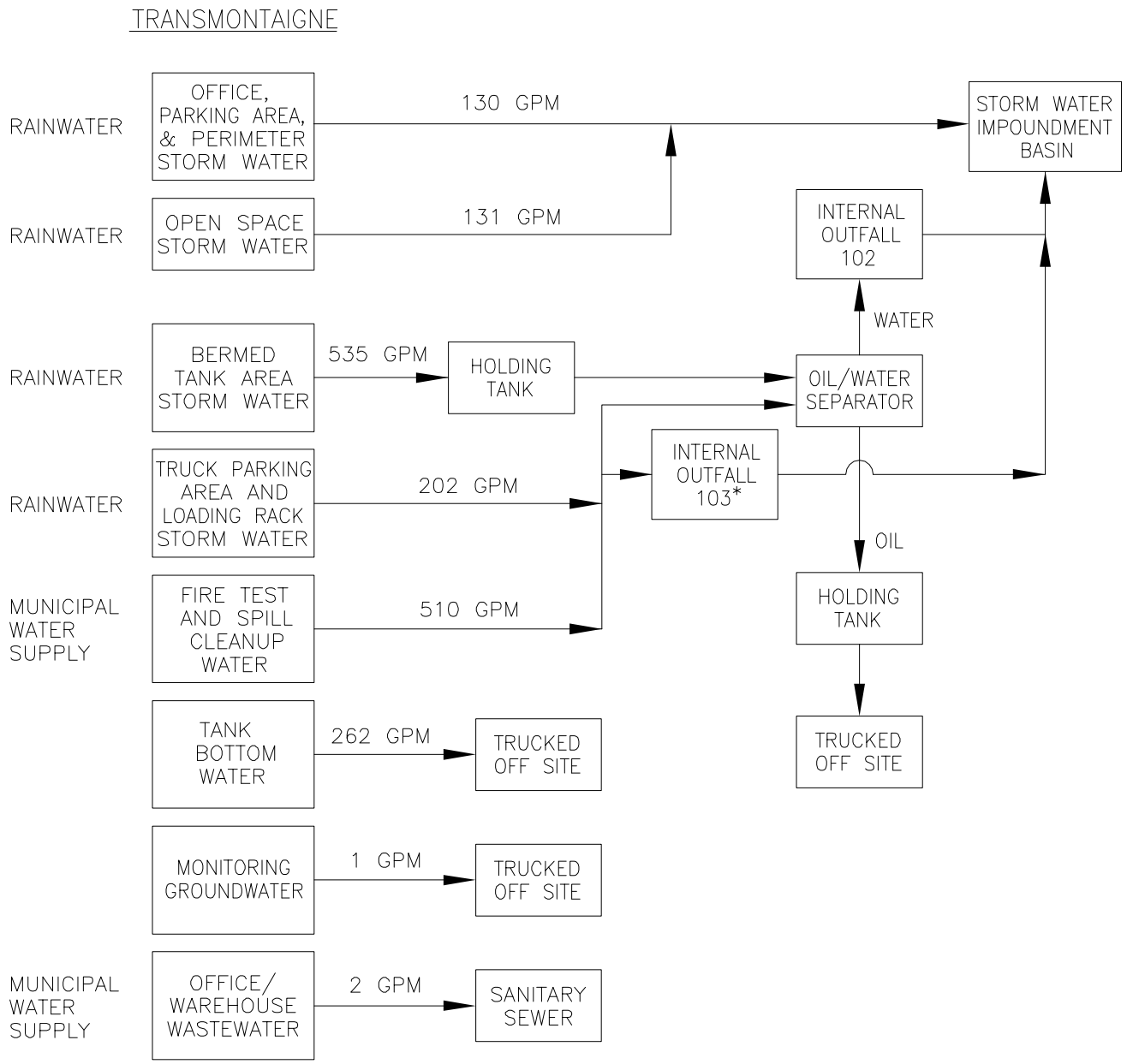


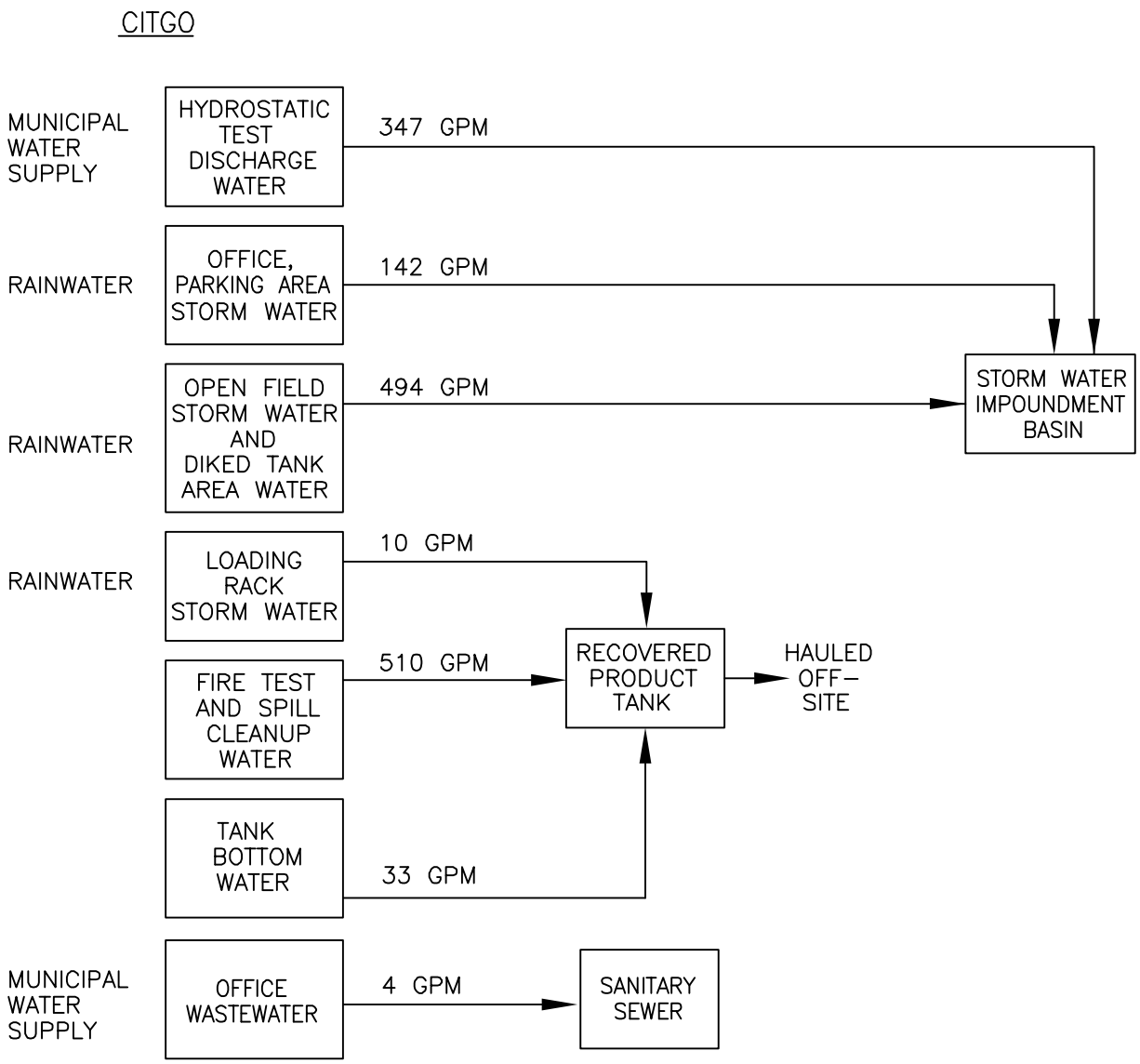
FIGURE 2-2. BP SCHEMATIC DIAGRAM



*NOTE: THIS OUTFALL WILL ONLY BE USED AS AN EMERGENCY DISCHARGE DURING A SEVERE RAINFALL EVENT.

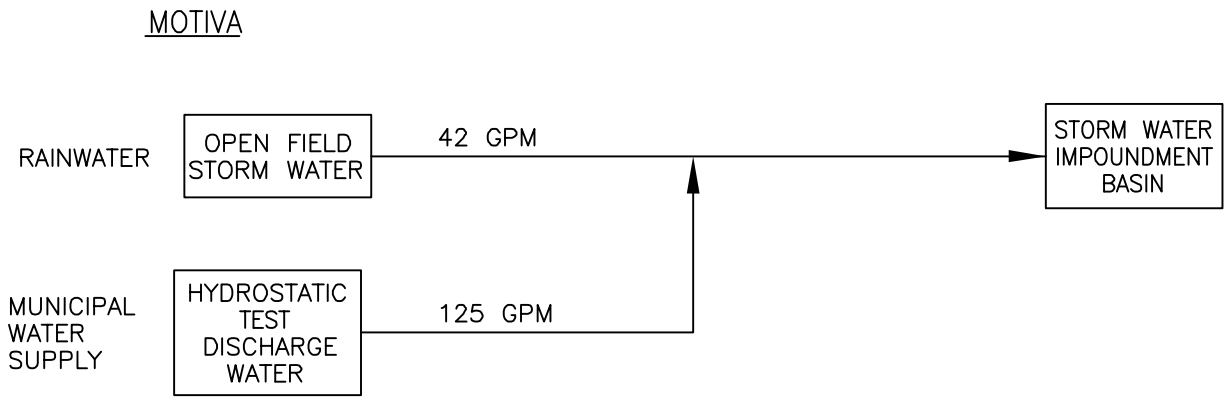
P:\Herndon\CAD\Fairfax Terminal - JBC\Permit Application\FFXTERM-PA FIG 2-3.DWG Jun 10, 2009

FIGURE 2-3. TRANSMONTAIGNE SCHEMATIC DIAGRAM



P:\Herndon\CAD\Fairfax Terminal - JBC\Permit Application\FFXTERM-PA FIG 2-4.DWG May 14, 2009

FIGURE 2-4. CITGO SCHEMATIC DIAGRAM



P:\Herndon\CAD\Fairfax Terminal - JBC\Permit Application\FFXTERM-PA FIG 2-5.DWG May 14, 2009

FIGURE 2-5. MOTIVA SCHEMATIC DIAGRAM

Table 2-1

Intermittent Flows to the JBC Basin

Outfall Number	Operations Contributing Flow	Frequency	Flow Rate (gpm)	Duration (hours)
001	**BP**			
	Maintenance Bay Drain Water	drain blocked	0	0.0
	Hydrostatic Test Discharge Water	approximately once every five years	446	168
	TransMontaigne			
	Hydrostatic Test Discharge Water	Approximately once every four years	208	240
	CITGO			
	Hydrostatic Test Discharge Water	Could be as frequent as annually	347	240
	MOTIVA			
	Hydrostatic Test Discharge Water	One every ten years	125	240

3.0 FORM 2F

Please print or type in the unshaded areas only.

EPA ID Number (*copy from Item 1 of Form 1*)
N/A

Form Approved. OMB No. 2040-0086
Approval expires 5-31-92

FORM **2F** NPDES

U.S. Environmental Protection Agency
Washington, DC 20460

Application for Permit to Discharge Storm Water Discharges Associated with Industrial Activity

Paperwork Reduction Act Notice

Public reporting burden for this application is estimated to average 28.6 hours per application, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate, any other aspect of this collection of information, or suggestions for improving this form, including suggestions which may increase or reduce this burden to: Chief, Information Policy Branch, PM-223, U.S. Environmental Protection Agency, 1200 Pennsylvania Avenue, NW, Washington, DC 20460, or Director, Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, DC 20503.

I. Outfall Location

For each outfall, list the latitude and longitude of its location to the nearest 15 seconds and the name of the receiving water.

A. Outfall Number (*list*)	B. Latitude			C. Longitude			D. Receiving Water (*name*)
001	38	51	10	77	16	30	Unnamed tributary to Daniels Run

II. Improvements

A. Are you now required by any Federal, State, or local authority to meet any implementation schedule for the construction, upgrading or operation of wastewater treatment equipment or practices or any other environmental programs which may affect the discharges described in this application? This includes, but is not limited to, permit conditions, administrative or enforcement orders, enforcement compliance schedule letters, stipulations, court orders, and grant or loan conditions.

1. Identification of Conditions, Agreements, Etc.	2. Affected Outfalls		3. Brief Description of Project	4. Final Compliance Date	
	number	source of discharge		a. req.	b. proj.
N/A	N/A	N/A	N/A		

B: You may attach additional sheets describing any additional water pollution (or other environmental projects which may affect your discharges) you now have under way or which you plan. Indicate whether each program is now under way or planned, and indicate your actual or planned schedules for construction.
Please see Figures 4-1 and 5-1.

III. Site Drainage Map

Attach a site map showing topography (or indicating the outline of drainage areas served by the outfalls(s) covered in the application if a topographic map is unavailable) depicting the facility including: each of its intake and discharge structures; the drainage area of each storm water outfall; paved areas and buildings within the drainage area of each storm water outfall, each known past or present areas used for outdoor storage of disposal of significant materials, each existing structural control measure to reduce pollutants in storm water runoff, materials loading and access areas, areas where pesticides, herbicides, soil conditioners and fertilizers are applied; each of its hazardous waste treatment, storage or disposal units (including each area not required to have a RCRA permit which is used for accumulating hazardous waste under 40 CFR 262.34); each well where fluids from the facility are injected underground; springs, and other surface water bodies which received storm water discharges from the facility. Please see Figures 3-1 through 3-6 and Attachment 3.2.

 Continue on Page 2

Continued from the Front

IV. Narrative Description of Pollutant Sources

A. For each outfall, provide an estimate of the area (include units) of imperious surfaces (including paved areas and building roofs) drained to the outfall, and an estimate of the total surface area drained by the outfall.

Outfall Number	Area of Impervious Surface *(provide units)*	Total Area Drained *(provide units)*	Outfall Number	Area of Impervious Surface *(provide units)*	Total Area Drained *(provide units)*
001	53.2 acres	106.4 acres	N/A	N/A	N/A

B. Provide a narrative description of significant materials that are currently or in the past three years have been treated, stored or disposed in a manner to allow exposure to storm water; method of treatment, storage, or disposal; past and present materials management practices employed to minimize contact by these materials with storm water runoff; materials loading and access areas, and the location, manner, and frequency in which pesticides, herbicides, soil conditioners, and fertilizers are applied.

Please see the narrative description included in Sections 3.1 and 3.2. Please also see Table 3-1.

C. For each outfall, provide the location and a description of existing structural and nonstructural control measures to reduce pollutants in storm water runoff; and a description of the treatment the storm water receives, including the schedule and type of maintenance for control and treatment measures and the ultimate disposal of any solid or fluid wastes other than by discharge.

Outfall Number	Treatment	List Codes from Table 2F-1
	Please see Table 3.2.	

V. Nonstormwater Discharges

A. I certify under penalty of law hat the outfall(s) covered by this application have been tested or evaluated for the presence of nonstormwater discharges, and that all nonstormwater discharged from these outfall(s) are identified in either an accompanying Form 2C or From 2E application for the outfall.

Name and Official Title *(type or print)*	Signature	Date Signed
Andrew Barnes, Vice President		6/25/09

B. Provide a description of the method used, the date of any testing, and the onsite drainage points that were directly observed during a test.

Non-storm water discharges have been identified and evaluated in the Risk Assessment and Site Characterization reports prepared for the Basin. These reports were previously submitted to the VDEQ (prior to 1994).

VI. Significant Leaks or Spills

Provide existing information regarding the history of significant leaks or spills of toxic or hazardous pollutants at the facility in the last three years, including the approximate date and location of the spill or leak, and the type and amount of material released.

Please see Table 3-3.

Please note that only leaks and spills on land that drains to the Basin have been included.

 Continue on Page 3

Continued from Page 2

EPA ID Number *(copy from Item 1 of Form 1)*
N/A

VII. Discharge Information

A, B, C, & D: See instructions before proceeding. Complete one set of tables for each outfall. Annotate the outfall number in the space provided. Table VII-A, VII-B, VII-C are included on separate sheets numbers VII-1 and VII-2.

E. Potential discharges not covered by analysis – is any toxic pollutant listed in table 2F-2, 2F-3, or 2F-4, a substance or a component of a substance which you currently use or manufacture as an intermediate or final product or byproduct?

☑ Yes (*list all such pollutants below*) ☐ No (*go to Section IX*)

Please see Parts A, B, C, and D.

VIII. Biological Toxicity Testing Data

Do you have any knowledge or reason to believe that any biological test for acute or chronic toxicity has been made on any of your discharges or on a receiving water in relation to your discharge within the last 3 years?

☑ Yes (*list all such pollutants below*) ☐ No (*go to Section IX*)

Please see Appendix C - Monitoring Reports (2005-2008) for the Toxicity Management Plan.

IX. Contract Analysis Information

Were any of the analyses reported in Item VII performed by a contract laboratory or consulting firm?

☑ Yes (*list the name, address, and telephone number of, and pollutants analyzed by, each such laboratory or firm below*) ☐ No (*go to Section X*)

A. Name	B. Address	C. Area Code & Phone No.	D. Pollutants Analyzed
Air, Water, and Soil Laboratories, Inc.	2109A North Hamilton Street Richmond, VA 23230	(804) 358-8295	Please see Appendix B

X. Certification

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.

A. Name & Official Title (*Type Or Print*)	B. Area Code and Phone No.
Andrew Barnes / Vice President	(703) 503-3687
C. Signature	D. Date Signed
	6/25/09

EPA ID Number (*copy from Item 1 of Form 1*)
N/A

Form Approved. OMB No. 2040-0086
Approval expires 5-31-92

VII. Discharge information *(Continued from page 3 of Form 2F)*

Part A – You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
Oil and Grease	<10 mg/L	N/A	N/A	N/A	N/A	N/A Please see notes with Table 3.4
Biological Oxygen Demand (BOD5)	6.9 mg/L	N/A	N/A	N/A	N/A	N/A
Chemical Oxygen Demand (COD)	22.8 mg/L	N/A	N/A	N/A	N/A	N/A
Total Suspended Solids (TSS)	11.5 mg/L	N/A	N/A	N/A	1	N/A
Total Nitrogen	1.1 mg/L	N/A	N/A	N/A	N/A	N/A
Total Phosphorus	0.07 mg/L	N/A	N/A	N/A	N/A	N/A
pH	Minimum 6.44	Maximum 6.44	Minimum	Maximum	1	N/A

Part B – List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
Please see	Appendix B for	sampling data	collected	between 2005 and	2009.	

Continue on Reverse

Continued from the Front

Part C - List each pollutant shown in Table 2F-2, 2F-3, and 2F-4 that you know or have reason to believe is present. See the instructions for additional details and requirements. Complete one table for each outfall.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
Please see	Appendix B for	sampling results				

Part D – Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample.

1. Date of Storm Event	2. Duration of Storm Event *(in minutes)*	3. Total rainfall during storm event *(in inches)*	4. Number of hours between beginning of storm measured and end of previous measurable rain event	5. Maximum flow rate during rain event *(gallons/minute or specify units)*	6. Total flow from rain event *(gallons or specify units)*
Please see	Attachment	3.1			

7. Provide a description of the method of flow measurement or estimate.

Manning's Formula/Nomograph for a 36-inch diamter pipe flowing full at a slope of 0.0001 feet per foot was used to estimate the maximum flow rate. Total flow was estimated by multiplying the maximum flow rate by the storm duration.

3.0 DISCHARGES TO BASIN AND OUTFALLS

This section discusses sources of water discharged to the Fairfax Terminal Storm Water Impoundment Basin (Basin). Information obtained from topographic maps, City of Fairfax utility maps, water management practices for each terminal facility, and visual observation was used to define the area draining to the Basin.

3.1 Sources of Water to Storm Water Impoundment Basin

Sources of water flowing into the Basin have been divided into two major groups: sources associated with the Fairfax Terminal Complex (the Terminal sources) and sources associated with off-site areas (Non-Terminal sources). Figure 3-1 shows the total drainage area for the Basin including both the Terminal and Non-Terminal source areas. Figure 3-2 shows the drainage subareas defined by unique drainage flow paths within the overall drainage area.

3.1.1 Terminal Sources

Surface water flowing to the Basin from the Terminal Complex area comes from each of the four Fairfax Terminal bulk storage facilities, from Colonial Avenue, and from the Basin area itself. Surface Water management activities at each of the four facilities are described in detail in Section 3-2. Figure 3-2 shows the sub-areas of drainage at each facility: BP, BP1-3; TransMontaigne, TM1-5; CITGO, CI1-6; and MOTIVA, MO1 and 2. Runoff from Colonial Avenue itself (CA) flows into the Basin after passing through culverts along Colonial Avenue and through the western portion of the CITGO property. Storm water runoff from the area immediately around the Basin (BA), and rainwater falling directly into the Basin also contribute water to the Basin.

3.1.2 Non-Terminal Sources

Water from three separate Non-Terminal areas flows into the Basin: a golf course located north of the Complex (OFF7), Pickett Road and a commercial area located east of the Complex (PR), and a residential area located south and west of the Complex (OFF1-6).

A section of the golf course located north of the TransMontaigne terminal (OFF7) contributes storm water runoff overland directly to the Basin. Storm water runoff from several commercial businesses located east of Pickett Road and runoff from a portion of Pickett Road itself (PR) flows into the Basin through a storm sewer pipeline that runs across the northern part of the TransMontaigne property.

The remaining Non-Terminal area that contributes storm water runoff to the Basin is a residential area located south and west of the Complex. The residential area, which was divided into six drainage sub-areas (OFF1-6) based on topographic flow paths, includes portions of three separate residential developments. Drainage from two small areas at the Comstock residential complex, a group of townhouses located south of the BP terminal (OFF5 and 6), drain into a single pipe and then flow into a storm water staging area on the BP property. A much larger area of Comstock and part of the Lyndhurst condominiums, located west of BP (OFF4) drain through a pipe under BP's staging area into a concrete-lined channel that crosses BP and CITGO property and discharges directly to the Basin. Another part of Lyndhurst (OFF3) also drains to the Basin, flowing overland to the concrete-lined channel on CITGO's property. Finally, storm water from a small part of Little River Hills (OFF1-2), a development of single family homes located to the west of the Complex, drains into the Basin after flowing overland to the concrete-lined channel, or to a separate channel located along the western boundary of the Basin area.

3.2 Surface Water Management by Facility

Information regarding surface water management was supplied by each of the four Fairfax Terminal facilities and is summarized below.

3.2.1 BP

BP owns approximately 19.7 acres in the southwest quadrant of the Terminal Complex. As shown on Figure 3-3, there are three surface water drainage sub-areas at the BP facility, that contribute water to the Basin including: the tank dike field area located in the

eastern and southern portions of the site (drainage area BP1 on Figure 3-3); the office parking area (BP2); and the grassy bermed area located between the office and the tank dike area (BP3). In addition to surface water run off, some other water generated by specific activities at the site is routed into the Basin.

Drainage from BP's tank dike areas located in the eastern and southern portions of the property (BP1) is discharged by gravity flow through a series of catch basins, valves, and piping to the storm water staging area located in the southwest portion of the BP property. The flow is clockwise around the perimeter of the site, from the Tank 1 dike area located in the northeast corner of the site and through other dikes to the staging area. Valves between the tank dikes are normally closed. These valves are opened as necessary to drain the dikes after a rain event. The valve at the staging area outfall is locked in the closed position. The staging area for the tank dike runoff also receives storm water runoff from a small portion of the Comstock residential complex located south of the BP property. Water that accumulates in this staging area is released to the Basin periodically as needed, after being visually inspected for a sheen or any other obvious signs of contamination. BP's practice is to keep the staging area dry; the frequency and intensity of rainfall events dictates the frequency with which the outfall valve is opened.

Storm water from the grassy/bermed area between the office and tank dike area (BP3) flows into the Colonial Avenue storm sewer ditch, and ultimately into the Basin. Storm water from BP's office/parking area (BP2) flows directly to the Basin through a series of drains located in the office and truck parking lots. Water from BP's loading rack canopy flows through this same series of drains.

Management of water generated by specific facility activities is described below. Wastewater from BP's office leaves the property through sanitary sewer lines. Maintenance bay floor drains are piped directly to the oil/water separator; however, the drains are currently blocked. Water and foam from fire tests and spill clean-ups discharges to the oil/water separator via the loading rack floor drains. Water from the loading rack floor drains discharges by gravity flow to the rack oil/water (oil/water) separator located south of the maintenance shop. Oil from the separator is skimmed into a 10,000-gallon underground holding tank, and water from the

separator discharges to a 37,000-gallon holding vault. The discharge from this vault is designated at Outfall 101.

Groundwater generated during monitoring activities conducted at the BP property is stored in a tank trailer or above ground holding tank. The groundwater is trucked off site and disposed by a subcontractor to BP. If it becomes necessary to discharge this water (approximately 1,400 gallons per year) to the JBC Basin, the JBC will notify the VDEQ and pre-discharge sampling will be conducted. Tank bottom water is piped from each storage tank to a lined sump; a pump transfers the water and recoverable hydrocarbons to an above ground storage tank located inside a containment dike. The contents of the tank are trucked off site.

3.2.2 TransMontaigne

TransMontaigne (TM) occupies 18.4 acres in the northeast quadrant of the Terminal Complex. As shown in Figure 3-4, there are six drainage sub-areas for surface water runoff at the TM facility, each of the following areas eventually contributes runoff to the Basin: the open space located along the northern portion of the property (drainage area TM1 on Figure 3-4); the office parking lot and driveway (TM2); the area located along the south and west perimeters of the property, outside the bermed tank area (TM3); the bermed storage tank area (TM4a and TM5b); and the truck parking area and loading racks (TM5). In addition, water generated through specific activities conducted at the site is managed in various ways, and some water discharges to the Basin.

Water from the open space adjoining Pickett Road and from the northern part of the property (TM1) flows overland and enters the storm sewer in the northern part of the property, which subsequently flows west into the Basin. This storm sewer also carries storm water runoff from Pickett Road and several adjoining commercial businesses located to the east. Some runoff from wooded land located to the north of the TM facility may also flow into this storm sewer (Figure 3-1, OFF7).

Water from TM's office and parking lot area (TM2) flows into the Colonial Avenue runoff channel located immediately south of the TM facility, eventually entering the

Basin at its western end. Runoff from the area located south and west of the bermed tank area (TM3) flows into the Basin through a concrete-lined channel and storm sewer located along the western border of the TM facility. This channel also receives runoff from portions of the CITGO property.

The bermed tank area (TM4a and TM5b) drains to a holding basin within the bermed area, and is then pumped, as needed, to the separator located immediately northeast of the bermed area. The truck parking area and loading racks (TM5) are also drained to the oil/water separator. Water from the separator discharges to the storm sewer, which drains the northern portion of the property into the Basin. The discharge from the separator is considered Outfall 102. Additionally, there is an overflow outlet on the west side of the holding basin that is used only in times of severe precipitation. This outlet is designated Outfall 103.

Currently, water from fire tests or spill clean-ups at TM's loading racks is routed to the oil/water separator. However, a "Product Contact Water" (PCW) recovery system has been installed and will be activated upon completion of a canopy for the Tank Truck Loading Rack. After activation, any collected PCW will be diverted to Tank 107 instead of discharging to the oil/water separator. Collected PCW will be trucked off-site for disposal.

Groundwater from monitoring activities is tested and then disposed off site. Tank bottom water is pumped from the large storage tanks to a dedicated storage tank, and then shipped off site for disposal following testing. Wastewater from TM's office leaves the property through via sanitary sewer lines.

3.2.3 CITGO

CITGO operates an approximately 15.5 acre facility in the northwest quadrant of the Terminal Complex. As shown on Figure 3-5, storm water runoff from the following six separate drainage sub-areas located on the CITGO property drains to the Basin: the parking lot located east of the loading rack, and the hill along the eastern border (drainage area CI1 on Figure 3-5); the office/parking lot area (CI2); the grassy area located west of the office (CI3); the

grassy diked area located west of the large storage tanks (CI4); the diked tank area (CI5); and the area located along the northern edge of the property (CI6).

Water from the CITGO parking lot located east of the loading rack, and from the hill on CITGO's property located adjacent to TM (CI1), flows into a drainage channel that runs to the north between the TM and CITGO properties, and then into the Basin. Storm water runoff from the CITGO office/parking lot area (CI2) drains toward Colonial Avenue where it flows into a culvert that empties into the Basin. Storm water runoff from the grassy area west of CITGO's office (CI3) drains into culverts located along the southern and western edges of the property, which carry the water to the Basin. These culverts also carry water from non-CITGO areas to the Basin, including runoff from part or all of the BP, TM, and MOTIVA properties; Colonial Avenue; and the Comstock and Lyndhurst residential developments located off-site. The culvert also passes through and collects runoff from the grassy diked area located west of CITGO's large storage tanks (CI4) before passing into the Basin area. Runoff from the area located along the northern edge of the CITGO property (CI6) flows directly into the Basin.

Water that does not flow directly into the Basin is handled as follows. Wastewater from CITGO's office leaves the property via sanitary sewer lines. Storm water runoff from CITGO's diked tank area (CI5) is manually pumped to the Basin after visual inspection by CITGO personnel. Runoff from under CITGO's loading rack drains by gravity to a 500-barrel holding tank, as does loading rack water from fire tests or spills and tank bottom water. Water from this tank is periodically hauled off-site for disposal.

CITGO has entered into a lease agreement with the City of Fairfax. Approximately 1.5 acres of CITGO's land is being used by the Fairfax Police and Fire Departments for training activities. In August 2005, a pre-fabricated steel training tower will be installed, in addition to a single story portable classroom, an automobile extrication training pad, an industrial confined-space entry simulator, a roof operations simulator, and a fire extinguisher simulator area. No new plumbing facilities will be constructed for this facility.

In 2009, CITGO plans to finish some grading activities on their property. This change might influence surface water runoff to drain predominantly through drainage area CI4

instead of CI5. This will not impact the nature of discharges or water quality for discharges from the CITGO property to the basin.

3.2.4 MOTIVA

MOTIVA occupies approximately 19.1 acres in the southeast quadrant of the Terminal Complex. Nearly all storm water runoff from MOTIVA's facility flows into a retention pond on MOTIVA property, or to the Pickett Road storm sewer. No off-site properties contribute runoff to this facility. As shown on Figure 3-6, two small areas (drainage areas MO1 and MO2 on Figure 3-6) totaling approximately 0.8 acres, located along the northern portion of the MOTIVA facility, drain into the Colonial Avenue storm drain, and ultimately to the Basin.

The remainder of the property consists of seven specific drainage areas. Runoff from MOTIVA's office area drains into the Pickett Road storm sewer located immediately east of the property. Runoff from MOTIVA's offices and warehouse, from the paved area located west of the warehouse, and from the paved area located between the offices and the pond (MOs A, B, and E, respectively), is collected and carried to the MOTIVA surface water retention pond (MOTIVA pond) through storm sewer lines. Water collected in the bermed tank area (MO C) is pumped to the lower oil/water separator and then discharges from the MOTIVA pond under a VPDES permit. The rack area runoff is also discharged from the MOTIVA pond under the same VPDES permit, after passing through the 10,000-gallon Spill Prevention, Control, and Countermeasures (SPCC) separator and the upper oil/water separator. Runoff from around the MOTIVA pond (MO D) flows overland directly into the pond. The MOTIVA pond discharges to a paved ditch and then to Crook Branch under a VPDES permit.

Water from truck and trailer washing activities and tank bottom water collected from the storage tanks is hauled off site, as needed. Water from fire tests or spill cleanups passes through the separator to the pond.

Groundwater obtained as part of observation and remediation activities at the facility is either treated and discharged to the pond or hauled off-site.

When the MOTIVA facility was built, the tank farm and truck loading rack areas drained storm water runoff to the south. Storm water was allowed to follow its own flow path depending on the location within the facility. Only the areas located north of the tank farm and in the vicinity of the warehouse drained to the north into the Basin.

These areas previously totaled approximately 1.6 acres. Over the years, the area that drains to the north has been reduced by MOTIVA. The current total area draining to the Basin is approximately 0.8 acres.

Table 3-1

Materials Inventory

Outfall Number	Company	Tank Number	Approximate Capacity (gallons)	Product Stored
001	BP	1	3,020,682	Premium Gasoline
		2	2,442,972	Gasoline
		3	907,158	Premium Gasoline
		4	4,381,818	Gasoline
		5	1,506,246	Ethanol
		6	2,946,216	Diesel
		7	10,000	Detergent Gasoline Additive
		8	10,000	Recoverable Hydrocarbon With Water
		9	10,000	Recoverable Hydrocarbon With Water
		10	4,000	Diesel Additive
		11	10,000	Detergent Gasoline Additive
		12	3,000	Diesel Lubricity Additive
		13	7,000	Additive (currently empty)
	TM	101	2,440,681	RUL
		102	2,440,100	Regular RFG Unleaded
		103	3,429,051	No. 2 (Ultra Low Sulfur)
		104	2,449,011	No. 2 (Ultra Low Sulfur)
		105	2,368,648	Premium RFG Gasoline
		106	211,410	Ethanol
		107	16,360	PC Water
		108	4,000	Additive
		109	586,484	Ethanol
		110	853,189	Diesel
		111	3,429,936	RBOB
		112	3,455,284	RFG Gasoline
		113	10,000	Additive
		114	966	Rack Overflow
		115	4,000	Additive
		116	2,000	Low Sulfur Diesel
		117-c1a	1,441	Diesel Additives
		117-c1b	3,008	Diesel Additives
		Unnumbered	500	Waste Oil
		Unnumbered	500	Heating Fuel Oil
	CITGO	1	3,444,000	Regular Unleaded Gasoline
		2	1,050,000	Ethanol

Table 3-1 (Continued)

Outfall Number	Company	Tank Number	Approximate Capacity (gallons)	Product Stored
	CITGO	3	1,470,000	Premium Unleaded Gasoline
		4	5,124,000	#2 Fuel Oil
		5	21,000	Slop Oil
		6	2,310,000	Unleaded Gasoline
		7	3,528,000	Ultra-Low Sulfur Diesel
		8	3,780	Remediation
		9	8,988	Gasoline Additive
		10	3,612	Pourback
		11	2,982	Premium Dist. Additive
		12	546	Red Dye
		14	9,500	Lubricity Additive
	MOTIVA	None	NA	NA

NOTE: This table only includes materials stored on property that drains to the Storm Water Impoundment Basin

Table 3-2

Storm Water Runoff Structural and Non-Structural Control Measures

Outfall Number	Treatment	Codes from Table 2F-1
001	**Structural Control Measures:** BP (101) Diked tank field areas, concrete runoff channel, loading rack canopy, oil/water separator, concrete holding vault, holding tanks	4A
	TM (102) Loading rack canopy, oil/water separator TM (103) Bermed storage tank areas, runoff channel, holding basin	4A 4A
	CITGO (105) Diked tank field areas, runoff channel, loading rack canopy, oil/water separators, air stripping, solids filtration	1V, 4A
	MOTIVA (106) Storm drains	4A
001	**Non-Structural Control Measures:** All facilities have non-structural control practices which include spill prevention plans (ODCP, SPCC), employee training, visual inspections, preventative maintenance, good housekeeping measures, and operate under City of Fairfax Department of Fire and Rescue, Office of Code Enforcement oversight (safety attendant present during loading, monthly high-level alarm inspections, annual hazardous use permit inspections).	NA

Table 3-3

Significant Leaks or Spills

Company	Date	Event	Product	Volume (gallons)
BP	1/25/2005	Spill	Infinium	20
	4/12/2005	Leak	Slop	<1
	9/6/2005	Spill	Gasoline	<1
	9/7/2005	Leak	Gasoline	<1
	9/27/2005	Leak	Gasoline	<1
	2/20/2006	Leak	Gasoline	<1
	4/10/2006	Spill	Ethanol	3
	7/27/2006	Spill	Diesel	<1
	8/23/2006	Spill	Gasoline	2
	8/29/2006	Leak	Gasoline	<1
	11/01/2006	Leak	Guardian	<1
	1/20/2007	Leak	Diesel	<1
	1/29/2007	Leak	Gasoline	<1
	2/19/2007	Spill	Gasoline	941
	3/20/2007	Spill	Ethanol	3
	4/4/2007	Spill	Gasoline	<1
	7/20/2007	Leak	Gasoline	<1
	1/16/2008	Spill	Gasoline	3
	2/22/2008	Spill	Gasoline	1
	12/12/2008	Spill	Gasoline	<1
	12/12/2008	Leak	Invigorate	<1
CITGO	8/5/2007	Load Arm Leak	Reg. Gas	50
	11/29/2007	Pot Overfill	Reg. Gas	20
	1/16/2009	Trailer Valve Malfunction	Reg. Gas	100
TransMontaigne	1/13/05	Leak	Jet A	<1
	2/2/05	Leak	Kero	<2
	3/30/05	Leak	LSD	<5
	6/15/05	Spill	Gasoline	<5
	6/17/05	Spill	Dye	<1
	8/2/05	Leak	Diesel	<1
	9/21/05	Spill	Gasoline	<3
	11/29/05	Spill	Diesel	<1
	2/17/06	Spill	Diesel	<10
	5/29/06	Leak	Diesel	<3
	6/12/06	Spill	Diesel	<30
	7/28/06	Leak	Ethanol	<1
	7/28/06	Spill	Ethanol	<1
	1/12/07	Spill	Additive	<1
	1/27/07	Spill	Gasoline	<1
	2/23/07	Leak	Diesel	<10
	5/7/07	Leak	Diesel	<5
	11/19/07	Spill	PCW	<1
	1/07/08	Spill	Diesel	<1
	2/08/08	Spill	Ethanol	<2
	2/10/08	Spill	Gasoline	<2
	4/17/08	Spill	Diesel	<25

Table 3-3

(Continued)

Company	Date	Event	Product	Volume (gallons)
Transmontaigne	4/18/08	Leak	Gasoline	<1
	4/19/08	Leak	Gasoline	<1
	4/24/08	Leak	Gasoline	<1
	6/27/08	Spill	Gasoline	<1
	8/02/08	Leak	Diesel	<1
	8/19/08	Leak	Diesel	<1
	10/3/08	Spill	Gasoline	<1

NOTE: MOTIVA had no spills in areas draining to the basin.

Table 3-4

Discharge Information

Part C:	**List each pollutant shown in Tables 2F-2, 2F-3, and 2F-4 that you know or have reason to believe is present. See instruction for additional details and requirements. Complete one table for each outfall.**					
Pollutant and CAS Number *(if available)*	**Maximum Values *(include units)***		**Average Values *(include units)***		**Number of Storm Events Sampled**	**Sources of Pollutants**
	Grab Sample Taken During First 20 Minutes*	**Flow-weighted Composited**	**Grab Sample Taken During First 20 Minutes**	**Flow-weighted Composited**		
Table 2F-2						
Oil and Grease	<10 mg/L	NA	NA	NA	NA	NA
Biological Oxygen Demand (BOD5)	6.9 mg/L	NA	NA	NA	NA	NA
Chemical Oxygen Demand (COD)	22.8 mg/L	NA	NA	NA	NA	NA
Total Suspended Solids (TSS)	11.5 mg/L	NA	NA	NA	1	NA
Total Nitrogen	1.1 mg/L	NA	NA	NA	NA	NA
Total Phosphorus	0.07 mg/L	NA	NA	NA	NA	NA
pH	6.44	NA	NA	NA	1	NA
Table 2F-3						
See Appendix B for sampling data collected between 2005 and 2009.						
Table 2F-4						
none						

* In addition to TSS and pH, TPH (15 mg/L) and flow (0.019 MGD) were also sampled during a storm event on January 7, 2009. Rainfall data from this event is presented in Attachment 3-1.
** O & G, BOD, COD, Total N, and Total P were sampled on April 2, 2009, not during a storm event.

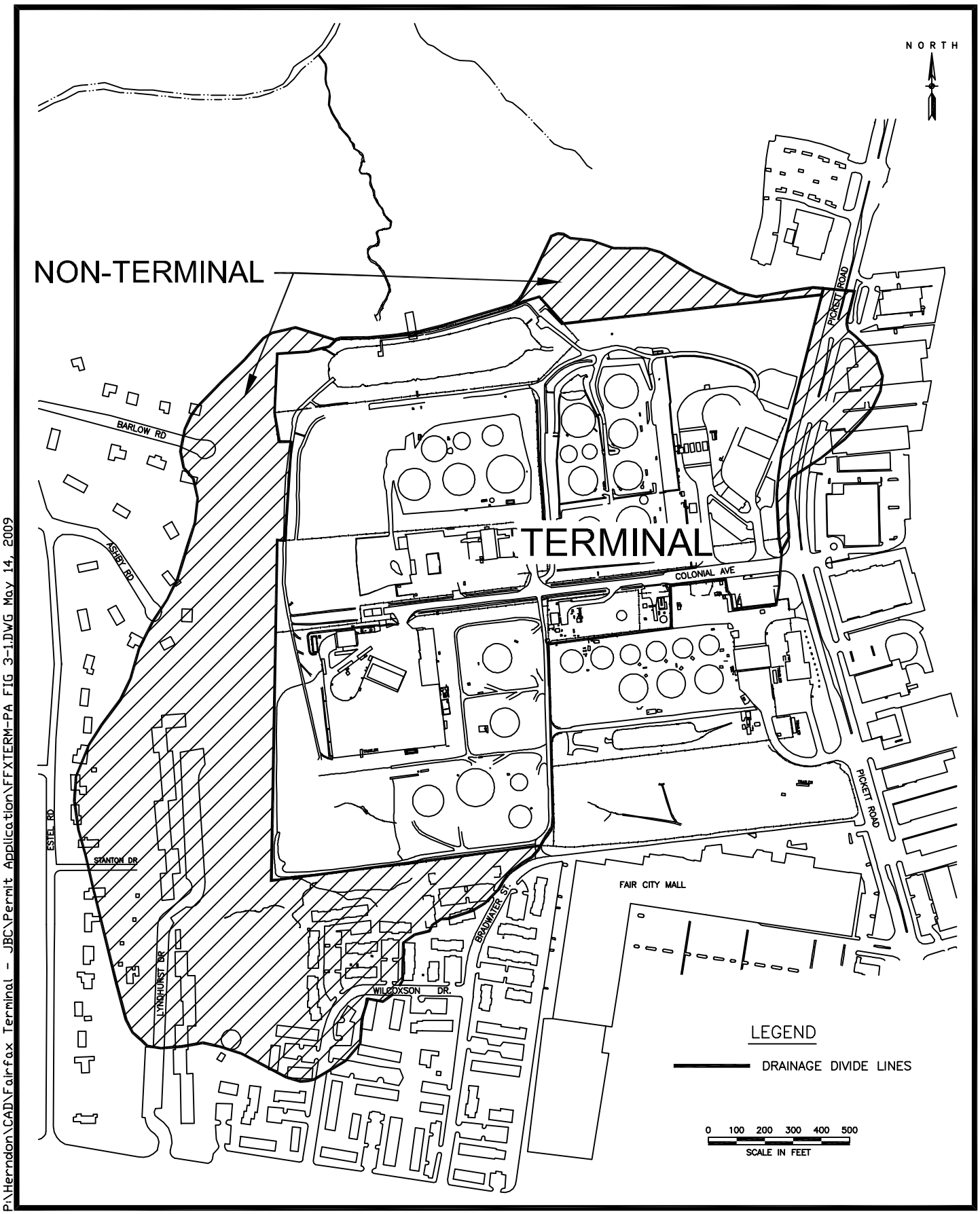


FIGURE 3-1. DRAINAGE AREA OF FAIRFAX TERMINAL
STORM WATER IMPOUNDMENT BASIN, FAIRFAX, VIRGINIA

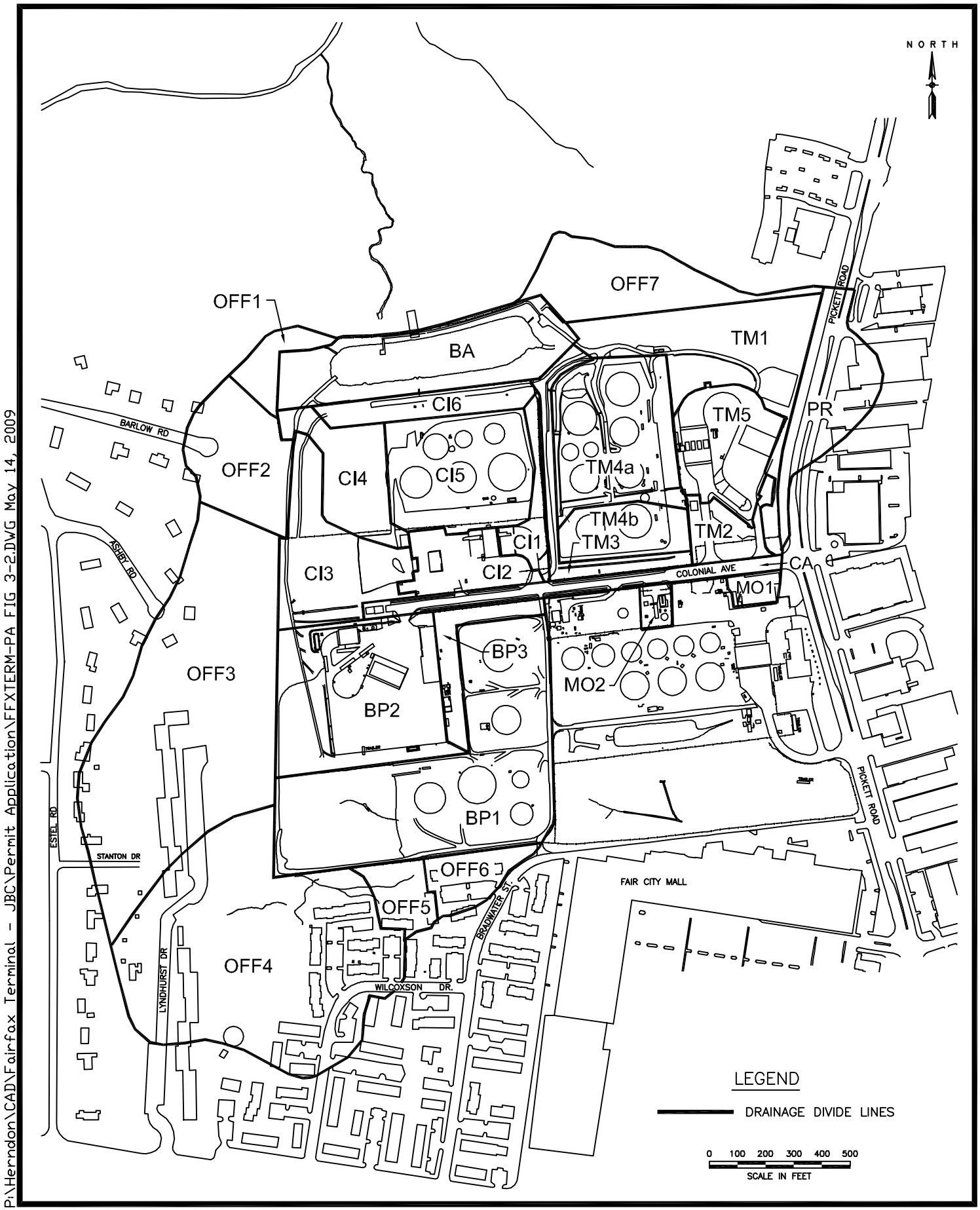


FIGURE 3-2. STORM WATER DRAINAGE SUB-AREAS,
FAIRFAX TERMINAL STORM WATER IMPOUNDMENT BASIN, FAIRFAX VIRGINIA

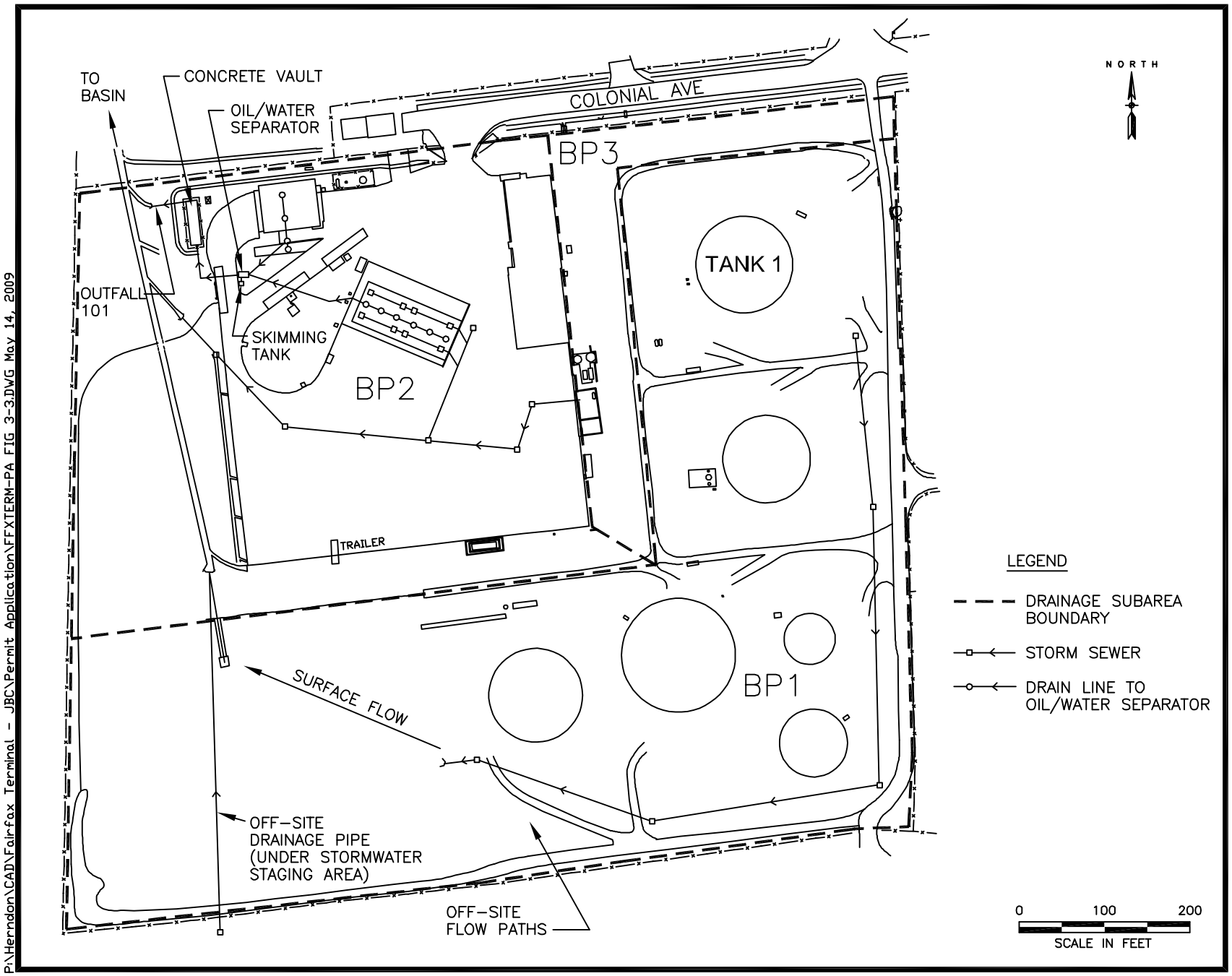
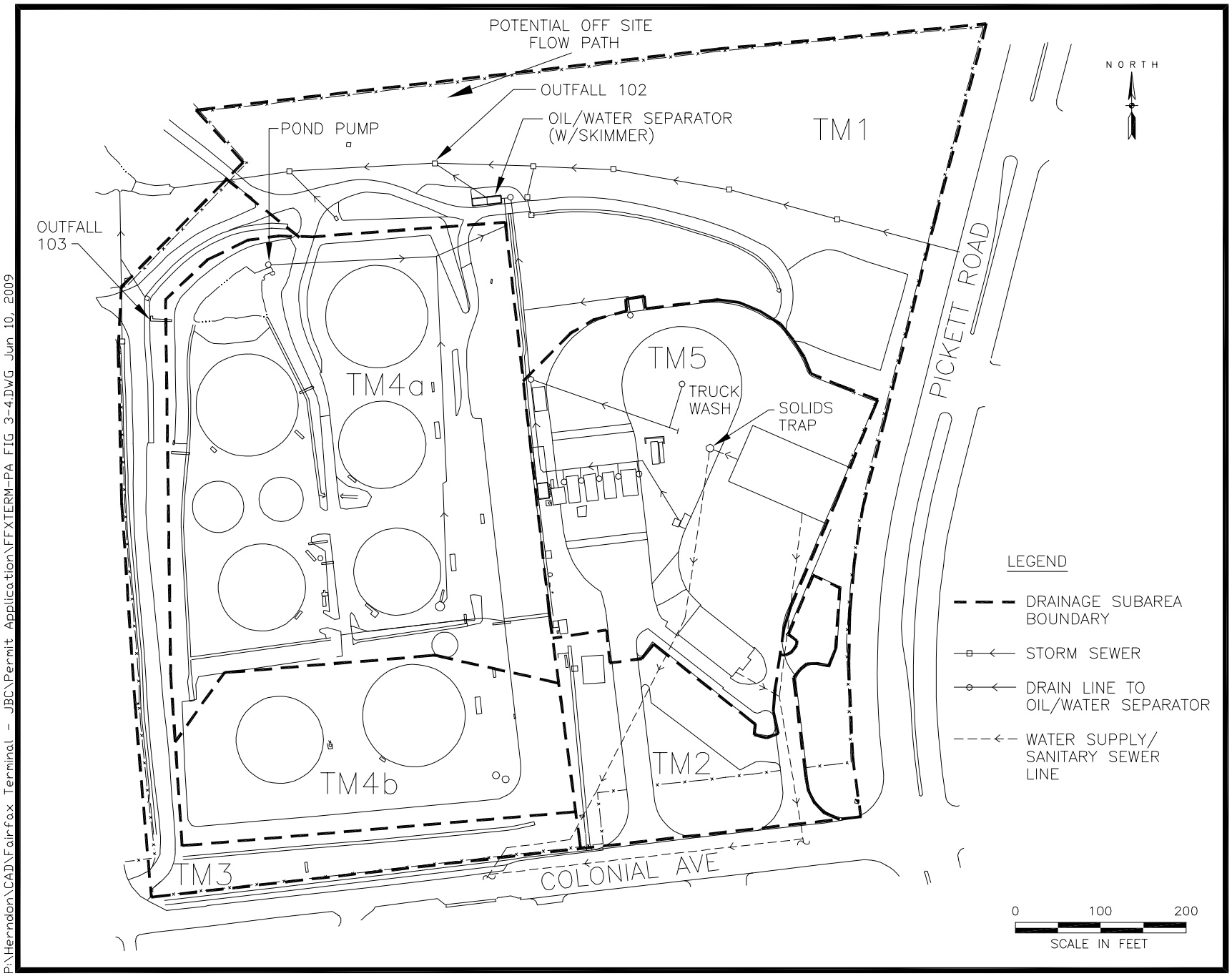


FIGURE 3-3. SURFACE WATER MANAGEMENT,
BP TERMINAL, FAIRFAX, VIRGINIA



P:\Herndon\CAD\Fairfax Terminal - JBC\Permit Application\FFXTERM-PA FIG 3-4.DWG Jun 10, 2009

FIGURE 3-4. SURFACE WATER MANAGEMENT
TRANSMONTAIGNE TERMINAL, FAIRAX, VIRGINIA

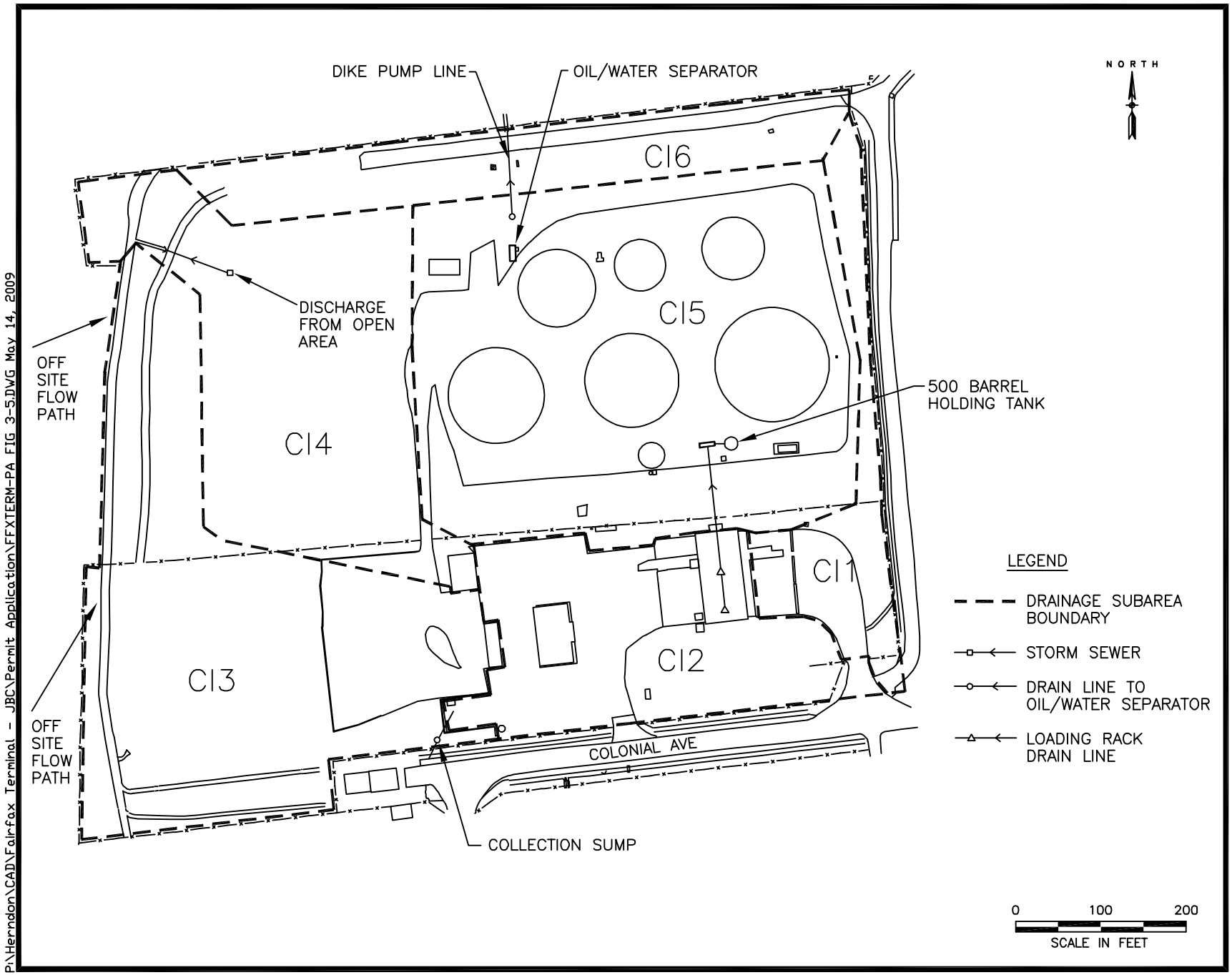


FIGURE 3-5. SURFACE WATER MANAGEMENT,
CITGO TERMINAL, FAIRFAX, VIRGINIA

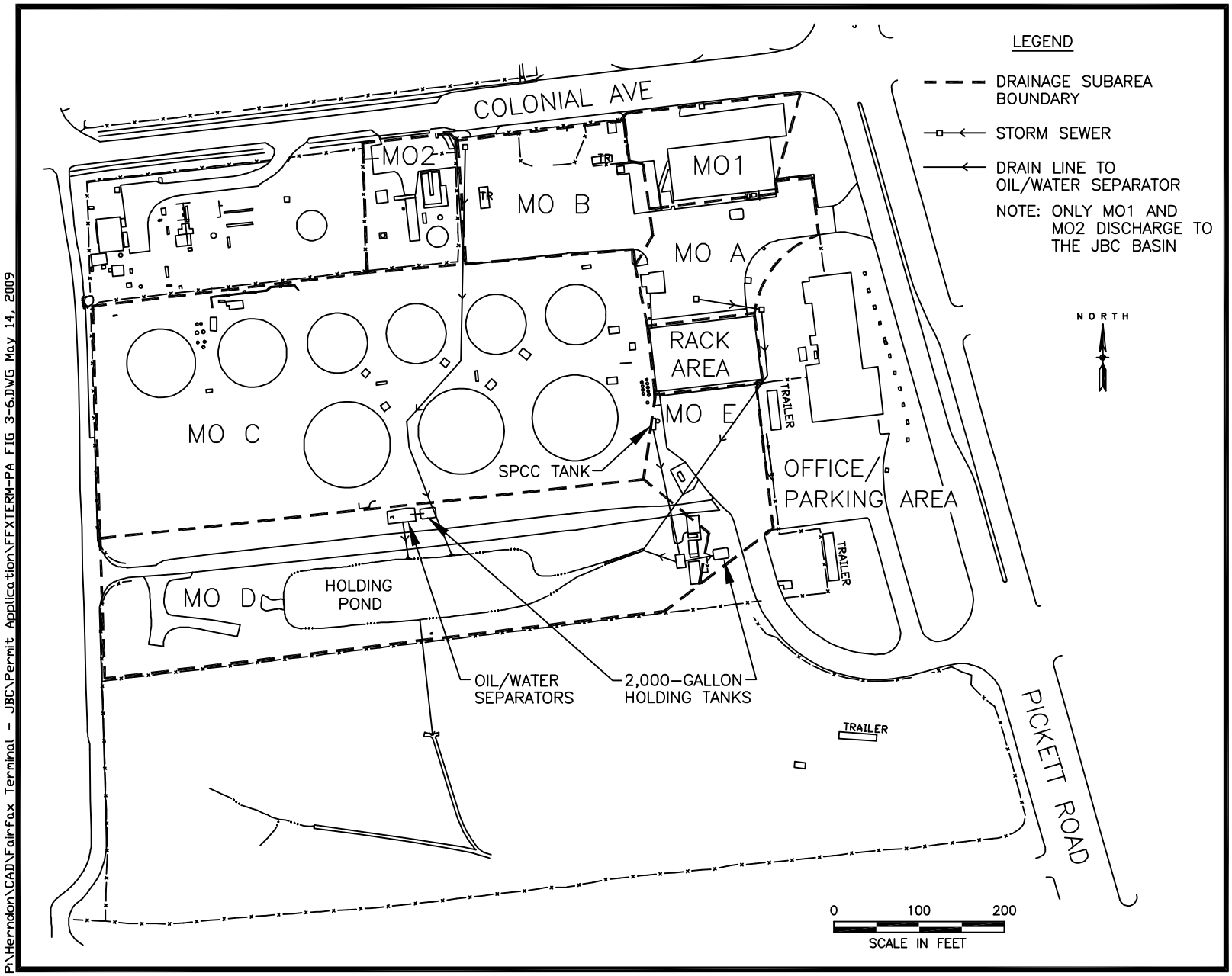


FIGURE 3-6. SURFACE WATER MANAGEMENT, MOTIVA TERMINAL, FAIRFAX, VIRGINIA

Attachment 3-1

RAINFALL DATA FOR
EVENT OCCURRING ON JANUARY 7, 2009

History for KVAVIENN4

Merrifield area, Vienna, VA — Current Conditions

Daily Summary for January 3, 2009

	Current:	High:	Low:	Average:
Temperature:	33.9 °F	57.7 °F	32.7 °F	39.3 °F
Dew Point:	25.5 °F	19.5 °F	-5.0 °F	4.0 °F
Humidity:	71%	51%	19%	24%
Wind Speed:	0.0mph	10.9mph	-	0.9mph
Wind Gust:	0.0mph	10.9mph	-	-
Wind:	SSE	-	-	NNW
Pressure:	29.70in	29.87in	29.56in	-
Precipitation:	0.00in			

Statistics for the rest of the month:

	High:	Low:	Average:
Temperature:	58.1 °F	21.3 °F	37.7 °F
Dew Point:	33.3 °F	-14.5 °F	6.1 °F
Humidity:	66.0%	19.0%	28.6%
Wind Speed:	12.3mph from the NNE	-	1.6mph
Wind Gust:	12.3mph from the NNE	-	-
Wind:	-	-	West
Pressure:	30.10in	29.49in	-
Precipitation:	0.00in		

History for KVAVIENN4

Merrifield area, Vienna, VA — Current Conditions

Daily Summary for January 4, 2009

	Current:	High:	Low:	Average:
Temperature:	33.9 °F	46.0 °F	27.8 °F	37.2 °F
Dew Point:	25.5 °F	23.0 °F	-8.3 °F	2.8 °F
Humidity:	71%	50%	19%	24%
Wind Speed:	0.0mph	8.0mph	-	1.0mph
Wind Gust:	0.0mph	8.0mph	-	-
Wind:	SSE	-	-	South
Pressure:	29.70in	29.88in	29.68in	-
Precipitation:	0.00in			

Statistics for the rest of the month:

	High:	Low:	Average:
Temperature:	58.1 °F	21.3 °F	37.7 °F
Dew Point:	33.3 °F	-14.5 °F	6.1 °F
Humidity:	66.0%	19.0%	28.6%
Wind Speed:	12.3mph from the NNE	-	1.6mph
Wind Gust:	12.3mph from the NNE	-	-
Wind:	-	-	West
Pressure:	30.10in	29.49in	-
Precipitation:	0.00in		

History for KVAVIENN4

Merrifield area, Vienna, VA — Current Conditions

Daily Summary for January 5, 2009

	Current:	High:	Low:	Average:
Temperature:	33.9 °F	50.3 °F	39.7 °F	43.7 °F
Dew Point:	25.5 °F	33.3 °F	0.0 °F	21.0 °F
Humidity:	71%	66%	19%	44%
Wind Speed:	0.0mph	10.9mph	-	1.6mph
Wind Gust:	0.0mph	10.9mph	-	-
Wind:	SSE	-	-	NNW
Pressure:	29.71in	29.76in	29.63in	-
Precipitation:	0.00in			

Statistics for the rest of the month:

	High:	Low:	Average:
Temperature:	58.1 °F	21.3 °F	37.7 °F
Dew Point:	33.3 °F	-14.5 °F	6.1 °F
Humidity:	66.0%	19.0%	28.6%
Wind Speed:	12.3mph from the NNE	-	1.6mph
Wind Gust:	12.3mph from the NNE	-	-
Wind:	-	-	West
Pressure:	30.10in	29.49in	-
Precipitation:	0.00in		

POPULAR SCREENSAVERS
Christmas Train
Christmas cat
Champagne Cheers
Haunted House (w/sound)
Preview
More!

History for KVAVIENN4

Merrifield area, Vienna, VA — Current Conditions

Daily Summary for January 6, 2009

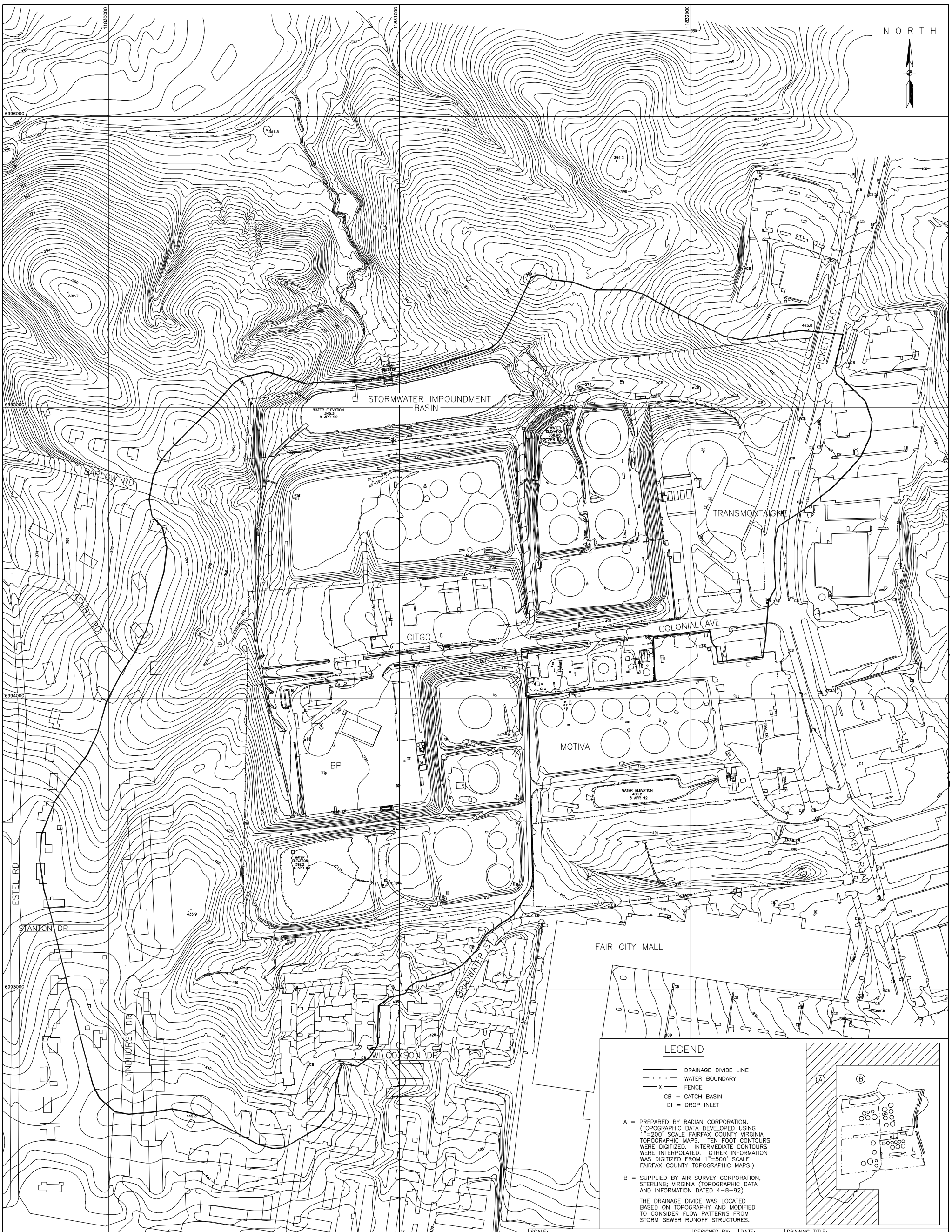
	Current:	High:	Low:	Average:
Temperature:	37.0 °F	40.1 °F	32.5 °F	34.5 °F
Dew Point:	36.0 °F	29.7 °F	-0.3 °F	23.1 °F
Humidity:	96%	88%	19%	68%
Wind Speed:	0.0mph	5.3mph	-	0.2mph
Wind Gust:	0.0mph	5.3mph	-	-
Wind:	North	-	-	NNW
Pressure:	28.92in	29.73in	29.39in	-
Precipitation:	0.59in			

Statistics for the rest of the month:

	High:	Low:	Average:
Temperature:	58.1 °F	21.3 °F	37.2 °F
Dew Point:	33.3 °F	-14.5 °F	9.0 °F
Humidity:	88.0%	19.0%	35.2%
Wind Speed:	12.3mph from the NNE	-	1.4mph
Wind Gust:	12.3mph from the NNE	-	-
Wind:	-	-	WNW
Pressure:	30.10in	29.39in	-
Precipitation:	0.59in		

Attachment 3-2

TOPOGRAPHIC MAP



SCALE:	DESIGNED BY:	DATE:	DRAWING TITLE:
1" = 100'	PJC	5/11/93	TOPOGRAPHIC MAP OF DRAINAGE AREA FAIRFAX TERMINAL STORMWATER IMPOUNDMENT BASIN FAIRFAX, VIRGINIA
	DRAWN BY: RTG	DATE: 5/11/93	
	CHECKED BY: KDR	DATE: 5/11/93	
	UPDATED BY: RTG	DATE: 6/05/09	

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URS
13825 Sunrise Valley Dr.
Suite 250
Herndon, VA 20171-3426
Ph: (703) 713-1500
Fax: (703) 713-1512

CONTRACT NO: 634-007-01-01 | PLATE I | REV A

AMPDTOP.DWG
(XREF: AMPDTOPA.DWG, AMPDTOPB.DWG, AMPDTOPC.DWG, AMPDTOPD.DWG)
RTG-DC

4.0 BP ATTACHMENTS

The following attached figure shows the oil/water separator currently used by BP to treat water before it is discharged from Outfall 101.

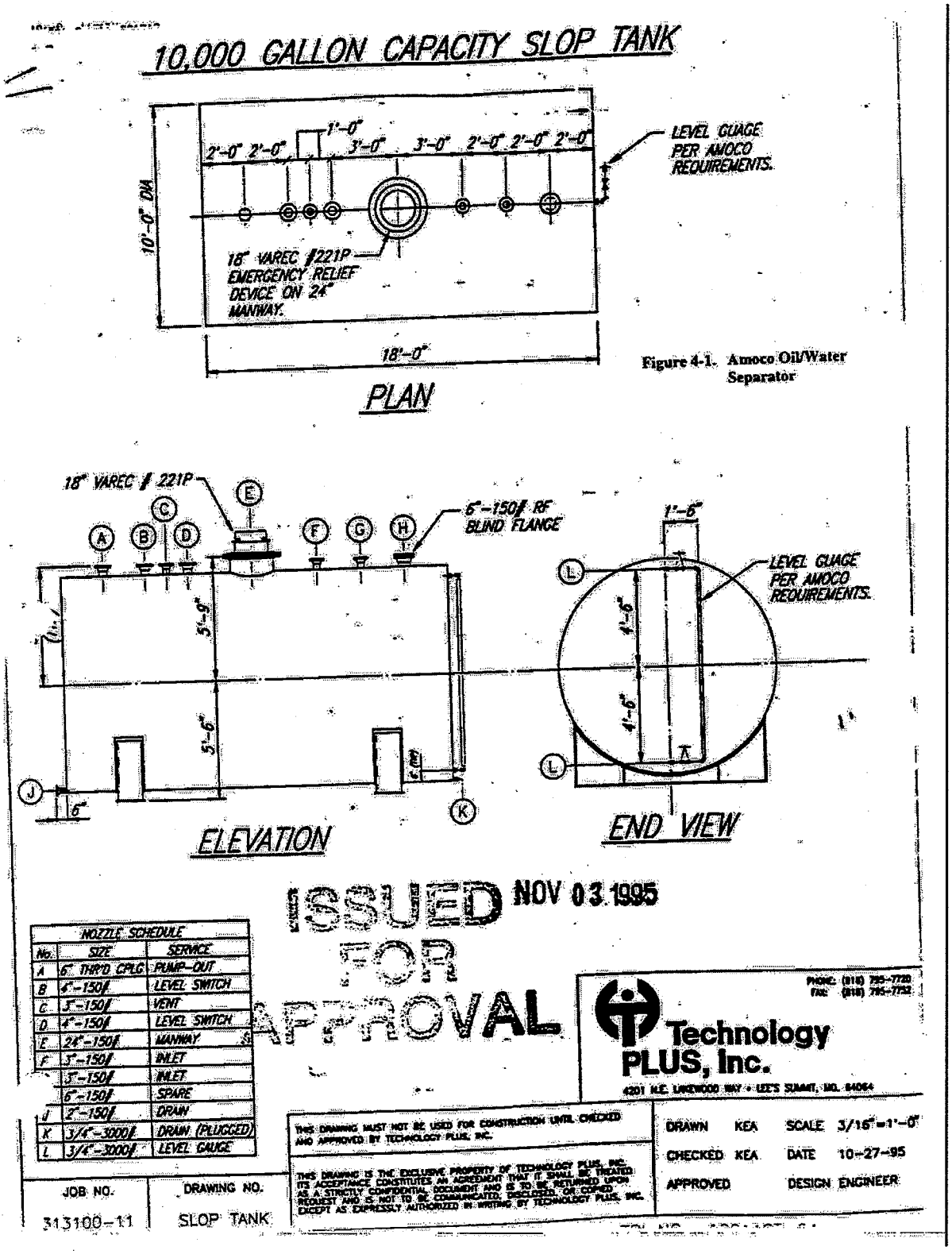


Figure 4-1. Amoco Oil/Water Separator

Figure 4-1. BP Oil/Water Separator

5.0 TRANSMONTAIGNE ATTACHMENT

Storm water from the bermed tank area, truck parking area, and the loading rack and water from exterior trailer cleaning, fire tests, and spill clean up drains to the oil/water separator (Figure 5-1) prior to draining to Outfall 102 and then to the storm water impoundment basin.

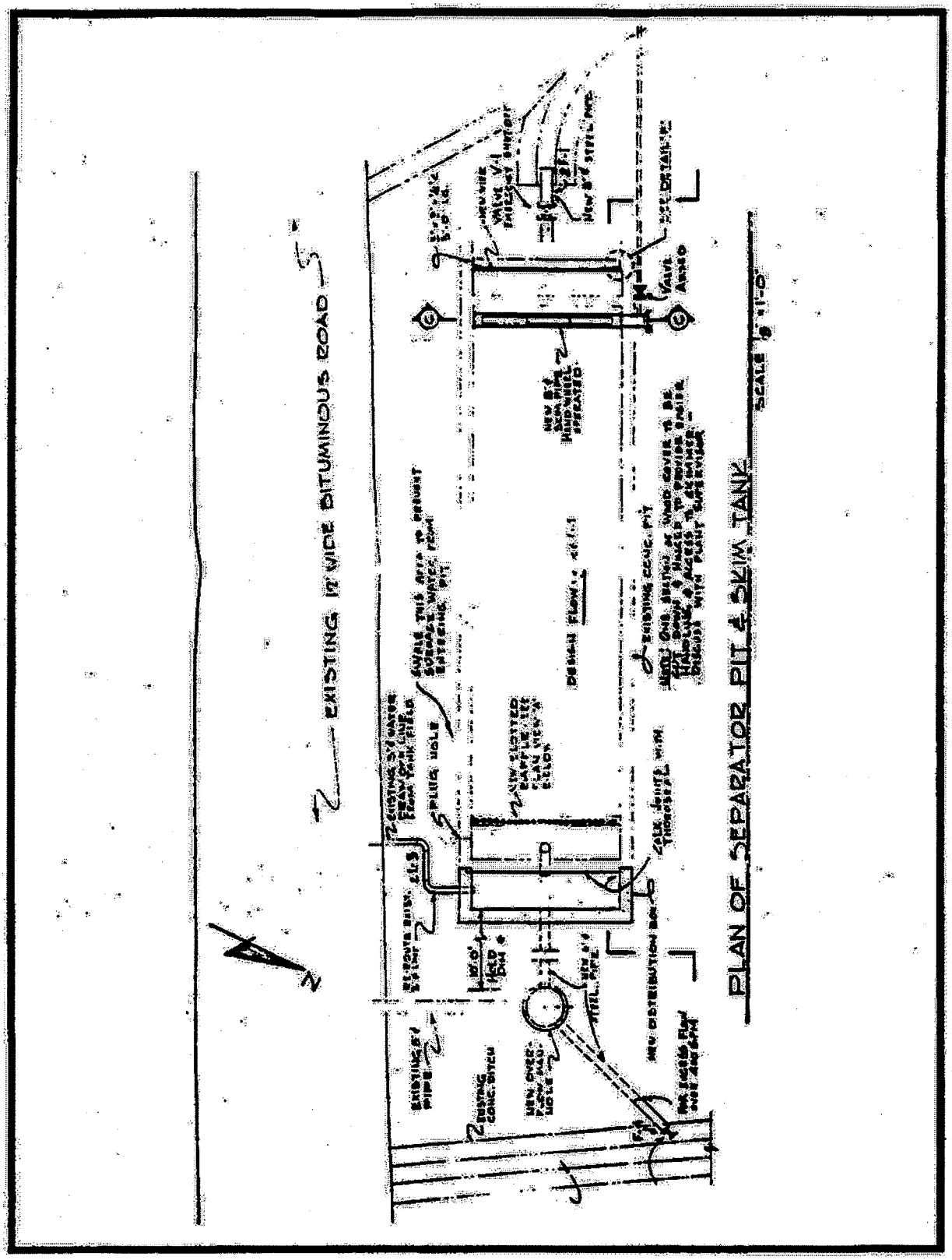


Figure 5-1. TransMontaigne Oil/Water Separator

6.0 CITGO ATTACHMENT

CITGO does not perform any treatment of surface water discharges from its property.

7.0 MOTIVA ATTACHMENT

Since only storm water drains from this 0.8 acre plot of grass and concrete, no wastewater treatment equipment has been constructed for this area. The remaining 18.3 acres drain to the MOTIVA Retention Pond.

MOTIVA Enterprise requests the option to discharge hydrostatic test water to the Storm Water Impoundment Basin with Commonwealth of Virginia, Department of Environmental Quality approval as a precautionary back-up to current plans to discharge the MOTIVA Retention Pond. This potential discharge should be included.

APPENDIX A

LABORATORY ANALYTICAL RESULTS

Table A-1
Monthly Sampling Results for Outfall 001

DATE	FLOW (mgd) Result	PH Result	TPH (Limit = 15 mg/L) Result	TSS (Limit = 60 mg/L) Result	TOTAL CYANIDE (No Limit, ug/L) Result	TOC (Limit = 110 mg/L) Result	ETHYL BENZENE (Limit = 468 ug/L) Result	BENZENE (Limit = 78 ug/L) Result	TOLUENE (Limit = 256 ug/L) Result	NAPHTHALENE (Limit = 91 ug/L) Result	METHYL TERT BUTYL ETHER (Limit = 1840 ug/L) Result	TOTAL XYLENES (Limit = 108 ug/L) Result
Jan-05	0.019	6.46	<1.3	NA	NA	4.2	<10	<10	<10	<10	NA	<3.0
Feb-05	0.019	6.37	<1.3	<12.0	<10	NA	NS	NS	NS	NS	330	NS
Mar-05	0.020	6.46	<1.3	<12.0	NS	NS	NS	NS	NS	NS	NS	NS
Apr-05	0.019	6.39	<1.3	<12.0	NS	NS	NS	NS	NS	NS	NS	NS
May-05	0.019	6.33	<1.3	<17.2	NS	NS	NS	NS	NS	NS	NS	NS
Jun-05	0.018	6.38	<1.3	<12.0	NS	NS	NS	NS	NS	NS	NS	NS
Jul-05	0.018	6.34	<1.3	<12.0	NS	NS	NS	NS	NS	NS	NS	NS
Aug-05	0.019	6.33	<1.3	16.4	<10	NA	<10	<10	<10	<10	95	<0.2
Sep-05	0.018	6.27	<1.3	<12.0	NS	NS	NS	NS	NS	NS	NS	NS
Oct-05	0.019	6.47	<1.3	<12.0	NS	NS	NS	NS	NS	NS	NS	NS
Nov-05	0.019	6.34	<1.3	<15.0	NS	NS	NS	NS	NS	NS	NS	NS
Dec-05	0.019	6.41	<1.3	<20.0	NS	NS	NS	NS	NS	NS	NS	NS
Jan-06	0.018	6.37	<1.3	<12.0	NS	NS	NS	NS	NS	NS	NS	NS
Feb-06	0.017	6.31	<1.0	7.2	<10	NA	<1.0	<1.0	<1.0	<5.0	200	<3.0
Mar-06	0.016	6.44	<1.0	8.0	NS	NS	NS	NS	NS	NS	NS	NS
Apr-06	0.017	6.36	<1.0	3.8	NS	NS	NS	NS	NS	NS	NS	NS
May-06	0.017	6.41	<1.0	2.3	NS	NS	NS	NS	NS	NS	NS	NS
Jun-06	0.017	6.38	<1.0	1.3	NS	NS	NS	NS	NS	NS	NS	NS
Jul-06	0.018	6.43	<1.0	2.9	NS	NS	NS	NS	NS	NS	NS	NS
Aug-06	0.017	6.51	<1.0	2.5	<10	NA	<1.0	<1.0	<1.0	<5.0	49	<3.0
Sep-06	0.018	6.43	<1.0	2.2	NS	NS	NS	NS	NS	NS	NS	NS
Oct-06	0.018	6.38	<1.0	8.0	NS	NS	NS	NS	NS	NS	NS	NS
Nov-06	0.019	6.45	<1.0	9.5	NS	NS	NS	NS	NS	NS	NS	NS
Dec-06	0.019	6.39	<1.0	3.3	NS	NS	NS	NS	NS	NS	NS	NS
Jan-07	0.018	6.44	<1.0	8.1	NS	NS	NS	NS	NS	NS	NS	NS
Feb-07	0.018	6.40	<1.0	7.2	NS	NS	NS	NS	NS	NS	NS	NS
Mar-07	0.016	6.42	<1.0	8.6	<10	NA	<1.0	<1.0	<1.0	<6.0	177	<6.0
Apr-07	0.017	6.39	<0.5	8.0	NS	NS	NS	NS	NS	NS	NS	NS
May-07	0.017	6.33	0.5	<1.0	NS	NS	NS	NS	NS	NS	NS	NS
Jun-07	0.017	6.37	<0.5	<1.0	NS	NS	NS	NS	NS	NS	NS	NS
Jul-07	0.016	6.45	1.3	1.1	NS	NS	NS	NS	NS	NS	NS	NS
Aug-07	0.016	6.51	<0.5	14	NS	NS	NS	NS	NS	NS	NS	NS
Sep-07	0.016	6.44	<0.5	1.1	<10	NA	<1.0	<1.0	<1.0	<6.0	38.2	<6.0
Oct-07	0.017	6.39	<0.5	3.3	NS	NS	NS	NS	NS	NS	NS	NS
Nov-07	0.018	6.48	<0.5	3.2	NS	NS	NS	NS	NS	NS	NS	NS
Dec-07	0.018	6.43	0.5	1.3	NS	NS	NS	NS	NS	NS	NS	NS

NL: No Limit
NA: Not Analyzed
NS: Not Sampled

Table A-1
Monthly Sampling Results for Outfall 001

DATE	FLOW (mgd) Result	PH Result	TPH (Limit = 15 mg/L) Result	TSS (Limit = 60 mg/L) Result	TOTAL CYANIDE (No Limit, ug/L) Result	TOC (Limit = 110 mg/L) Result	ETHYL BENZENE (Limit = 468 ug/L) Result	BENZENE (Limit = 78 ug/L) Result	TOLUENE (Limit = 256 ug/L) Result	NAPHTHALENE (Limit = 91 ug/L) Result	METHYL TERT BUTYL ETHER (Limit = 1840 ug/L) Result	TOTAL XYLENES (Limit = 108 ug/L) Result
Jan-08	0.018	6.39	1.2	3.2	NS	NS	NS	NS	NS	NS	NS	NS
Feb-08	0.018	6.23	0.9	7.4	<10	NA	<1.0	<1.0	<1.0	<6.0	164	<6.0
Mar-08	0.018	6.15	0.7	25.1	NS	NS	NS	NS	NS	NS	NS	NS
Apr-08	0.019	6.18	<0.5	2.2	NS	NS	NS	NS	NS	NS	NS	NS
May-08	0.019	6.26	<0.5	<1.0	NS	NS	NS	NS	NS	NS	NS	NS
Jun-08	0.020	6.31	<0.5	5.2	NS	NS	NS	NS	NS	NS	NS	NS
Jul-08	0.019	6.45	<0.5	<2.0	NS	NS	NS	NS	NS	NS	NS	NS
Aug-08	0.017	6.55	<0.5	2.4	<10	NA	<1.0	<1.0	<1.0	<6.0	48.6	<6.0
Sep-08	0.016	6.71	<0.5	9.7	NS	NS	NS	NS	NS	NS	NS	NS
Oct-08	0.017	6.41	<0.5	5.2	NS	NS	NS	NS	NS	NS	NS	NS
Nov-08	0.016	7.05	<0.5	3.4	NS	NS	NS	NS	NS	NS	NS	NS
Dec-08	0.017	6.89	<0.5	5.4	NS	NS	NS	NS	NS	NS	NS	NS
Jan-09	0.019	6.44	<0.5	11.5	<10	NA	<1.0	<1.0	<1.0	<6.0	110	<6.0
Feb-09	0.017	6.58	<0.5	6.0	NS	NS	NS	NS	NS	NS	NS	NS
Mar-09	0.015	6.22	<0.5	8.5	NS	NS	NS	NS	NS	NS	NS	NS
Apr-09	0.019	6.37	<0.5	14	NS	NS	NS	NS	NS	NS	NS	NS
May-09	0.018	6.45	<0.5	< 1.0	NS	NS	NS	NS	NS	NS	NS	NS

NL: No Limit
NA: Not Analyzed
NS: Not Sampled

Table A-2
Sampling Results for Outfall 101

DATE	FLOW (mgd) Result	TOC (Limit = 15 mg/L) Result	TPH (Limit = 15 mg/L) Result
Jan-05	0.004	NA	<1.3
Feb-05	NS	NS	NS
Mar-05	NS	NS	NS
Apr-05	0.003	NA	<1.3
May-05	NS	NS	NS
Jun-05	NS	NS	NS
Jul-05	0.003	NS	7.5
Aug-05	NS	NS	NS
Sep-05	NS	NS	NS
Oct-05	NS	NS	NS
Nov-05	0.004	NS	<1.3
Dec-05	NS	NS	NS
Jan-06	0.003	NA	<1.3
Feb-06	NS	NS	NS
Mar-06	NS	NS	NS
Apr-06	NS	NS	NS
May-06	0.003	NA	<1.0
Jun-06	NS	NS	NS
Jul-06	0.004	NA	<1.0
Aug-06	NS	NS	NS
Sep-06	NS	NS	NS
Oct-06	0.003	NA	<1.0
Nov-06	NS	NS	NS
Dec-06	NS	NS	NS
Jan-07	NS	NS	NS
Feb-07	NS	NS	NS
Mar-07	0.003	NA	7.2
Apr-07	NS	NS	NS
May-07	NS	NS	NS
Jun-07	0.003	NA	4.5
Jul-07	NS	NS	NS
Aug-07	NS	NS	NS
Sep-07	0.003	NA	0.9
Oct-07	0.004	NA	0.7
Nov-07	NS	NS	NS
Dec-07	NS	NS	NS

NL: No Limit
NA: Not Analyzed
NS: Not Sampled

Table A-2
Sampling Results for Outfall 101

DATE	FLOW (mgd) Result	TOC (Limit = 15 mg/L) Result	TPH (Limit = 15 mg/L) Result
Jan-08	0.004	NA	1.2
Feb-08	NS	NS	NS
Mar-08	NS	NS	NS
Apr-08	0.005	NA	2.7
May-08	NS	NS	NS
Jun-08	NS	NS	NS
Jul-08	NS	NS	NS
Aug-08	0.003	NA	1.2
Sep-08	NS	NS	NS
Oct-08	NS	NS	NS
Nov-08	0.002	NA	<0.5
Dec-08	NS	NS	NS
Jan-09	0.004	NA	<0.5
Feb-09	NS	NS	NS
Mar-09	NS	NS	NS
Apr-09	NS	NS	NS
May-09	NS	NS	NS

NL: No Limit
NA: Not Analyzed
NS: Not Sampled

Table A-3
Monthly Sampling Results for Outfall 102

DATE	FLOW (mgd) Result	TOC (Limit = 15 mg/L) Result	TPH (Limit = 15 mg/L) Result
Jan-05	0.006	NA	<1.3
Feb-05	NS	NS	NS
Mar-05	NS	NS	NS
Apr-05	0.005	NA	<1.3
May-05	NS	NS	NS
Jun-05	NS	NS	NS
Jul-05	0.005	NA	1.4
Aug-05	NS	NS	NS
Sep-05	NS	NS	NS
Oct-05	NS	NS	NS
Nov-05	0.006	NS	<1.3
Dec-05	NS	NS	NS
Jan-06	0.005	NA	3.3
Feb-06	NS	NS	NS
Mar-06	NS	NS	NS
Apr-06	0.003	NA	<1.0
May-06	NS	NS	NS
Jun-06	NS	NS	NS
Jul-06	0.004	NA	<1.0
Aug-06	NS	NS	NS
Sep-06	NS	NS	NS
Oct-06	0.003	NA	<1.0
Nov-06	NS	NS	NS
Dec-06	NS	NS	NS
Jan-07	0.003	NA	<1.0
Feb-07	NS	NS	NS
Mar-07	NS	NS	NS
Apr-07	0.004	NA	<0.5
May-07	NS	NS	NS
Jun-07	NS	NS	NS
Jul-07	NS	NS	NS
Aug-07	0.004	NA	2.2
Sep-07	NS	NS	NS
Oct-07	0.005	NA	2.7
Nov-07	NS	NS	NS
Dec-07	NS	NS	NS

NL: No Limit
NA: Not Analyzed
NS: Not Sampled

Table A-3
Monthly Sampling Results for Outfall 102

DATE	FLOW (mgd) Result	TOC (Limit = 15 mg/L) Result	TPH (Limit = 15 mg/L) Result
Jan-08	0.0005	NA	0.6
Feb-08	NS	NS	NS
Mar-08	NS	NS	NS
Apr-08	0.006	NA	5.3
May-08	NS	NS	NS
Jun-08	NS	NS	NS
Jul-08	NS	NS	NS
Aug-08	0.005	NA	<0.5
Sep-08	NS	NS	NS
Oct-08	NS	NS	NS
Nov-08	0.003	NA	<0.5
Dec-08	NS	NS	NS
Jan-09	0.006	NA	<0.5
Feb-09	NS	NS	NS
Mar-09	NS	NS	NS
Apr-09	NS	NS	NS
May-09	NS	NS	NS

NL: No Limit
NA: Not Analyzed
NS: Not Sampled

Table A-4
Monthly Sampling Results for Outfall 103

DATE	FLOW (mgd) Result	TPH (Limit = 30 mg/L) Result
Jan-05	NS	NS
Feb-05	NS	NS
Mar-05	NS	NS
Apr-05	NS	NS
May-05	NS	NS
Jun-05	NS	NS
Jul-05	NS	NS
Aug-05	NS	NS
Sep-05	NS	NS
Oct-05	0.005	<1.3
Nov-05	NS	NS
Dec-05	NS	NS
Jan-06	NS	NS
Feb-06	NS	NS
Mar-06	NS	NS
Apr-06	NS	NS
May-06	NS	NS
Jun-06	NS	NS
Jul-06	NS	NS
Aug-06	NS	NS
Sep-06	NS	NS
Oct-06	NS	NS
Nov-06	NS	NS
Dec-06	NS	NS
Jan-07	NS	NS
Feb-07	NS	NS
Mar-07	NS	NS
Apr-07	NS	NS
May-07	NS	NS
Jun-07	NS	NS
Jul-07	NS	NS
Aug-07	NS	NS
Sep-07	NS	NS
Oct-07	NS	NS
Nov-07	NS	NS
Dec-07	NS	NS

NL: No Limit
NA: Not Analyzed
NS: Not Sampled

Table A-4
Monthly Sampling Results for Outfall 103

DATE	FLOW (mgd) Result	TPH (Limit = 30 mg/L) Result
Jan-08	NS	NS
Feb-08	NS	NS
Mar-08	NS	NS
Apr-08	NS	NS
May-08	NS	NS
Jun-08	NS	NS
Jul-08	NS	NS
Aug-08	NS	NS
Sep-08	NS	NS
Oct-08	NS	NS
Nov-08	NS	NS
Dec-08	NS	NS
Jan-09	NS	NS
Feb-09	NS	NS
Mar-09	NS	NS
Apr-09	NS	NS
May-09	NS	NS

Note: There was no discharge from this Outfall after October 2005.

NL: No Limit
NA: Not Analyzed
NS: Not Sampled

Table A-5
Monthly Sampling Results for Outfall 106

DATE	FLOW (mg) Result	PH (avg) Result	TSS Result	TOC Result	ETHYL BENZENE (Limit = 320 ug/L) Result	BENZENE (Limit = 50 ug/l) Result	TOLUENE (Limit = 175 ug/L) Result	TPH (Limit = 15 mg/L) Result	NAPHTHALENE (Limit = 62 ug/L) Result	METHYL TERT BUTYL ETHER (Limit = 1840 ug/L) Result	TOTAL XYLENES (Limit = 74 ug/L) Result	CHLORINE (ug/L) Result
Jan-05	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Feb-05	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Mar-05	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Apr-05	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
May-05	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Jun-05	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Jul-05	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Aug-05	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Sep-05	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Oct-05	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Nov-05	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Dec-05	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Jan-06	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Feb-06	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Mar-06	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Apr-06	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
May-06	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Jun-06	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Jul-06	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Aug-06	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Sep-06	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Oct-06	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Nov-06	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Dec-06	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Jan-07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Feb-07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Mar-07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Apr-07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
May-07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Jun-07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Jul-07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Aug-07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Sep-07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Oct-07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Nov-07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Dec-07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

NL: No Limit
NA: Not Analyzed
NS: Not Sampled

Table A-5
Monthly Sampling Results for Outfall 106

DATE	FLOW (mg) Result	PH (avg) Result	TSS Result	TOC Result	ETHYL BENZENE (Limit = 320 ug/L) Result	BENZENE (Limit = 50 ug/l) Result	TOLUENE (Limit = 175 ug/L) Result	TPH (Limit = 15 mg/L) Result	NAPHTHALENE (Limit = 62 ug/L) Result	METHYL TERT BUTYL ETHER (Limit = 1840 ug/L) Result	TOTAL XYLENES (Limit = 74 ug/L) Result	CHLORINE (ug/L) Result
Jan-08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Feb-08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Mar-08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Apr-08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
May-08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Jun-08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Jul-08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Aug-08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Sep-08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Oct-08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Nov-08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Dec-08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Jan-09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Feb-09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Mar-09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Apr-09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
May-09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

Note: There was no discharge from this Outfall after May 2004.

NL: No Limit
NA: Not Analyzed
NS: Not Sampled

Table A-6
Monthly Sampling Results for Outfall 901

DATE	FLOW (mgd) Result	PH Result	TSS (Limit = 60 mg/L) Result	TPH (Limit = 30 mg/L) Result
Jan-05	NS	NS	NS	NS
Feb-05	NS	NS	NS	NS
Mar-05	0.144	6.49	14.4	<1.3
Apr-05	NS	NS	NS	NS
May-05	NS	NS	NS	NS
Jun-05	0.139	6.30	<12.0	<1.3
Jul-05	NS	NS	NS	NS
Aug-05	NS	NS	NS	NS
Sep-05	0.130	6.32	<12.0	<1.3
Oct-05	NS	NS	NS	NS
Nov-05	0.136	6.37	<15.0	<1.3
Dec-05	NS	NS	NS	NS
Jan-06	NS	NS	NS	NS
Feb-06	NS	NS	NS	NS
Mar-06	0.118	6.29	7.8	<1.0
Apr-06	0.125	6.34	3.2	<1.0
May-06	NS	NS	NS	NS
Jun-06	NS	NS	NS	NS
Jul-06	NS	NS	NS	NS
Aug-06	NS	NS	NS	NS
Sep-06	0.131	6.39	1.7	<1.7
Oct-06	NS	NS	NS	NS
Nov-06	NS	NS	NS	NS
Dec-06	0.134	6.38	8.8	<1.0
Jan-07	NS	NS	NS	NS
Feb-07	NS	NS	NS	NS
Mar-07	0.125	6.39	25	<1.0
Apr-07	NS	NS	NS	NS
May-07	NS	NS	NS	NS
Jun-07	0.122	6.46	1.0	<0.5
Jul-07	NS	NS	NS	NS
Aug-07	NS	NS	NS	NS
Sep-07	0.121	6.49	2.3	<0.5
Oct-07	NS	NS	NS	NS
Nov-07	0.123	6.50	1.2	<0.5
Dec-07	NS	NS	NS	NS

NL: No Limit
NA: Not Analyzed
NS: Not Sampled

Table A-6
Monthly Sampling Results for Outfall 901

DATE	FLOW (mgd) Result	PH Result	TSS (Limit = 60 mg/L) Result	TPH (Limit = 30 mg/L) Result
Jan-08	NS	NS	NS	NS
Feb-08	NS	NS	NS	NS
Mar-08	0.121	6.14	26.5	0.8
Apr-08	NS	NS	NS	NS
May-08	NS	NS	NS	NS
Jun-08	0.120	6.31	4.4	<0.5
Jul-08	NS	NS	NS	NS
Aug-08	0.124	6.4	17.6	<0.5
Sep-08	NS	NS	NS	NS
Oct-08	NS	NS	NS	NS
Nov-08	0.12	7.07	4.4	<0.5
Dec-08	NS	NS	NS	NS
Jan-09	0.122	6.4	12	<0.5
Feb-09	NS	NS	NS	NS
Mar-09	NS	NS	NS	NS
Apr-09	NS	NS	NS	NS
May-09	NS	NS	NS	NS

NL: No Limit
NA: Not Analyzed
NS: Not Sampled

Table A-7
5-Year Sampling Results for Outfall 001 (Samples collected 4/2/09)

Analyte	Result	Detection Limit	
Pesticides/PCBs			
4,4 - DDD	ND	0.1	ug/L
4,4 - DDE	ND	0.04	ug/L
4,4 - DDT	ND	0.01	ug/L
Aldrin	ND	0.005	ug/L
alpha - BHC	ND	0.02	ug/L
beta - BHC	ND	0.05	ug/L
Bolstar	ND	0.095	ug/L
Chlordane	ND	0.2	ug/L
Chlorpyrifos	ND	0.11	ug/L
Coumaphos	ND	0.081	ug/L
delta - BHC	ND	0.05	ug/L
Demeton - O	ND	0.11	ug/L
Diazinon	ND	0.11	ug/L
Dichlorvos	ND	0.26	ug/L
Dieldrin	ND	0.005	ug/L
Dimethoate	ND	0.32	ug/L
Disulfoton	ND	0.12	ug/L
Endosulfan I	ND	0.1	ug/L
Endosulfan II	ND	0.04	ug/L
Endosulfan sulfate	ND	0.01	ug/L
Endrin	ND	0.1	ug/L
Endrin aldehyde	ND	0.2	ug/L
EPN	ND	0.071	ug/L
Ethion	ND	0.11	ug/L
Ethyl Parathion	ND	0.08	ug/L
Fensulfothion	ND	0.17	ug/L
Fenthion	ND	0.11	ug/L
gamma - BHC (Lindane)	ND	0.02	ug/L
Guthion	ND	0.33	ug/L
Heptachlor	ND	0.05	ug/L
Heptachlor epoxide	ND	0.2	ug/L
Kepone	ND	20	ug/L
Malathion	ND	0.092	ug/L
Merphos	ND	0.13	ug/L
Methoxychlor	ND	2	ug/L
Methyl parathion	ND	0.12	ug/L
Mevinphos	ND	0.15	ug/L
Mirex	ND	0.1	ug/L
Mocap	ND	0.41	ug/L
Monochrotophos	ND	2.6	ug/L
Naled	ND	0.36	ug/L
PCB-1016	ND	1	ug/L
PCB-1221	ND	1	ug/L
PCB-1232	ND	1	ug/L
PCB-1242	ND	1	ug/L
PCB-1248	ND	1	ug/L
PCB-1254	ND	1	ug/L
PCB-1260	ND	1	ug/L

ND: Not Detected in sample

Table A-7
5-Year Sampling Results for Outfall 001 (Samples collected 4/2/09)

Analyte	Result	Detection Limit	
Phorate	ND	0.16	ug/L
Ronnel	ND	0.13	ug/L
Stirphos	ND	0.084	ug/L
Sulfotepp	ND	0.055	ug/L
Tokuthion	ND	0.087	ug/L
Toxaphene	ND	3	ug/L
Trichloronate	ND	0.11	ug/L
Semi-Volatiles			
1,2,4 - Trichlorobenzene	ND	10	ug/L
2 - Chloronaphthalene	ND	10	ug/L
2,4 - Dimethylphenol	ND	10	ug/L
2,4 - Dinitrophenol	ND	50	ug/L
2,4 - Dinitrotoluene	ND	10	ug/L
2,4 Dichlorophenol	ND	10	ug/L
2,4,6 - Trichlorophenol	ND	10	ug/L
2-Chlorophenol	ND	10	ug/L
3,3 - Dichlorobenzidine	ND	10	ug/L
4,6 - Dinitro - 2 - methylphenol	ND	50	ug/L
Acenaphthene	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzidine	ND	50	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)flouranthene	ND	10	ug/L
bis (2-chloroethyl) ether	ND	10	ug/L
bis (2-Chloroisopropyl) ether	ND	10	ug/L
bis (2-Ethylhexyl) phthalate	ND	10	ug/L
Butyl benzyl phthalate	ND	10	ug/L
Chrysene	ND	10	ug/L
Dibenz(a,h)anthracene	ND	10	ug/L
Diethyl phthalate	ND	10	ug/L
Dimethyl phthalate	ND	10	ug/L
Fluoranthene	ND	10	ug/L
Fluorene	ND	10	ug/L
Hexachlorobenzene	ND	10	ug/L
Hexachlorobutadiene	ND	10	ug/L
Hexachlorocyclopentadiene	ND	10	ug/L
Hexachloroethane	ND	10	ug/L
Indeno (1,2,3-cd) pyrene	ND	10	ug/L
Isophorone	ND	10	ug/L
N - Nitrosodimethylamine	ND	10	ug/L
N - Nitrosodiphenylamine	ND	10	ug/L
N- Nitrosodi - N - propylamine	ND	10	ug/L
Naphthalene	ND	10	ug/L
Nitrobenzene	ND	10	ug/L
Pentachlorophenol	ND	20	ug/L
Phenol	ND	10	ug/L
Pyrene	ND	10	ug/L

ND: Not Detected in sample

Table A-7
5-Year Sampling Results for Outfall 001 (Samples collected 4/2/09)

Analyte	Result	Detection Limit	
Volatiles			
1,1,2 - Trichloroethane	ND	10	ug/L
1,1,2,2 - Tetrachloroethane	ND	10	ug/L
1,1-Dichloroethylene	ND	10	ug/L
1,2 - Dichloropropane	ND	10	ug/L
1,2-Dichlorobenzene	ND	10	ug/L
1,2-Dichloroethane	ND	10	ug/L
1,3-Dichlorobenzene	ND	10	ug/L
1,4-Dichlorobenzene	ND	10	ug/L
Acrolein	ND	10	ug/L
Acrylonitrile	ND	10	ug/L
Azobenzene	ND	10	ug/L
Benzene	ND	10	ug/L
Bromodichloromethane	ND	10	ug/L
Bromoform	ND	10	ug/L
Bromomethane	ND	10	ug/L
Carbon tetrachloride	ND	10	ug/L
Chlorobenzene	ND	10	ug/L
Chloroform	ND	10	ug/L
cis - 1,3 - Dichloropropene	ND	10	ug/L
Dibromochloromethane	ND	10	ug/L
Ethylbenzene	ND	10	ug/L
m,p - Xylenes	ND	4	ug/L
Methylene chloride	ND	20	ug/L
o - Xylene	ND	2	ug/L
Tetrachloroethylene (PCE)	ND	10	ug/L
Toluene	ND	10	ug/L
trans - 1,2 - Dichloroethylene	ND	10	ug/L
trans - 1,3 - Dichloropropene	ND	10	ug/L
Trichloroethylene	ND	10	ug/L
Vinyl Chloride	ND	10	ug/L
Xylenes, total	ND	6	ug/L

ND: Not Detected in sample

Table A-7
5-Year Sampling Results for Outfall 001 (Samples collected 4/2/09)

Analyte	Result	Detection Limit	
Metals			
Antimony - D	ND	0.1	mg/l
Arsenic III - D	ND	0.01	mg/l
Cadmium - D	ND	0.01	mg/l
Calcium	7.89	0.05	mg/L
Chromium - D	ND	0.01	mg/L
Chromium III - D	ND	0.01	mg/L
Chromium VI - D	ND	0.005	mg/L
Copper - D	ND	0.01	mg/L
Lead - D	ND	0.01	mg/L
Magnesium	2.85	0.01	mg/L
Mercury - D	ND	0.0002	mg/L
Nickel - D	ND	0.01	mg/L
Selenium - D	ND	0.05	mg/L
Silver - D	ND	0.01	mg/L
Thallium - D	ND	0.05	mg/L
Zinc - D	0.013	0.01	mg/L
Miscellaneous			
Ammonia	ND	0.1	mg/L
BOD	6.9	2	mg/L
Chloride	78	1	mg/L
COD	22.8	10	mg/L
Cyanide	ND	0.01	mg/L
E. Coli	25	1	mpn/100 mL
Hardness (Calc)	31.4	0.5	mg/L
Hydrogen Sulfide (calc)	ND	1	mg/L
Nitrate + Nitrite	ND	0.1	mg/L
Nitrogen, total	1.1	0.2	mg/L
Oil and Grease	ND	10	mg/L
Phosphorus, total	0.07	0.01	mg/L
Sulfide	ND	1	mg/L
TDS	141	10	mg/L
TKN	1.1	0.2	mg/L
TSS	14.5	1	mg/L

ND: Not Detected in sample

APPENDIX B

FLOW CALCULATIONS

TABLE B -1

FAIRFAX TERMINAL STORM WATER IMPOUNDMENT BASIN
CONTRIBUTION FROM BP Terminal 10 YR STORM

TIME (hrs)	T INT (hrs)	Q(1) (cfs)	Q(2) (cfs)	Q(3) (cfs)	Q(4) (cfs)	Q(5) (cfs)	Q(6) (cfs)	TOT Q (cfs)	Q AVG (cfs)	VOLUME (cfs-hr)	VOLUME AM(1) (cfs-hr)	VOLUME AM(2) (cfs-hr)	VOLUME AM(3) (cfs-hr)
11		2	1	0				3			0	0	0
11.3	0.3	2	2	0				4	3.5	1.05	0.6	0.6	0
11.6	0.3	3	3	0				6	5	1.5	0.9	0.9	0
11.9	0.3	11	16	0				27	16.5	4.95	3.3	4.8	0
12	0.1	21	31	1				53	40	4	2.1	3.1	0.1
12.1	0.1	41	48	1				90	71.5	7.15	4.1	4.8	0.1
12.2	0.1	67	30	2				99	94.5	9.45	6.7	3	0.2
12.3	0.1	55	10	3				68	83.5	8.35	5.5	1	0.3
12.4	0.1	30	7	3				40	54	5.4	3	0.7	0.3
12.5	0.1	18	6	2				26	33	3.3	1.8	0.6	0.2
12.6	0.1	12	5	1				18	22	2.2	1.2	0.5	0.1
12.7	0.1	10	4	1				15	16.5	1.65	1	0.4	0.1
12.8	0.1	8	4	1				13	14	1.4	0.8	0.4	0.1
13	0.2	6	3	1				10	11.5	2.3	1.2	0.6	0.2
13.2	0.2	5	3	0				8	9	1.8	1	0.6	0
13.4	0.2	4	2	0				6	7	1.4	0.8	0.4	0
13.6	0.2	4	2	0				6	6	1.2	0.8	0.4	0
13.8	0.2	4	2	0				6	6	1.2	0.8	0.4	0
14	0.2	3	2	0				5	5.5	1.1	0.6	0.4	0
14.3	0.3	3	2	0				5	5	1.5	0.9	0.6	0
14.6	0.3	3	2	0				5	5	1.5	0.9	0.6	0
15	0.4	2	1	0				3	4	1.6	0.8	0.4	0
15.5	0.5	2	1	0				3	3	1.5	1	0.5	0
16	0.5	2	1	0				3	3	1.5	1	0.5	0
16.5	0.5	2	1	0				3	3	1.5	1	0.5	0
17	0.5	2	1	0				3	3	1.5	1	0.5	0
17.5	0.5	1	1	0				2	2.5	1.25	0.5	0.5	0
18	0.5	1	1	0				2	2	1	0.5	0.5	0
19	1	1	1	0				2	2	2	1	1	0
20	1	1	1	0				2	2	2	1	1	0
22	2	1	1	0				2	2	4	2	2	0
26	4	0	0	0				0	1	4	0	0	0
								TOTAL (cfs-hr):		84.25	47.8	32.2	1.7
								TOTAL (gal):		2268684	1287158.4	867081.6	45777.6
								TOTAL (gpm):			825.1	555.8	29.3

TABLE B-2

FAIRFAX TERMINAL STORM WATER IMPOUNDMENT BASIN
CONTRIBUTION FROM: TRANSMONTAIGNE TERMINAL 10 YR STORM

TIME (hrs)	T INT (hrs)	Q(1) (cfs)	Q(2) (cfs)	Q(3) (cfs)	Q(4) (cfs)	Q(5) (cfs)	Q(6) (cfs)	TOT Q (cfs)	Q AVG (cfs)	VOLUME (cfs-hr)	VOLUME CH(1) (cfs-hr)	VOLUME CH(2) (cfs-hr)	VOLUME CH(3) (cfs-hr)	VOLUME CH(4) (cfs-hr)	VOLUME CH(5) (cfs-hr)
11		0	0	0	1	0		1			0	0	0	0	0
11.3	0.3	0	0	0	2	1		3	2	0.6	0	0	0	0.6	0.3
11.6	0.3	0	0	1	2	1		4	3.5	1.05	0	0	0.3	0.6	0.3
11.9	0.3	0	2	3	15	7		27	15.5	4.65	0	0.6	0.9	4.5	2.1
12	0.1	0	5	6	30	13		54	40.5	4.05	0	0.5	0.6	3	1.3
12.1	0.1	1	7	10	47	21		86	70	7	0.1	0.7	1	4.7	2.1
12.2	0.1	1	5	6	29	13		54	70	7	0.1	0.5	0.6	2.9	1.3
12.3	0.1	2	2	2	10	4		20	37	3.7	0.2	0.2	0.2	1	0.4
12.4	0.1	4	1	1	7	3		16	18	1.8	0.4	0.1	0.1	0.7	0.3
12.5	0.1	5	1	1	6	3		16	16	1.6	0.5	0.1	0.1	0.6	0.3
12.6	0.1	6	1	1	5	2		15	15.5	1.55	0.6	0.1	0.1	0.5	0.2
12.7	0.1	6	1	1	4	2		14	14.5	1.45	0.6	0.1	0.1	0.4	0.2
12.8	0.1	5	1	1	4	2		13	13.5	1.35	0.5	0.1	0.1	0.4	0.2
13	0.2	4	0	1	3	1		9	11	2.2	0.8	0	0.2	0.6	0.2
13.2	0.2	3	0	1	3	1		8	8.5	1.7	0.6	0	0.2	0.6	0.2
13.4	0.2	2	0	0	2	1		5	6.5	1.3	0.4	0	0	0.4	0.2
13.6	0.2	2	0	0	2	1		5	5	1	0.4	0	0	0.4	0.2
13.8	0.2	1	0	0	2	1		4	4.5	0.9	0.2	0	0	0.4	0.2
14	0.2	1	0	0	2	1		4	4	0.8	0.2	0	0	0.4	0.2
14.3	0.3	1	0	0	2	1		4	4	1.2	0.3	0	0	0.6	0.3
14.6	0.3	1	0	0	1	1		3	3.5	1.05	0.3	0	0	0.3	0.3
15	0.4	1	0	0	1	1		3	3	1.2	0.4	0	0	0.4	0.4
15.5	0.5	1	0	0	1	1		3	3	1.5	0.5	0	0	0.5	0.5
16	0.5	1	0	0	1	0		2	2.5	1.25	0.5	0	0	0.5	0
16.5	0.5	0	0	0	1	0		1	1.5	0.75	0	0	0	0.5	0
17	0.5	0	0	0	1	0		1	1	0.5	0	0	0	0.5	0
17.5	0.5	0	0	0	1	0		1	1	0.5	0	0	0	0.5	0
18	0.5	0	0	0	1	0		1	1	0.5	0	0	0	0.5	0
19	1	0	0	0	1	0		1	1	1	0	0	0	1	0
20	1	0	0	0	1	0		1	1	1	0	0	0	1	0
22	2	0	0	0	1	0		1	1	2	0	0	0	2	0
26	4	0	0	0	0	0		0	0.5	2	0	0	0	0	0
								TOTAL (cfs-hr):		58.15	7.6	3	4.5	31	11.7
								TOTAL (gal):		1565863.2	204652.8	80784	121176	834768	315057.6
								TOTAL (gpm):			131.2	51.8	77.7	535.1	202.0

TABLE B-3

FAIRFAX TERMINAL STORM WATER IMPOUNDMENT BASIN
CONTRIBUTION FROM: Citgo Terminal 10 YR STORM

TIME (hrs)	T INT (hrs)	Q(1) (cfs)	Q(2) (cfs)	Q(3) (cfs)	Q(4) (cfs)	Q(5) (cfs)	Q(6) (cfs)	TOT Q (cfs)	Q AVG (cfs)	VOLUME (cfs-hr)	VOLUME Cl(1) (cfs-hr)	VOLUME Cl(2) (cfs-hr)	VOLUME Cl(3) (cfs-hr)	VOLUME Cl(4) (cfs-hr)	VOLUME Cl(5) (cfs-hr)	VOLUME Cl(6) (cfs-hr)
11		0	0	0	0	1	0	1			0	0	0	0	0	0
11.3	0.3	0	0	0	0	1	0	1	1	0.3	0	0	0	0	0.3	0
11.6	0.3	0	1	0	0	1	0	2	1.5	0.45	0	0.3	0	0	0.3	0
11.9	0.3	2	4	2	3	9	1	21	11.5	3.45	0.6	1.2	0.6	0.9	2.7	0.3
12	0.1	3	8	4	6	18	3	42	31.5	3.15	0.3	0.8	0.4	0.6	1.8	0.3
12.1	0.1	5	12	8	9	28	5	67	54.5	5.45	0.5	1.2	0.8	0.9	2.8	0.5
12.2	0.1	3	8	10	6	17	3	47	57	5.7	0.3	0.8	1	0.6	1.7	0.3
12.3	0.1	1	3	6	2	6	1	19	33	3.3	0.1	0.3	0.6	0.2	0.6	0.1
12.4	0.1	1	2	3	1	4	1	12	15.5	1.55	0.1	0.2	0.3	0.1	0.4	0.1
12.5	0.1	1	1	2	1	3	1	9	10.5	1.05	0.1	0.1	0.2	0.1	0.3	0.1
12.6	0.1	0	1	2	1	3	1	8	8.5	0.85	0	0.1	0.2	0.1	0.3	0.1
12.7	0.1	0	1	1	1	2	0	5	6.5	0.65	0	0.1	0.1	0.1	0.2	0
12.8	0.1	0	1	1	1	2	0	5	5	0.5	0	0.1	0.1	0.1	0.2	0
13	0.2	0	1	1	1	2	0	5	5	1	0	0.2	0.2	0.2	0.4	0
13.2	0.2	0	1	1	1	2	0	5	5	1	0	0.2	0.2	0.2	0.4	0
13.4	0.2	0	1	1	1	1	0	4	4.5	0.9	0	0.2	0.2	0.2	0.2	0
13.6	0.2	0	1	1	0	1	0	3	3.5	0.7	0	0.2	0.2	0	0.2	0
13.8	0.2	0	1	1	0	1	0	3	3	0.6	0	0.2	0.2	0	0.2	0
14	0.2	0	0	1	0	1	0	2	2.5	0.5	0	0	0.2	0	0.2	0
14.3	0.3	0	0	1	0	1	0	2	2	0.6	0	0	0.3	0	0.3	0
14.6	0.3	0	0	0	0	1	0	1	1.5	0.45	0	0	0	0	0.3	0
15	0.4	0	0	0	0	1	0	1	1	0.4	0	0	0	0	0.4	0
15.5	0.5	0	0	0	0	1	0	1	1	0.5	0	0	0	0	0.5	0
16	0.5	0	0	0	0	1	0	1	1	0.5	0	0	0	0	0.5	0
16.5	0.5	0	0	0	0	1	0	1	1	0.5	0	0	0	0	0.5	0
17	0.5	0	0	0	0	1	0	1	1	0.5	0	0	0	0	0.5	0
17.5	0.5	0	0	0	0	1	0	1	1	0.5	0	0	0	0	0.5	0
18	0.5	0	0	0	0	0	0	0	0.5	0.25	0	0	0	0	0	0
19	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
								TOTAL (cfs-hr):		35.3	2	6.2	5.8	4.3	16.7	1.8
								TOTAL (gal):		950558.4	53856	166953.6	156182.4	115790.4	449697.6	48470.4
								TOTAL (gpm):			34.5	107.0	100.1	74.2	288.3	31.1

TABLE B-4

FAIRFAX TERMINAL STORM WATER IMPOUNDMENT BASIN
CONTRIBUTION FROM: MOTIVA Terminal 10 YR STORM

TIME (hrs)	T INT (hrs)	Q(1) (cfs)	Q(2) (cfs)	Q(3) (cfs)	Q(4) (cfs)	Q(5) (cfs)	Q(6) (cfs)	TOT Q (cfs)	Q AVG (cfs)	VOLUME (cfs-hr)	VOLUME ST(1) (cfs-hr)	VOLUME ST(2) (cfs-hr)
11		0	0					0			0	0
11.3	0.3	0	0					0	0	0	0	0
11.6	0.3	0	0					0	0	0	0	0
11.9	0.3	1	1					2	1	0.3	0.3	0.3
12	0.1	2	2					4	3	0.3	0.2	0.2
12.1	0.1	4	4					8	6	0.6	0.4	0.4
12.2	0.1	2	2					4	6	0.6	0.2	0.2
12.3	0.1	1	1					2	3	0.3	0.1	0.1
12.4	0.1	1	1					2	2	0.2	0.1	0.1
12.5	0.1	0	0					0	1	0.1	0	0
12.6	0.1	0	0					0	0	0	0	0
12.7	0.1	0	0					0	0	0	0	0
12.8	0.1	0	0					0	0	0	0	0
13	0.2	0	0					0	0	0	0	0
13.2	0.2	0	0					0	0	0	0	0
13.4	0.2	0	0					0	0	0	0	0
13.6	0.2	0	0					0	0	0	0	0
13.8	0.2	0	0					0	0	0	0	0
14	0.2	0	0					0	0	0	0	0
14.3	0.3	0	0					0	0	0	0	0
14.6	0.3	0	0					0	0	0	0	0
15	0.4	0	0					0	0	0	0	0
15.5	0.5	0	0					0	0	0	0	0
16	0.5	0	0					0	0	0	0	0
16.5	0.5	0	0					0	0	0	0	0
17	0.5	0	0					0	0	0	0	0
17.5	0.5	0	0					0	0	0	0	0
18	0.5	0	0					0	0	0	0	0
19	1	0	0					0	0	0	0	0
20	1	0	0					0	0	0	0	0
22	2	0	0					0	0	0	0	0
26	4	0	0					0	0	0	0	0
								TOTAL (cfs-hr):		2.4	1.3	1.3
								TOTAL (gal):		64627.2	35006.4	35006.4
								TOTAL (gpm):			22.4	22.4

Table B-5

BP Flow Calculations

Operation	Average Flow (gpm)	Flow Basis
Grassy/Bermed Area Storm Water	29	Volume of the storm water generated in area BP3 during the 10 year storm divided by the duration of the runoff (26 hours). (See Table B-1)
Tank Dike Area Storm Water	825	Volume of the storm water generated in area BP1 during the 10 year storm divided by the duration of the runoff (26 hours). (See Table B-1)
Office, Parking Area Storm Water	556	Volume of the storm water generated in area BP2 during the 10 year storm divided by the duration of the runoff (26 hours). (See Table B-1)
Loading Rack Canopy Storm Water	21	Estimated percentage (3.9%) of the volume of storm water generated in area BP2 during the 10 year storm divided by the duration of the runoff (26 hours). (See Table B-1)
Office Wastewater	4	Estimated by BP.
Maintenance Bay Drain Water	3	Average volume of water discharged through a maintenance bay floor drain (300 gallons) divided by the duration of discharge (2 hours).
Fire Test & Spill Cleanup Water	1010	Volume of water generated during a fire test (5,000 gallons) divided by the duration of the test (5 minutes) plus the average amount of water used to cleanup a spill (100 gallons) divided by the average time to cleanup a spill (10 minutes).
Loading Rack Floor Drain Storm Water	14	Estimated percentage (2.5%) of the volume of storm water generated in area BP2 during the 10 year storm divided by the duration of the runoff (26 hours). (See Table B-1)
Remediation Groundwater	5	Average amount of water generated during monthly monitoring activities (1,400 gallons) divided by average amount of time required to pump it to a vacuum truck (5 hours).
Hydrostatic Test Discharge Water	446	Volume of largest above ground storage tank (4,500,000 gallons) to be tested and discharged during the permit period divided by the duration of the discharge (168 hours).
Tank Bottom Water	3	Volume of the average amount of tank bottom water generated per tank (2,500 gallons) divided by the duration of discharge (4 hours).

Table B-6

TransMontaigne Flow Calculations

Operation	Average Flow (gpm)	Flow Basis
Office, Parking Area, & Perimeter Storm Water	130	Volume of the storm water generated in areas TM2 and TM3 during the 10 year storm divided by the duration of the runoff (26 hours). (See Table B-2)
Open Space Storm Water	131	Volume of the storm water generated in area TM1 during the 10 year storm divided by the duration of the runoff (26 hours). (See Table B-2)
Bermed Tank Area Storm Water	535	Volume of the storm water generated in area TM4 during the 10 year storm divided by the duration of the runoff (26 hours). (See Table B-2)
Truck Parking Area and Loading Rack Storm Water	202	Volume of the storm water generated in the area TM5 during the 10 year storm divided by the duration of the runoff (26 hours). (See Table B-2)
Fire Test and Spill Cleanup Water	510	Volume of water generated during a fire test (5,000 gallons) divided by the duration of the test (10 minutes) plus the average amount of water used to cleanup a spill (100 gallons) divided by the average time to cleanup a spill (10 minutes).
Tank Bottom Water	262	Volume of tank bottom water generated (15,700 gallons) divided by the duration of discharge into two tanker trucks for hauling (60 minutes).
Monitoring Groundwater	1	Average amount of water generated during quarterly monitoring activities (5, 55 gallon drums) divided by average amount of time required to collect it (8 hours).
Office Wastewater	2	Estimated by TM
Hydrostatic Test Discharge Water	208	Volume of largest tank (3,000,000 gallons) divided by the duration of the event (240 hours)

Table B-7

CITGO Flow Calculations

Operation	Average Flow (gpm)	Flow Basis
Hydrostatic Test Discharge Water	347	Volume of largest above ground storage tank (5,000,000 gallons) to be tested and discharged during the permit period divided by the duration of the discharge (240 hours).
Office, Parking Area Storm Water	142	Volume of the storm water generated in areas C I1 and CI2 during the 10 year storm divided by the duration of the runoff (26 hours). (See Table B-3)
Open Field Storm Water and Diked Tank Area Water	494	Volume of the storm water generated in areas CI3, CI4, CI5 and CI6 during the 10 year storm divided by the duration of the runoff (26 hours). (See Table B-3)
Loading Rack Storm Water	10	Estimated percentage (9.4%) of the volume of storm water generated in area CI2 during the 10 year storm divided by the duration of the runoff (26 hours). (See Table B-3)
Fire Test and Spill Cleanup Water	510	Volume of water generated during a fire test (5,000 gallons) divided by the duration of the test (10 minutes) plus the average amount of water used to cleanup a spill (300 gallons) divided by the average time to cleanup a spill (30 minutes).
Tank Bottom Water	33	Volume of the average amount of tank bottom water generated per tank (2,000 gallons) divided by the duration of discharge (60 minutes).
Office Wastewater	4	Estimated by CITGO.

Table B-8

MOTIVA Flow Calculations

Operation	Average Flow (gpm)	Flow Basis
Open Field Storm Water	42	Volume of storm water generated in areas MO1 and MO2 during the 10 year storm divided by the duration of the runoff (26 hours). (See Table B-4)
Hydrostatic Test Discharge Water	125	Volume of largest above ground storage tank (1,800,000 gallons) to be tested and discharged during the permit period divided by the duration of the discharge (240 hours).

Table B-9

Non-Terminal Flow Calculations

Area	Average Flow (gpm)	Flow Basis
OFF-1	24	It was assumed that OFF-1 had the same flow characteristics for stormwater discharge from the 10-year storm event as TM-1. Therefore, the flow rate would be proportional to the flow from TM-1 based on area. (42,822 / 233,288) * 131 = 24
OFF-2	83	It was assumed that OFF-2 had the same flow characteristics for stormwater discharge from the 10-year storm event as TM-1. Therefore, the flow rate would be proportional to the flow from TM-1 based on area. (147,617 / 233,288) * 131 = 83
OFF-3	1088	It was assumed that OFF-3 had the same flow characteristics for stormwater discharge from the 10-year storm event as BP -1. Therefore, the flow rate would be proportional to the flow from BP-1 based on area. (644,054 / 488,303) * 825 = 1088
OFF-4	1073	It was assumed that OFF-4 had the same flow characteristics for stormwater discharge from the 10-year storm event as BP-1. Therefore, the flow rate would be proportional to the flow from BP-1 based on area. (635,359 / 488,303) * 825 = 1073
OFF-5	88	It was assumed that OFF-5 had the same flow characteristics for stormwater discharge from the 10-year storm event as BP-1. Therefore, the flow rate would be proportional to the flow from BP-1 based on area. (51,926 / 488,303) * 825 = 88
OFF-6	98	It was assumed that OFF-6 had the same flow characteristics for stormwater discharge from the 10-year storm event as BP-1. Therefore, the flow rate would be proportional to the flow from BP-1 based on area. (57,775 / 488,303) * 825 = 98
OFF-7	88	It was assumed that OFF-7 had the same flow characteristics for stormwater discharge from the 10-year storm event as TM-1. Therefore, the flow rate would be proportional to the flow from TM-1 based on area. (156,202 / 233,288) * 131 = 88
CA	107	It was assumed that CA had the same flow characteristics for stormwater discharge from the 10-year storm event as CI-2. Therefore, the flow rate would be proportional to the flow from CI-2 based on area. (81,956 / 81,773) * 107 = 107
PR	248	It was assumed that PR had the same flow characteristics for stormwater discharge from the 10-year storm event as TM-5. Therefore, the flow rate would be proportional to the flow from TM-5 based on area. (139,416 / 113,565) * 202 = 248
BA	135	It was assumed that BA had the same flow characteristics for stormwater discharge from the 10-year storm event as TM-1. Therefore, the flow rate would be proportional to the flow from TM-1 based on area (240,590/233,288) * 131 = 135.

APPENDIX C

MONITORING REPORTS FOR THE TOXICITY MANAGEMENT PLAN

Client: URS Corporation
Project ID: URSR0501
Client Sample ID: BP Amoco/Fairfax Terminal Outfall 001
Permit No: VA0001872
Sample Period: 5/9/05 to 5/12/05

Coastal Bioanalysts, Inc.

Report of Analysis: Whole Effluent Toxicity (WET)

Submitted To:	Prepared By:
Mr. Mark Colonna URS Corporation 13825 Sunrise Valley Drive Suite 250 Herndon, VA 20171-4672	Coastal Bioanalysts, Inc. 6400 Enterprise Court Gloucester, VA 23061 (804) 694-8285 www.coastalbio.com Contact: Peter F. De Lisle, Technical Director

Acute Test Results*

Species-Test Method	48-h LC50	95% C.L.	$T.U._{Ac}$	NOAEC
C. dubia EPA 2002.0	>100	N/A	<1.00	100

Chronic Test Results*

Species-Test Method	Endpoint	NOEC	LOEC	ChrV	PMSD	$T.U._C$	IC25	48-h LC50	LC50 95% C.L.	$T.U._{Ac}$
C. dubia	Survival	100	>100	>100	N/A	1.00	N/A	>100	N/A	<1.00
EPA 1002.0	Reproduction	100	>100	>100	18	1.00	>100	N/A	N/A	N/A

Chronic Test Results* (*P. promelas* side-by-side UV treated and untreated)

Species-Test Method	Endpoint	NOEC	LOEC	ChrV	PMSD	$T.U._C$	IC25	48-h LC50	LC50 95% C.L.	$T.U._{Ac}$
P. promelas	Survival	100	>100	>100	N/A	1.00	N/A	>100	N/A	<1.00
EPA 1001.0 UV	Biomass	100	>100	>100	16	1.00	>100	N/A	N/A	N/A
P. promelas	Survival	100	>100	>100	N/A	1.00	N/A	>100	N/A	<1.00
EPA 1001.0	Biomass	100	>100	>100	24	1.00	>100	N/A	N/A	N/A

*Note: Details regarding test conduct and data analysis provided in attached bench sheets and printouts as applicable.

Acute Test Biological Summary Data		Sample Concentration (%)					
Species-Method	Endpoint	Control	6.3	13	25	50	100
C. dubia EPA 2002.0	Survival (%):	100	100	100	100	100	100

Chronic Test Biological Summary Data		Sample Concentration (%)					
Species-Method	Endpoint	Control	6.3	13	25	50	100
C. dubia EPA 1002.0	Survival (%):	100	100	100	100	90	90
	Repro (# young):	22.0	23.3	22.6	23.0	19.8	21.4

Chronic Test Biological Summary Data		Sample Concentration (%)					
Species-Method	Endpoint	Control	6.3	13	25	50	100
P. promelas UV Treated	Survival (%):	98	98	98	95	95	98
EPA 1000.0	Biomass (mg):	0.450	0.420	0.439	0.410	0.417	0.416
P. promelas Untreated	Survival (%):	100	98	95	95	95	95
EPA 1000.0	Biomass (mg):	0.449	0.442	0.375	0.383	0.433	0.409

Total No. Printouts/Bench Sheets Attached: 19

Client: URS Corporation
Project ID: URSR0501
Client Sample ID: BP Amoco/Fairfax Terminal Outfall 001
Permit No: VA0001872
Sample Period: 5/9/05 to 5/12/05

Coastal Bioanalysts, Inc.

Test Information Species-Method	Start Date/Time End Date/Time	Organism Source	Hatch/Harvest Date/Time	Acclimation Temp.	Acclimation Water	Test Aerated?
C. dubia EPA 2002.0	5/11/05 1155 5/13/05 1200	CBI Stock	5/10/05 1630 5/11/05 0930	25° C	Mod. Hard Syn. FW	No
C. dubia EPA 1002.0	5/10/05 1300 5/16/05 1335	CBI Stock	5/9/05 1620 5/9/05 2200	25° C	Mod. Hard Syn. FW	No
P. promelas UV Treated	5/10/05 1330 5/17/05 1330	CBI Stock	5/9/05 1530 5/10/05 0930	25° C	Mod. Hard Syn. FW	No
P. promelas Untreated	5/10/05 1330 5/17/05 1305	CBI Stock	5/9/05 1530 5/10/05 0930	25° C	Mod. Hard Syn. FW	No

Sample/Dilution Water Data	Acute Test		Chronic Test			
		Dilution*	Sample		Dilution Water*	
Water Quality Parameter (Units)	Sample	Water	Mean	Std. Dev.	Mean	Std. Dev.
Arrival Temperature (°C)	2	N/A	2	0.6	N/A	N/A
Use Temperature (°C)	25	25	25	0.6	25	0.4
Conductivity (µS/cm)	127	280	120	7.6	276	8.0
pH (S.U.)	7.07	7.69	7.21	0.14	7.75	0.08
Dissolved Oxygen (mg/l)	8.2	8.2	8.2	0	8.2	0
Total Hardness (mg/l as $CaCO_3$)	36	84	37	3.1	87	4.9
Alkalinity (mg/l as $CaCO_3$)	31	65	27	3.8	64	0.9
Total Residual Chlorine (mg/l)	0.1	N/A	0.1	0	N/A	N/A
Ammonia (mg/l NH_3-N)	<1.0	N/A	0.5	0.7	N/A	N/A

*Dilution water = Moderately hard synthetic freshwater made with ASTM Type I deionized water

Sample Aging/Use/Pretreatment				
CBI Sample I.D.	Collection Date/Time	Date(s)/Time(s) 1st Used in Tests	Date(s)/Time(s) Used in Renewals	Sample Adjustments
URSR0501-A	5/9/05 1100	5/10/05 1300-1330	N/A	Aerated 0.5 min UV Treated
URSR0501-B	5/10/05 1135	5/11/05 1255-1355 5/11/05 1155*	5/12/05 1255-1420	Aerated 0.5-1 min UV Treated
URSR0501-C	5/12/05 1100	5/13/05 1320-1430	5/14/05 1230-1415 5/15/05 1250-1320 5/16/05 1145-1255	Aerated 1.5-2.5 min UV Treated

*acute test

Acute Test Water Quality (Mean/Std. Dev.)						
Test:	*C. dubia* 2002.0					
% Conc:	Cont.	6.3	13	25	50	100
Temp. (°C)	25 0.6	25 0.6	25 0.6	25 0.6	25 0.6	25 0.6
D.O. (mg/l)	8.1 0.1	8.1 0.1	8.1 0.1	8.0 0.2	8.0 0.2	8.0 0.2
pH (S.U.)	7.56 0.14	7.53 0.13	7.49 0.13	7.45 0.14	7.36 0.15	7.00 0.06

Client: URS Corporation
Project ID: URSR0501
Client Sample ID: BP Amoco/Fairfax Terminal Outfall 001
Permit No: VA0001872
Sample Period: 5/9/05 to 5/12/05

Coastal Bioanalysts, Inc.

Chronic Test Water Quality (Mean/Std. Dev.)						
Test:	*C. dubia* 1002.0					
% Conc:	Cont.	6.3	13	25	50	100
Temp.	25	25	25	25	25	25
(°C)	0	0	0	0	0.3	0.4
D.O.	8.1	8.1	8.0	8.0	7.9	7.8
(mg/l)	0.1	0.2	0.2	0.3	0.4	0.6
pH	7.56	7.50	7.46	7.43	7.34	7.08
(S.U.)	0.13	0.13	0.13	0.13	0.16	0.18
Cond.	277	274	265	248	207	133
(µS/cm)	6.6	6.1	8.1	2.3	13	6.0

Chronic Test Water Quality (Mean/Std. Dev.)												
Test:	*P. promelas* 1000.0-UV Treated						*P. promelas* 1000.0-Untreated					
% Conc:	Cont.	6.3	13	25	50	100	Cont.	6.3	13	25	50	100
Temp.	25	25	25	25	25	25	25	25	25	25	25	25
(°C)	0.4	0.4	0.4	0.4	0.4	0.4	0	0.3	0.3	0.3	0.3	0.3
D.O.	8.0	8.0	8.0	7.9	7.8	7.8	8.1	8.0	8.0	8.0	7.9	7.9
(mg/l)	0.2	0.2	0.3	0.4	0.5	0.4	0.2	0.2	0.3	0.3	0.3	0.4
pH	7.53	7.51	7.48	7.43	7.36	7.09	7.52	7.51	7.47	7.42	7.34	7.08
(S.U.)	0.15	0.18	0.19	0.23	0.22	0.15	0.16	0.19	0.21	0.21	0.21	0.14
Cond.	280	273	267	249	214	136	274	271	264	247	209	127
(µS/cm)	6.1	5.7	5.0	4.5	4.5	5.6	7.0	5.0	5.1	3.2	8.3	5.3

Acute Test QA/QC Reference Toxicant: KCl Units: mg/l					
Species-Method (Ref. Test Date)	Data Source	Animal Source	% Control Survival	48-h LC50	95% C.L./A.L. for LC50
C. dubia 2002.0	RTT	CBI	100	601	559-647
(5/4/05-5/6/05)	CC	CBI	99	540	463-617

Chronic Test QA/QC Reference Toxicant: KCl Units: mg/l									
Species-Method	Data	Animal	Survival (%)		Reproduction (# Young)/Biomass (mg)				
(Ref. Test Date)	Source	Source	Cont.	NOEC	Cont.	NOEC	PMSD	IC25	IC25 A.L.
C. dubia 1002.0	RTT	CBI	100	500	22.7	250	25	293	N/A
(5/6/05-5/12/05)	CC	CBI	99	250	22.4	250	24	306	245-366
P. promelas 1000.0	RTT	CBI	100	500	0.49	500	15	594	N/A
(4/12/05-4/19/05)	CC	CBI	99	500	0.50	500	15	600	532-668

Note: RTT = Reference Toxicant Test, CC = Control Chart, Cont. = Control group.

The results of analysis contained within this report relate only to the sample as received in the laboratory. This report shall not be reproduced except in full without written approval from the laboratory.

APPROVED:

Peter F. De Lisle, Ph.D.
Technical Director

5/23/05
Date

Total No. Printouts/Bench Sheets Attached: 19

Coastal Bioanalysts, Inc.

GLOSSARY OF TERMS AND ABBREVIATIONS

A.L. (Acceptance Limits): The results of a given reference toxicant test are compared to the control chart mean value ± 2 standard deviations. These limits approximate the 95% probability limits for the "true" reference toxicant value.

Chronic Value (ChrV): The geometric mean of the NOEC and LOEC. Units are same as test concentration units.

C.L. (Confidence Limits): These are the probability limits, based on the data set and statistical model employed, that the "true value" lies within the limits specified. Typically limits are based on 95% or 99% probabilities.

Control chart: A cumulative summary chart of results from QC tests with reference toxicants. The results of a given reference toxicant test are compared to the control chart mean value and 95% Acceptance Limits (A.L.) (mean ± 2 standard deviations).

IC25: The concentration of sample or chemical, calculated from the data set using statistical models, causing a 25% reduction in test organism growth, reproduction, etc. The lower the IC25, the more toxic the chemical or sample. Units are same as test concentration units.

LC50: The concentration of sample or chemical, calculated from the data set using statistical models, causing a 50% reduction in test organism survival. The lower the LC50, the more toxic the chemical or sample. Units are same as test concentration units. Note: The LC50 value must always be associated with the duration of exposure. Thus 48-h LC50, 96-h LC50, etc. are calculated.

LOEC: Lowest-observable-effect-concentration. The lowest concentration of sample or chemical in a chronic test dilution series in which the test organisms exhibit a statistically significant reduction in any of the test end points (e.g. growth, survival, reproduction) compared to control organisms. Units are same as test concentration units.

PMSD: Percent Minimum Significant Difference: The minimum difference which can exist between a test treatment and the controls in a particular test and be statistically significant; a measure of test sensitivity. The lower the PMSD the more sensitive the test.

N/A: Not applicable.

N/D: Not determined or measured.

NOAEC: No-observable-acute-effect-concentration. The highest concentration of sample or chemical in an acute test dilution series in which the test organisms exhibit no statistically significant reduction in the test end point (e.g. survival) compared to control organisms. Units are same as test concentration units.

NOEC: No-observable-effect-concentration. The highest concentration of sample or chemical in a chronic test dilution series in which the test organisms exhibit no statistically significant reduction in any of the test end points (e.g. growth, survival, reproduction) compared to control organisms. Some regulatory definitions also require that the NOEC be less than the LOEC. Units are same as test concentration units.

Q.L.: Quantitation Limit. Level, concentration, or quantity of a target variable (analyte) that can be reported at a specified degree of confidence.

T.U.: Toxic units. Expresses the relative toxicity of an effluent in such a manner that the larger the toxic unit value the more toxic the effluent. $T.U._{Ac} = 100/LC50$. $T.U._{Chr} = 100/NOEC$. A dimensionless unit.

CERIODAPHNIA DUBIA STATIC ACUTE WET TEST (ACD)

COASTAL BIOANALYSTS, INC
FORM ETF1051A EFFECTIVE DATE: 5/15/02

% Effluent	I.D.	Day 0 Live	Day 1 Live	Day 2 Live	Final % Survival
..trol	C-1	5	5	5	100
	C-2	5	5	5	
	C-3	5	5	5	
	C-4	5	5	5	
6.25	1-1	5	5	5	100
	1-2	5	5	5	
	1-3	5	5	5	
	1-4	5	5	5	
12.5	2-1	5	5	5	100
	2-2	5	5	5	
	2-3	5	5	5	
	2-4	5	5	5	

% Effluent	I.D.	Day 0 Live	Day 1 Live	Day 2 Live	Final % Survival
25	3-1	5	5	5	100
	3-2	5	5	5	
	3-3	5	5	5	
	3-4	5	5	5	
50	4-1	5	5	5	100
	4-2	5	5	5	
	4-3	5	5	5	
	4-4	5	5	5	
100	5-1	5	5	5	100
	5-2	5	5	5	
	5-3	5	5	5	
	5-4	5	5	5	
	Initials:	PB	PB	LL	
	Count Time:	1155	0920	1200	*Test End Time

NOTES:

Parameter	Treatment I.D.	Day 0	Day 1	Day 2
Temp. (°C)	C	25	25	24
	1	25	25	24
	2	25	25	24
	3	25	25	24
	4	25	25	24
	5	25	25	24
pH (S.U.)	C	7.69	7.57	7.41
	1	7.67	7.49	7.42
	2	7.64	7.46	7.38
	3	7.61	7.42	7.33
	4	7.52	7.33	7.22
	5	7.07	6.95	6.97
D.O. (mg/l)	C	8.2	8.1	8.1
	1	8.2	8.1	8.1
	2	8.2	8.1	8.0
	3	8.2	8.0	7.9
	4	8.2	7.9	7.9
	5	8.2	7.9	7.8
Conduct. (uS/cm)	C	280		278
	1	278		
	2	267		
	3	246		
	4	211		
	5	127		145
Replicate # Meas.:		1	2	1
Initials:		PB	PB	LL
TRC (mg/l) in highest conc. at end of test:				~~NA~~ LDL

Species: *Ceriodaphnia dubia*

Source: CBI stock cultures ✓

Other: _____

Brood Release: Date/time start: 5/10/05 1630

Date /time end: 5/14/05 0930

Acclimation: Water: Mod. hard syn. FW ✓

Other _____

Temperature (°C): 25

Feeding: Prior to test: YCT/*Selenastrum*
During test: Not Fed

Illumination: 16L:8D 10-20 uE/m²/s

Test chamber size: ✓30 _____ ml

Solution volume: ✓15 ml _____ ml

Number of replicates/treatment: 4

Initial number of daphnids/replicate: 5

Randomization template number: 3

Set up: Date (Day 0): 5/11/05

Time water added: 1145

Time daphnids added: 1155

Set up by (initials): PB

TEST I.D. UBR0501 ACD

BASELINE TEST INFO – *Ceriodaphnia* 3-BROOD TEST

Coastal Bioanalysts, Inc
Form ETF0051A
Effective Date: 5/15/02

TEST ORGANISM INFO

Species: *Ceriodaphnia dubia*

Source: CBI Stock Cultures

Acclimation: **Water:** Mod. hard syn. FW ✓

Other: _____

Temp. (°C): 25

Brood Release: 5/9/05 1620
(start date/time)
Brood Release: 5/9/05 2200
(end date/time)

Feeding Prior to Test: *Selenastrum*/YCT 1X/day

Feeding During Test: *Selenastrum*/YCT 1X/day

TEST DESIGN

Test Chamber: Borosilicate vial ✓

Other _____

Solution Vol: 15 ml ✓

Other _____

Illumination: 16:8 L:D 10-20 uE/m²/s

Number of Replicates/Concentration: 10

Initial Number of Daphnids/Replicate: 1

Randomization Template No. 12

TEST SET UP (Day 0)

Set Up Date: 5/10/05

Set Up By: DB

Time Water Added: 1245

Time Animals Added: 1300

NOTES

Test I.D. URSR05 01 -CCD

WATER QUALITY DATA – *Ceriodaphnia dubia* 3-BROOD TEST COASTAL BIOANALYSTS, INC FORM ETF0054A EFFECTIVE DATE: 5/15/02

Parameter	Treatment	Day 0 Initial	Day 1 Final	Day 1 Initial	Day 2 Final	Day 2 Initial	Day 3 Final	Day 3 Initial	Day 4 Final	Day 4 Initial	Day 5 Final	Day 5 Initial	Day 6 Final	Day 6 Initial	Day 7 Final
TEMP (°C)	C	25	25	25	25	25	25	25	25	25	25	25	25		
	1	25	25	25	25	25	25	25	25	25	25	25	25		
	2	25	25	25	25	25	25	25	25	25	25	25	25		
	3	25	25	25	25	25	25	25	25	25	25	25	25		
	4	25	25	25	25	25	25	25	25	25	25	25	26		
	5	25	26	25	25	25	25	25	25	25	25	25	26		
pH (S.U.)	C	7.71	7.55	7.61	7.38	7.67	7.67	7.60	7.45	7.69	7.47	7.63	7.31		
	1	7.69	7.48	7.51	7.34	7.63	7.53	7.49	7.44	7.65	7.42	7.62	7.23		
	2	7.58	7.49	7.46	7.42	7.61	7.45	7.43	7.37	7.63	7.37	7.60	7.16		
	3	7.55	7.48	7.40	7.36	7.55	7.43	7.35	7.36	7.60	7.33	7.57	7.16		
	4	7.50	7.41	7.16	7.25	7.51	7.35	7.29	7.31	7.51	7.24	7.52	7.03		
	5	7.15	7.12	7.09	6.87	7.22	7.10	7.15	7.11	7.27	6.96	7.23	6.64		
D.O. (mg/l)	C	8.2	8.1	8.2	8.1	8.2	8.1	8.2	8.1	8.2	8.0	8.2	7.9		
	1	8.2	8.1	8.2	8.1	8.2	8.0	8.2	7.8	8.2	7.9	8.2	7.8		
	2	8.2	8.1	8.2	8.0	8.2	8.0	8.2	7.6	8.2	7.9	8.2	7.7		
	3	8.2	8.0	8.2	8.0	8.2	7.9	8.2	7.4	8.2	7.9	8.2	7.6		
	4	8.2	7.9	8.2	8.0	8.2	7.8	8.2	7.1	8.2	7.5	8.2	7.4		
	5	8.2	7.9	8.2	7.9	8.2	7.7	8.2	6.8	8.2	6.7	8.2	7.1		
COND (uS/cm)	C	269		269		279		282		285		277			
	1	265		268		277		280		278		277			
	2	257		247		270		272		252		269			
	3	244		249		248		251		248		247			
	4	181		211		213		218		207		211			
	5	132		121		136		136		135		137			
Replicate:		1	5	5	7	7	10	10	8	8	3	3	4		
Initials:		GM	GB	GB	u	u	GI	GB	GM	GB	u	u	GM		

TEST I.D. URS105-01 -CCD

REPRODUCTION/SURVIVAL DATA – *Ceriodaphnia* 3-BROOD TEST

Coastal Bioanalysts, Inc
Form ETF0053A
Effective Date: 5/15/02

Treatment	REP	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
C	1	0	0	3	0	6	16	
	2	0	0	5	7	0	14	
	3	0	0	3	7	0	12	
	4	0	0	4	0	9	14	
Lab	5	0	0	4	5	0	10	
Control	6	0	0	3	0	5	8	
	7	0	0	4	6	0	8	
	8	0	0	3	0	6	10	
	9	0	0	5	8	11	0	
	10	0	0	5	0	7	12	
1	1	0	0	2	0	6	14	
	2	0	0	3	8	0	14	
	3	0	0	5	9	0	12	
	4	0	0	6	0	7	12	
6.25	5	0	0	3	7	5	0	
Conc.	6	0	0	0	5	7	10	
	7	0	0	4	7	0	10	
	8	0	0	3	7	0	14	
5	9	0	0	4	8	12	0	
Vol.	10	0	0	3	0	12	14	
2	1	0	0	3	0	4	12	
	2	0	0	4	7	0	12	
	3	0	0	2	8	0	12	
	4	0	0	5	0	8	14	
12.5	5	0	0	3	8	8	0	
Conc.	6	0	0	5	0	6	14	
	7	0	0	3	6	0	12	
	8	0	0	3	6	0	12	
25	9	0	0	4	7	9	0	
Spl. Vol.	10	0	0	4	0	9	16	

Treatment	REP	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
3	1	0	0	4	0	8	12	
	2	0	0	4	8	0	14	
	3	0	0	4	8	0	12	
	4	0	0	0	0	10	10	
25	5	0	0	3	6	0	12	
Conc.	6	0	0	4	0	7	12	
	7	0	0	2	0	7	10	
	8	0	0	3	9	0	14	
50	9	0	0	3	7	9	0	
Spl. Vol.	10	0	0	3	0	9	16	
4	1	0	0	4	0	6	12	
	2	0	0	5	0	7	12	
	3	0	0	4	0	7	0/0	
	4	0	0	4	0	5	12	
50	5	0	0	3	6	9	0	
Conc.	6	0	0	4	0	7	12	
	7	0	0	3	6	0	12	
	8	0	0	3	9	0	12	
100	9	0	0	5	10	6	0	
Spl. Vol.	10	0	0	0	0	3	10	
5	1	0	0	4	0	8	12	
	2	0	0	4	5	0/0	–	
	3	0	0	3	0	5	12	
	4	0	0	0	0	10	14	
100	5	0	0	3	7	0	12	
Conc.	6	0	0	3	0	7	14	
	7	0	0	4	0	9	12	
	8	0	0	3	7	0	12	
200	9	0	0	4	5	13	0	
Spl. Vol.	10	0	0	3	0	9	10	

	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Count/Renewal Time*:	1255	1255	1320	1230	1250	1335	
Initials:	GA	LL	GA	GA	LL	GA	

*Time of final count (day 6 or 7) = test end time. See printout of statistical analyses for total number of offspring by replicate.

Note: "Spl. Vol." = Volume sample added to total volume of 200 ml for preparation of dilutions.

ES:

Test I.D. UNSR0501 -CCD

Ceriodaphnia Survival and Reproduction Test-6 Day Survival

Start Date:	5/10/2005 13:00	Test ID:	URSR0501CD	Sample ID:	FAIRFAX TERMINAL 001
End Date:	5/16/2005 13:35	Lab ID:	CBI	Sample Type:	WW
Sample Date:		Protocol:	EPAF 94-EPA Freshwater	Test Species:	CD-Ceriodaphnia dubia
Comments:					

Conc-%	1	2	3	4	5	6	7	8	9	10
CONTROL	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
6.25	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
12.5	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
25	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
50	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Conc-%	Mean	N-Mean	Resp	Not Resp	Total	N	Fisher's Exact P	1-Tailed Critical
CONTROL	1.0000	1.0000	0	10	10	10		
6.25	1.0000	1.0000	0	10	10	10	1.0000	0.0500
12.5	1.0000	1.0000	0	10	10	10	1.0000	0.0500
25	1.0000	1.0000	0	10	10	10	1.0000	0.0500
50	0.9000	0.9000	1	9	10	10	0.5000	0.0500
100	0.9000	0.9000	1	9	10	10	0.5000	0.0500

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Fisher's Exact Test	100	>100		1

ToxCalc v5.0.23

Reviewed by: PD

Ceriodaphnia Survival and Reproduction Test-Reproduction

Start Date:	5/10/2005 13:00	Test ID:	URSR0501CD	Sample ID:	FAIRFAX TERMINAL 001
End Date:	5/16/2005 13:35	Lab ID:	CBI	Sample Type:	WW
Sample Date:		Protocol:	EPAF 94-EPA Freshwater	Test Species:	CD-Ceriodaphnia dubia

Comments:

Conc-%	1	2	3	4	5	6	7	8	9	10
CONTROL	25.000	26.000	22.000	27.000	19.000	16.000	18.000	19.000	24.000	24.000
6.25	22.000	25.000	26.000	25.000	15.000	22.000	21.000	24.000	24.000	29.000
12.5	19.000	23.000	22.000	27.000	19.000	25.000	21.000	21.000	20.000	29.000
25	24.000	26.000	24.000	20.000	21.000	23.000	19.000	26.000	19.000	28.000
50	22.000	24.000	11.000	21.000	18.000	23.000	21.000	24.000	21.000	13.000
100	24.000	9.000	20.000	24.000	22.000	24.000	25.000	22.000	22.000	22.000

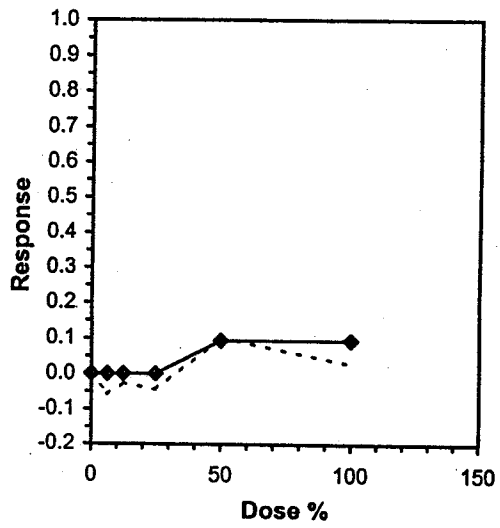
			Transform: Untransformed						1-Tailed		Isotonic	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD	Mean	N-Mean
CONTROL	22.000	1.0000	22.000	16.000	27.000	17.142	10				22.725	1.0000
6.25	23.300	1.0591	23.300	15.000	29.000	15.937	10	-0.747	2.287	3.981	22.725	1.0000
12.5	22.600	1.0273	22.600	19.000	29.000	15.070	10	-0.345	2.287	3.981	22.725	1.0000
25	23.000	1.0455	23.000	19.000	28.000	13.749	10	-0.574	2.287	3.981	22.725	1.0000
50	19.800	0.9000	19.800	11.000	24.000	22.687	10	1.264	2.287	3.981	20.600	0.9065
100	21.400	0.9727	21.400	9.000	25.000	21.493	10	0.345	2.287	3.981	20.600	0.9065

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Kolmogorov D Test indicates normal distribution (p > 0.01)	1.02508	1.035	-0.96	1.26232
Bartlett's Test indicates equal variances (p = 0.86)	1.9169	15.0863		

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU	MSDu	MSDp	MSB	MSE	F-Prob	df
Dunnett's Test	100	>100		1	3.98135	0.18097	16.4967	15.1574	0.37739	5, 54

Linear Interpolation (200 Resamples)

oint	%	SD	95% CL	Skew
IC05	38.368			
IC10	>100			
IC15	>100			
IC20	>100			
IC25	>100			
IC40	>100			
IC50	>100			



ToxCalc v5.0.23

Reviewed by: RD

BASELINE TEST INFO – FATHEAD 7 DAY TEST

Coastal Bioanalysts, Inc
Form ETF0041A
Effective Date: 5/15/02

TEST ORGANISM INFO

Species: *Pimephales promelas*

Source: CBI Stock Cultures: ✓

Other: _____

Hatch Date/Time: 5/9/05 1530
(start)

Hatch Date/Time: 5/10/05 0930
(end)

Acclimation: **Water:** Mod. hard syn. FW ✓

Other: _____

Temp. (°C): 25

Feeding Prior to Test: *Artemia ad libitum* 2X/day

Feeding During Test: *Artemia* 0.15 g/rep 2X/day

Arrival Date: NA
(non-CBI)

TEST DESIGN

Test Chamber: 1000 ml beaker ✓

600 ml beaker _____

Solution Vol: 500 ml ✓

Other _____

Illumination: 16:8 L:D 10-20 uE/m²/s

Number of Replicates/Concentration: 4

Initial Number of Fish/Replicate: 10

Randomization Template No. 2

TEST SET UP (Day 0)

Set Up Date: 5/10/05

Set Up By: GD

Time Water Added: 1320

Time Animals Added: 1330

NOTES

For UV: sample exposed to 8W UV bulb 1½ hour before use

Test I.D. UR5R0501 -CPP

WATER QUALITY DATA – *Pimephales promelas* 7-day Larval Test COASTAL BIOANALYSTS, INC FORM ETF0042A EFFECTIVE DATE: 5/15/02

Parameter	Treatment	Day 0 Initial	Day 1 Final	Day 1 Initial	Day 2 Final	Day 2 Initial	Day 3 Final	Day 3 Initial	Day 4 Final	Day 4 Initial	Day 5 Final	Day 5 Initial	Day 6 Final	Day 6 Initial	Day 7 Final
TEMP (°C)	C	25	25	25	25	25	25	25	25	25	25	25	25	25	25
	1	25	25	25	25	25	25	25	24	25	25	25	25	24	24
	2	25	25	25	25	25	25	25	24	25	25	25	25	25	24
	3	25	25	25	25	25	25	25	25	25	25	25	25	24	24
	4	25	25	25	25	25	25	25	25	25	25	25	25	25	24
	5	25	25	25	25	25	25	25	25	25	25	25	25	24	24
pH (S.U.)	C	7.65	7.42	7.62	7.35	7.69	7.42	7.64	7.58	7.66	7.30	7.69	7.29	7.71	7.32
	1	7.65	7.46	7.62	7.29	7.71	7.36	7.66	7.54	7.64	7.24	7.69	7.23	7.69	7.30
	2	7.63	7.46	7.59	7.26	7.66	7.35	7.66	7.49	7.62	7.19	7.68	7.10	7.66	7.19
	3	7.59	7.42	7.54	7.21	7.61	7.31	7.59	7.47	7.58	7.17	7.61	7.02	7.68	7.09
	4	7.54	7.34	7.50	7.13	7.44	7.26	7.50	7.42	7.53	7.08	7.51	6.95	7.48	7.02
	5	7.18	7.11	7.10	6.89	7.09	6.96	7.10	7.35	7.20	6.86	7.25	6.94	7.11	6.94
D.O. (mg/l)	C	8.2	8.1	8.2	8.1	8.2	8.1	8.2	7.7	8.2	7.8	8.2	7.8	8.1	7.8
	1	8.2	8.1	8.2	8.1	8.2	8.0	8.2	7.5	8.2	7.8	8.2	7.2	8.1	7.8
	2	8.2	8.0	8.2	8.1	8.2	8.0	8.2	7.4	8.2	7.4	8.2	7.1	8.1	7.7
	3	8.2	8.1	8.2	8.0	8.2	8.0	8.2	7.3	8.1	7.6	8.2	7.5	8.1	7.7
	4	8.2	8.0	8.2	8.0	8.2	7.9	8.1	7.2	8.1	7.6	8.1	7.3	8.1	7.6
	5	8.2	8.0	8.2	8.0	8.2	7.9	8.1	7.0	8.0	7.8	8.1	7.2	8.0	7.6
COND (uS/cm)	C	263		248		278		282		278		280		271	
	1	263		265		273		276		275		271		273	
	2	254		242		268		268		247		265		247	
	3	242		245		251		249		249		245		249	
	4	200		195		214		212		211		213		218	
	5	121		130		134		124		125		128		137	
Replicate:		1	3	2	4	1	4	2	1	2	4	3	3	4	2
Initials:		GA	GA	GB	LL	PB	GA	PB	GA	GA	JH	W	GB	GA	GB

TEST I.D. UR5R0501 (contracted) -CPP

WATER QUALITY DATA – *Pimephales promelas* 7-day Larval Test COASTAL BIOANALYSTS, INC FORM ETF0042A EFFECTIVE DA...: 5/15/02

Parameter	Treatment	Day 0 Initial	Day 1 Final	Day 1 Initial	Day 2 Final	Day 2 Initial	Day 3 Final	Day 3 Initial	Day 4 Final	Day 4 Initial	Day 5 Final	Day 5 Initial	Day 6 Final	Day 6 Initial	Day 7 Final
TEMP (°C)	C	25	25	25	25	25	25	25	25	26	25	25	25	25	24
	1	25	25	25	25	25	25	25	25	26	25	25	25	25	24
	2	25	25	25	25	25	25	25	25	26	25	25	25	25	24
	3	25	25	25	25	25	25	25	25	26	25	25	25	25	24
	4	25	25	25	25	25	25	25	25	26	25	25	25	25	24
	5	25	25	26	25	25	25	25	25	26	25	25	25	25	24
pH (S.U.)	C	7.58	7.57	7.56	7.36	7.60	7.38	7.68	7.42	7.80	7.27	7.67	7.42	7.69	7.46
	1	7.63	7.51	7.58	7.31	7.65	7.30	7.65	7.35	7.78	7.17	7.67	7.39	7.67	7.45
	2	7.63	7.50	7.58	7.28	7.62	7.24	7.63	7.31	7.76	7.13	7.67	7.32	7.64	7.37
	3	7.66	7.47	7.54	7.25	7.61	7.17	7.59	7.25	7.72	6.90	7.62	7.35	7.59	7.36
	4	7.53	7.43	7.46	7.15	7.44	7.11	7.56	7.17	7.68	6.89	7.53	7.31	7.52	7.28
	5	7.18	7.07	7.14	6.91	7.12	7.21	7.18	7.13	7.23	6.67	7.17	7.07	7.17	6.95
D.O. (mg/l)	C	8.2	8.1	8.2	8.1	8.2	8.0	8.2	7.7	8.2	7.6	8.2	7.8	8.2	7.8
	1	8.2	8.1	8.2	8.1	8.2	8.1	8.2	7.6	8.2	7.6	8.2	7.7	8.2	7.7
	2	8.2	8.0	8.2	8.0	8.2	8.0	8.2	7.5	8.2	7.46 JH	8.2	7.6	8.1	7.7
	3	8.2	8.0	8.2	8.0	8.2	8.0	8.2	7.3	8.1	~~6.47~~ 7.0 JH	8.2	7.4	8.1	7.6
	4	8.2	8.0	8.2	7.9	8.2	8.0	8.2	7.1	8.1	6.8	8.2	7.2	8.1	7.5
	5	8.2	8.0	8.2	7.8	8.2	7.9	8.2	7.1	8.0	7.2	8.2	7.2	8.0	7.4
COND (uS/cm)	C	281		271		278		289		285		278		275	
	1	~~724~~ 265		267		274		279		276		269		279	
	2	262		262		269		270		269		261		274	
	3	243		244		252		253		248		246		254	
	4	209		212		215		216		212		213		223	
	5	133		135		136		138		132		130		142	
Replicate:		1	2	2	4	1	4	2	1	3	4	2	3	4	2
Initials:		GA	GA	GA	UL	PB	GA	PB	GA	GA	JH	UL	GA	GA	GA

TEST I.D. UR5R0521 UV -CPP

SURVIVAL GROWTH DATA – FATHEAD MINNOW 7 DAY TEST Coastal Bioanalysts, Inc Form ETF0043D Effective Date: 2/3/

Treatment[1]	Rep No.	Number of Live Fish							Fish Dry Weight Data (mg)[2]			Notes
		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Pan #	Tot. Wt.	Tare Wt.	
C CONTROL	1	10	10	10	10	10	10	10	1	10.90	5.96	
	2	10	10	10	10	10	10	10	2	10.26	5.93	
	3	10	10	10	10	10	10	10	3	9.68	5.37	
	4	10	10	10	10	10	10	10	4	9.12	5.14	
1 C: 6.25	1	10	10	10	10	10	10	10	5	11.81	6.48	
	2	10	10	10	10	9	9	9	6	9.62	5.90	
	3	10	10	10	10	10	10	10	7	9.46	5.22	
V: 100	4	10	10	10	10	10	10	10	8	9.23	4.86	
2 C: 12.5	1	10	10	8	8	8	8	8	9	9.56	5.69	
	2	10	10	10	10	10	10	10	10	9.66	5.28	
	3	10	10	10	10	10	10	10	11	9.14	5.55	
V: 200	4	10	10	10	10	10	10	10	12	9.36	6.22	
3 C: 25	1	10	10	10	10	10	8	8	13	8.35	5.48	
	2	10	10	10	10	10	10	10	14	10.30	5.94	
	3	10	10	10	10	10	10	10	15	11.25	6.56	
V: 400	4	10	10	10	10	10	10	10	16	10.18	6.78	
4 C: 50	1	10	10	10	10	10	10	10	17	11.27	6.04	
	2	10	10	10	10	10	10	10	18	10.35	6.14	
	3	10	10	10	10	10	10	10	19	10.88	6.53	
V: 800	4	10	10	10	9	8	8	8	20	10.31	6.80	
5 C: 100	1	10	10	10	10	10	10	10	21	10.61	6.10	
	2	10	10	10	9	9	9	9	22	9.11	5.35	
	3	10	10	10	10	10	10	10	23	10.44	6.10	
V: 1600	4	10	10	10	10	9	9	9	24	11.10	7.37	
Renewal/Count Time:		1320	1420	1430	1315	1320	1145	1305[3]	Tare Wt: Date: 5/17/05 Calib. Check (10 mg[4]): 9.97 Init: LL			
Initials:		CB	CB	PB	CB	LL	CB	CB	Tot. Wt: Date: 5/18/05 Calib. Check (10 mg[4]): 9.97 Init: PB			

[1] C = Concentration; V = Volume (ml) sample added to total volume of 1600 ml for preparation of solutions. [2]See printout of statistical analyses for biomass weights by replicate. [3]Time of final count = test end time. [4]True value/estimated uncertainty of calibration weight (NIST traceable annual certification) = 10.00 / 0.05 mg

Test ID URS05-01 (untreated) -CPP

Larval Fish Growth and Survival Test-7 Day Survival

Start Date:	5/10/2005 13:30	Test ID:	URSR0501PP	Sample ID:	FAIRFAX TERMINAL 001
End Date:	5/17/2005 13:05	Lab ID:	CBI	Sample Type:	UNTREATED
Sample Date:		Protocol:	EPAF 94-EPA Freshwater	Test Species:	PP-Pimephales promelas
Comments:					

Conc-%	1	2	3	4
CONTROL	1.0000	1.0000	1.0000	1.0000
6.25	1.0000	0.9000	1.0000	1.0000
12.5	0.8000	1.0000	1.0000	1.0000
25	0.8000	1.0000	1.0000	1.0000
50	1.0000	1.0000	1.0000	0.8000
100	1.0000	0.9000	1.0000	0.9000

			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
CONTROL	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	4		
6.25	0.9750	0.9750	1.3713	1.2490	1.4120	5.942	4	16.00	10.00
12.5	0.9500	0.9500	1.3358	1.1071	1.4120	11.411	4	16.00	10.00
25	0.9500	0.9500	1.3358	1.1071	1.4120	11.411	4	16.00	10.00
50	0.9500	0.9500	1.3358	1.1071	1.4120	11.411	4	16.00	10.00
100	0.9500	0.9500	1.3305	1.2490	1.4120	7.072	4	14.00	10.00

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.01)	0.74492	0.884	-1.3563	0.63923
Equality of variance cannot be confirmed				

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Steel's Many-One Rank Test	100	>100		1

ToxCalc v5.0.23

Reviewed by: PD

Larval Fish Growth and Survival Test-7 Day Biomass

Start Date:	5/10/2005 13:30	Test ID:	URSR0501PP	Sample ID:	FAIRFAX TERMINAL 001
End Date:	5/17/2005 13:05	Lab ID:	CBI	Sample Type:	UNTREATED
Sample Date:		Protocol:	EPAF 94-EPA Freshwater	Test Species:	PP-Pimephales promelas
Comments:					

Conc-%	1	2	3	4
CONTROL	0.5340	0.4330	0.4310	0.3960
6.25	0.5330	0.3720	0.4240	0.4370
12.5	0.3870	0.4380	0.3590	0.3140
25	0.2870	0.4360	0.4690	0.3400
50	0.5230	0.4210	0.4350	0.3510
100	0.4510	0.3760	0.4340	0.3730

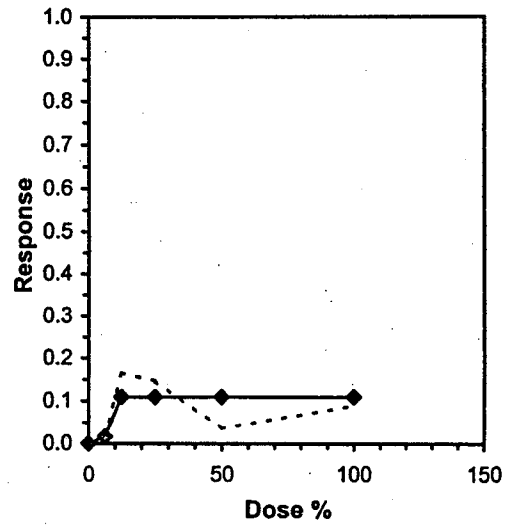
			Transform: Untransformed						1-Tailed		Isotonic	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD	Mean	N-Mean
CONTROL	0.4485	1.0000	0.4485	0.3960	0.5340	13.262	4				0.4485	1.0000
6.25	0.4415	0.9844	0.4415	0.3720	0.5330	15.210	4	0.155	2.410	0.1087	0.4415	0.9844
12.5	0.3745	0.8350	0.3745	0.3140	0.4380	13.865	4	1.641	2.410	0.1087	0.3996	0.8910
25	0.3830	0.8540	0.3830	0.2870	0.4690	21.985	4	1.452	2.410	0.1087	0.3996	0.8910
50	0.4325	0.9643	0.4325	0.3510	0.5230	16.333	4	0.355	2.410	0.1087	0.3996	0.8910
100	0.4085	0.9108	0.4085	0.3730	0.4510	9.764	4	0.887	2.410	0.1087	0.3996	0.8910

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.94648	0.884	0.25398	-0.9129
Bartlett's Test indicates equal variances (p = 0.89)	1.66912	15.0863		

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU	MSDu	MSDp	MSB	MSE	F-Prob	df
Dunnett's Test	100	>100		1	0.10871	0.24238	0.00387	0.00407	0.47277	5, 18

Linear Interpolation (200 Resamples)

Point	%	SD	95% CL(Exp)	Skew
IC05	8.552			
IC10	11.899			
IC15	>100			
IC20	>100			
IC25	>100			
IC40	>100			
IC50	>100			



ToxCalc v5.0.23

Reviewed by: PO

SURVIV/ GROWTH DATA – FATHEAD MINNOW 7 DAY TEST Coas' 'oanalysts, Inc Form ETF0043D Effective Date: 2/'

Treatment[1]		Rep No.	Number of Live Fish Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Fish Dry Weight Data (mg)[2] Pan #	Tot. Wt.	Tare Wt.	Notes
C	CONTROL UV SRW	1	10	10	10	10	10	10	10	1	10.70	5.62	
		2	10	10	10	10	10	9	9	2	9.73	5.18	
		3	10	10	10	10	10	10	10	3	8.53	4.44	
		4	10	10	10	10	10	10	10	4	8.77	4.50	
1	C: 6.25	1	10	10	10	10	10	10	10	5	9.88	4.94	
		2	10	10	10	10	10	10	9	6	9.72	4.97	
		3	10	10	10	10	10	10	10	7	9.70	4.63	
	V: ~~75~~ 50 100	4	10	10	10	10	10	10	10	8	8.77	4.75	
2	C: 12.5	1	10	10	10	10	10	10	9	9	9.99	5.03	
		2	10	10	10	10	10	10	10	10	9.92	5.15	
		3	10	10	10	10	10	10	10	11	9.59	5.57	
	V: 200	4	10	10	10	10	10	10	10	12	9.30	5.51	
3	C: 25	1	10	10	10	9	9	9	9	13	9.60	5.40	
		2	10	10	10	10	10	10	10	14	9.26	5.01	
		3	10	10	10	10	10	10	10	15	10.03	5.73	
	V: 400	4	10	10	10	10	10	9	9	16	8.92	5.26	
4	C: 50	1	10	10	10	10	10	10	9	17	9.73	5.18	
		2	10	10	10	10	10	10	9	18	9.17	5.39	
		3	10	10	10	10	10	10	10	19	10.67	6.37	
	V: 800	4	10	10	10	10	10	10	10	20	9.25	5.20	
5	C: 100	1	10	10	10	10	10	10	10	21	11.42	7.01	
		2	10	10	10	10	10	10	10	22	10.47	6.41	
		3	10	10	10	10	10	10	10	23	10.51	6.30	
	V: 1600	4	10	10	10	10	10	9	9	24	10.57	6.62	
Renewal/Count Time:			1355	1400	1430	1415	1320	1355	1330[3]	Tare Wt: Date: 5/17/05 Calib. Check (10 mg[4]) 9.97 Init: LL			
Initials:			CA	PB	PB	CA	LL	CA	CA	Tot. Wt: Date: 5/18/05 Calib. Check (10 mg[4]): 9.99 Init: PB			

[1] C = Concentration; V = Volume (ml) sample added to total volume of 1600 ml for preparation of solutions. [2]See printout of statistical analyses for biomass weights by replicate. [3]Time of final count = test end time. [4]True value/estimated uncertainty of calibration weight (NIST traceable annual certification) = 10.00 / 0.05 mg

Test ID URSR05U1 UV -CPP

Larval Fish Growth and Survival Test-7 Day Survival

Start Date:	5/10/2005 13:30	Test ID:	URSR0501UV	Sample ID:	FAIRFAX TERMINAL 001
End Date:	5/17/2005 13:30	Lab ID:	CBI	Sample Type:	UV TREATED
Sample Date:		Protocol:	EPAF 94-EPA Freshwater	Test Species:	PP-Pimephales promelas
Comments:					

Conc-%	1	2	3	4
UV CONT	1.0000	0.9000	1.0000	1.0000
6.25	1.0000	0.9000	1.0000	1.0000
12.5	0.9000	1.0000	1.0000	1.0000
25	0.9000	1.0000	1.0000	0.9000
50	0.9000	0.9000	1.0000	1.0000
100	1.0000	1.0000	1.0000	0.9000

			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
UV CONT	0.9750	1.0000	1.3713	1.2490	1.4120	5.942	4		
6.25	0.9750	1.0000	1.3713	1.2490	1.4120	5.942	4	18.00	10.00
12.5	0.9750	1.0000	1.3713	1.2490	1.4120	5.942	4	18.00	10.00
25	0.9500	0.9744	1.3305	1.2490	1.4120	7.072	4	16.00	10.00
50	0.9500	0.9744	1.3305	1.2490	1.4120	7.072	4	16.00	10.00
100	0.9750	1.0000	1.3713	1.2490	1.4120	5.942	4	18.00	10.00

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.01)	0.7631	0.884	-0.7019	-1.2695
Bartlett's Test indicates equal variances (p = 1.00)	0.15084	15.0863		

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Steel's Many-One Rank Test	100	>100		1

ToxCalc v5.0.23

Reviewed by: PD

Larval Fish Growth and Survival Test-7 Day Biomass

Start Date:	5/10/2005 13:30	Test ID:	URSR0501UV	Sample ID:	FAIRFAX TERMINAL 001
End Date:	5/17/2005 13:30	Lab ID:	CBI	Sample Type:	UV TREATED
Sample Date:		Protocol:	EPAF 94-EPA Freshwater	Test Species:	PP-Pimephales promelas
Comments:					

Conc-%	1	2	3	4
UV CONT	0.5080	0.4550	0.4090	0.4270
6.25	0.4940	0.3750	0.4070	0.4020
12.5	0.4960	0.4770	0.4020	0.3790
25	0.4200	0.4250	0.4300	0.3660
50	0.4550	0.3780	0.4300	0.4050
100	0.4410	0.4060	0.4210	0.3950

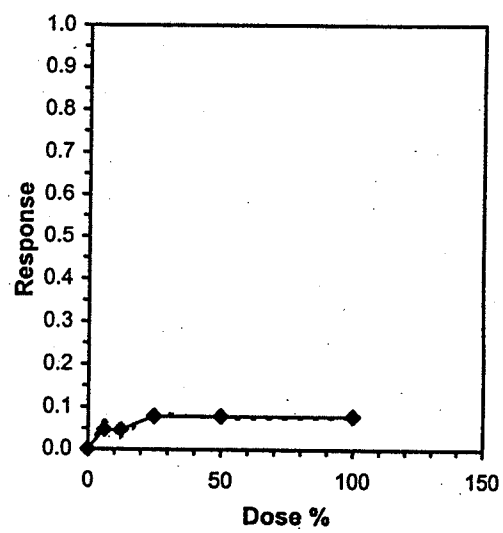
			Transform: Untransformed						1-Tailed		Isotonic	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD	Mean	N-Mean
UV CONT	0.4498	1.0000	0.4498	0.4090	0.5080	9.605	4				0.4498	1.0000
6.25	0.4195	0.9327	0.4195	0.3750	0.4940	12.304	4	1.041	2.410	0.0700	0.4290	0.9539
12.5	0.4385	0.9750	0.4385	0.3790	0.4960	12.941	4	0.387	2.410	0.0700	0.4290	0.9539
25	0.4103	0.9122	0.4103	0.3660	0.4300	7.259	4	1.360	2.410	0.0700	0.4143	0.9213
50	0.4170	0.9272	0.4170	0.3780	0.4550	7.927	4	1.127	2.410	0.0700	0.4143	0.9213
100	0.4158	0.9244	0.4158	0.3950	0.4410	4.792	4	1.170	2.410	0.0700	0.4143	0.9213

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.96637	0.884	0.34766	-0.655
Bartlett's Test indicates equal variances (p = 0.62)	3.51344	15.0863		

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU	MSDu	MSDp	MSB	MSE	F-Prob	df
Dunnett's Test	100	>100		1	0.07001	0.15567	0.00095	0.00169	0.72562	5, 18

Linear Interpolation (200 Resamples)

Point	%	SD	95% CL(Exp)	Skew
IC05	13.981			
IC10	>100			
IC15	>100			
IC20	>100			
IC25	>100			
IC40	>100			
IC50	>100			



ToxCalc v5.0.23

Reviewed by: PP

EFFLUENT SAMPLE & DILUTION WATER CHARACTERISTICS
FRESHWATER TESTS

COASTAL BIOANALYSTS, INC
FORM ETF2031B EFFECTIVE DATE: 10/17/02

INITIAL SAMPLE CHARACTERIZATION[1]

Sample Bottle[2]	A-1	B-1	C-1	
Tot. Resid. Chlorine (mg/l)	0.1	0.1	0.1	
Hardness (mg/l $CaCO_3$)	34	34	40	
Alkalinity (mg/l $CaCO_3$)	24	31	25	
NH_3-N (mg/l)	1.3	<1.0	<1.0	
Color/Appearance[3]	CYSSL	CYSSL	CYSSL	
Obvious Odor?	ND	ND	ND	
Date/Time	5/10 0950	5/11 1005	5/13 1010	
Initials	GA	GB	GB	

NOTES:

SAMPLE PREPARATION MEASUREMENTS (100% concentration)

Sample Bottle	A-1,2	B-1,2	B-3,4	C-1,2	C-2,3	C-4,5	C-6,7	B-3,3
Prep Temperature (°C)	25	25	25	24	25	26	25	25
Conductivity (uS/cm)[4]	111	123	n/a	125	NA	NA	ND	127
D.O. (mg/l) After Warming	8.5	9.0	~~8.7~~ 8.7	9.0	9.4	10.0	10.2	8.7
Aeration Time (min)	0.5	1.0	1.0	1.5	2.0	2.5	2.5	0.5
Adjusted D.O.	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2
Final pH (S.U.)	7.12	7.10	7.27	7.13	7.23	7.50	7.11	7.07
Tot. Resid. Chlorine (mg/l)[5]	~~0.2~~ 0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Sample Filtered (60 um)?	Yes	Yes	yes	Yes	Yes	yes	Yes	NA
Date/Time	5/10 1045	5/11 1115	5/12 1010	5/13 1130	5/14 1130	5/15 1120	5/16 1030	5/11 1140
Initials	GB	GA	W	GA	GB	W	GB	GB

DILUTION WATER CHARACTERISTICS

Vat Number	1	1	2	2	1	1	1	2
Temperature (°C)	25	24	25	25	25	25	25	25
Conductivity (uS/cm)	263	269	285	274	282	281	280	280
D.O. (mg/l)	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2
pH (S.U.)	7.75	7.75	7.61	7.70	7.89	7.77	7.76	7.69
Hardness (mg/l $CaCO_3$)	84	84	82	82	92	92	92	84
Alkalinity (mg/l $CaCO_3$)	65	65	64	64	63	63	63	65
Date/Time	5/10 1000	5/11 0835	5/12 0840	5/13 0925	5/14 0945	5/15 0950	5/16 0905	5/11 1100
Initials	GB	GA	W	GA	GB	W	GA	GB

[1]Q.L. = Quantification Limit, N.D. = Not Determined/Measured, NA = Not Applicable
[2]Bottle number = 9th or 9th and 10th characters of Laboratory Sample I.D. (e.g. "A", "A-1", "A-2"; see SOP SPLS202)
[3]C-Clear, O-Opaque, T-Turbid, S-Solids (Sl-Slight, M-Moderate, H-Heavy), Y-Yellow, B-Brown, Bl-Black, G-Green
[4]Conductivity measured on first use of sample only
[5]Total residual chlorine measured after sample prep only if present in initial sample characterization

PROJECT I.D. URSR0501
(First 8 characters of Laboratory Sample ID)

SAMPLE INFORMATION/CHAIN-OF-CUSTODY (FORM ETF2011B Rev. 5/15/02)

Coastal Bioanalysts, Inc.

Note: It is the responsibility of the sampler to insure that samples are properly collected, preserved (0-6° C) and shipped. Sample hold time is 36 h and samples must be received in the lab no later than noon the day following collection to allow for sufficient processing time. Additional costs may be incurred by improper sampling preservation or shipping. Questions? Call 804-694-8285

Laboratory Sample ID (Lab Use Only): U R 5 R 0 5 0 1 - A

A A A A Y Y N N A

FACILITY INFORMATION

CLIENT NAME	URS Corporation	FACILITY	Fairfax Terminal
NPDES PERMIT NO	VPDES Permit Number VA0001872	OUTFALL # OR LOCATION	001
SAMPLE CHLORINATED?	SAMPLE DECHLORINATED?	IF CHLORINE PRESENT UPON ARRIVAL AT LAB, DOES PERMIT SPECIFY DECHLORINATION OF SAMPLES?	

TESTS REQUESTED:

SPECIES OR EPA METH #	C. dubia	ACUTE ☐	CHRONIC ☑
SPECIES OR EPA METH #	P. promelas	ACUTE ☐	CHRONIC ☑

OTHER TESTS:

*A SPECIFIC DILUTION SERIES MAY BE REQUIRED IN THE DISCHARGE PERMIT. A DEFAULT SERIES OF 100, 50, 25, 12.5 AND 6.3%, OR CONCENTRATIONS USED IN PRIOR TESTING OF THIS OUTFALL, WILL BE USED UNLESS INDICATED OTHERWISE. IF IN DOUBT PLEASE ATTACH A COPY OF APPLICABLE PERMIT PAGES.

GRAB SAMPLE INFORMATION

SAMPLE DATE	SAMPLE TIME	SAMPLE VOLUME

COMPOSITE SAMPLE INFORMATION

COMPOSITE START DATE & TIME	5-8-05 12:00		COMPOSITE END DATE & TIME	5-9-05 11:00
TIME PROPORTIONAL COMPOSITE INFO	NUMBER SUBSAMPLES 24	VOL (ml) SUBSAMPLES 620	TIME INCREMENT 1 hr.	TOTAL VOLUME 14,880 ml.
FLOW PROPORTIONAL COMPOSITE INFO*	SET VOLUME SUBSAMPLE		SET VOLUME FLOW	TOTAL VOLUME

*FOR VARIABLE VOLUME SUBSAMPLES BASED ON FLOW (e.g. COMPOSITING "BY HAND") ATTACH SAMPLE AND FLOW INFORMATION ON SEPARATE SHEET

FIELD MEASUREMENTS

DISCHARGE TEMP (°C)	SAMPLE TEMP (°C)	DISCHARGE pH (S.U.)	SAMPLE TRC (mg/l)	DATE/TIME (e.g. 02/23/00 1835)	INITIALS
22.8	5.0	6.44	0	11:07 5/9/05	MLP

MEASUREMENTS MUST BE TAKEN WITHIN 15 MINUTES OF SAMPLE OR LAST SUBSAMPLE COLLECTION.

COMMENTS:

Mark L. Johnson / URS Corporation — Mark L. Johnson — 5-9-05

(PRINTED NAME/AFFILIATION SAMPLER/ANALYST) (SIGNATURE) (DATE)

RELINQUISHED BY	DATE	TIME	RECEIVED BY
Mark L. Johnson /	5-9-05	15:00	
Mark L. Johnson	5/10/05	0945	B. Barry

SHIPPING METHOD: UPS____ FEDEX X HAND DELIVERY____ OTHER____

CONDITION ON ARRIVAL: ACCEPTABLE ✓ OTHER____

SAMPLE ARRIVAL TEMP: (°C) 3 ARRIVED ON ICE? YES ✓ NO____

SAMPLE INFORMATION/CHAIN-OF-CUSTODY (FORM ETF2011B Rev. 5/15/02)

Coastal Bioanalysts, Inc.

Note: It is the responsibility of the sampler to insure that samples are properly collected, preserved (~0-6° C) and shipped. Sample hold time is 36 h and samples must be received in the lab no later than noon the day following collection to allow for sufficient processing time. Additional costs may be incurred by improper sampling preservation or shipping. Questions? Call 804-694-8285

Laboratory Sample ID (Lab Use Only): U R S R 0 5 U 1 - B
A A A A Y Y N N A

FACILITY INFORMATION

CLIENT NAME	URS Corporation	FACILITY	Fairfax Terminal
NPDES PERMIT NO	VPDES Permit Number VA0001872	OUTFALL # OR LOCATION	001
SAMPLE CHLORINATED?	SAMPLE DECHLORINATED?	IF CHLORINE PRESENT UPON ARRIVAL AT LAB, DOES PERMIT SPECIFY DECHLORINATION OF SAMPLES?	

TESTS REQUESTED:			
SPECIES OR EPA METH #	C. dubia	ACUTE ☑	CHRONIC ☑
SPECIES OR EPA METH #	P. pinnifes	ACUTE ☑	CHRONIC ☑
OTHER TESTS:			

*A SPECIFIC DILUTION SERIES MAY BE REQUIRED IN THE DISCHARGE PERMIT. A DEFAULT SERIES OF 100, 50, 25, 12.5 AND 6.3%, OR CONCENTRATIONS USED IN PRIOR TESTING OF THIS OUTFALL, WILL BE USED UNLESS INDICATED OTHERWISE. IF IN DOUBT PLEASE ATTACH A COPY OF APPLICABLE PERMIT PAGES.

GRAB SAMPLE INFORMATION

SAMPLE DATE	SAMPLE TIME	SAMPLE VOLUME

COMPOSITE SAMPLE INFORMATION

COMPOSITE START DATE & TIME	5-9-05 12:35	COMPOSITE END DATE & TIME	5-10-05 11:35	
TIME PROPORTIONAL COMPOSITE INFO	NUMBER SUBSAMPLES 24	VOL (ml) SUBSAMPLES 1240	TIME INCREMENT 1 hr.	TOTAL VOLUME 29,760 ml.
FLOW PROPORTIONAL COMPOSITE INFO*	SET VOLUME SUBSAMPLE	SET VOLUME FLOW		TOTAL VOLUME

*FOR VARIABLE VOLUME SUBSAMPLES BASED ON FLOW (e.g. COMPOSITING "BY HAND") ATTACH SAMPLE AND FLOW INFORMATION ON SEPARATE SHEET

FIELD MEASUREMENTS

DISCHARGE TEMP (°C)	SAMPLE TEMP (°C)	DISCHARGE pH (S.U.)	SAMPLE TRC (mg/l)	DATE/TIME (e.g. 02/23/00 1835)	INITIALS
23.1	4.8	6.41	0	11:40 5/10/05	MLJ

MEASUREMENTS MUST BE TAKEN WITHIN 15 MINUTES OF SAMPLE OR LAST SUBSAMPLE COLLECTION.

COMMENTS:

Mark L. Johnson / URS Corporation — Mark L. Johnson — 5-10-05
(PRINTED NAME/AFFILIATION SAMPLER/ANALYST) (SIGNATURE) (DATE)

RELINQUISHED BY	DATE	TIME	RECEIVED BY
Mark L. Johnson /	5-10-05	15:00	
Mark L. Johnson	5/11/05	1000	D. Bugg

SHIPPING METHOD: UPS ____ FEDEX X HAND DELIVERY ____ OTHER ____

CONDITION ON ARRIVAL: ACCEPTABLE ✓ OTHER ____

SAMPLE ARRIVAL TEMP: (°C) 2 ARRIVED ON ICE? YES ✓ NO ____

SAMPLE INFORMATION/CHAIN-OF-CUSTODY (FORM ETF2011B Rev. 5/15/02)

CBI
Coastal Bioanalysts, Inc.

'ote: It is the responsibility of the sampler to insure that samples are properly collected, preserved 0-6° C) and shipped. Sample hold time is 36 h and samples must be received in the lab no later than noon the day following collection to allow for sufficient processing time. Additional costs may be incurred by improper sampling preservation or shipping. Questions? Call 804-694-8285

Laboratory Sample ID (Lab Use Only): U R 5 R 0 5 0 1 - C
A A A A Y Y N N A

FACILITY INFORMATION

CLIENT NAME	URS Corporation	FACILITY	Fairfax Terminal
NPDES PERMIT NO	VPDES Permit Number VA0001872	OUTFALL # OR LOCATION	001
SAMPLE CHLORINATED?	SAMPLE DECHLORINATED?	IF CHLORINE PRESENT UPON ARRIVAL AT LAB, DOES PERMIT SPECIFY DECHLORINATION OF SAMPLES?	

TESTS REQUESTED:
- SPECIES OR EPA METH #: C. dubia — ACUTE ☐ CHRONIC ☑
- SPECIES OR EPA METH #: P. promelas — ACUTE ☐ CHRONIC ☑

OTHER TESTS:

*A SPECIFIC DILUTION SERIES MAY BE REQUIRED IN THE DISCHARGE PERMIT. A DEFAULT SERIES OF 100, 50, 25, 12.5 AND 6.3%, OR CONCENTRATIONS USED IN PRIOR TESTING OF THIS OUTFALL, WILL BE USED UNLESS INDICATED OTHERWISE. IF IN DOUBT PLEASE ATTACH A COPY OF APPLICABLE PERMIT PAGES.

GRAB SAMPLE INFORMATION

SAMPLE DATE	SAMPLE TIME	SAMPLE VOLUME

COMPOSITE SAMPLE INFORMATION

COMPOSITE START DATE & TIME	5-11-05 12:00		COMPOSITE END DATE & TIME	5-12-05 11:00	
TIME PROPORTIONAL COMPOSITE INFO	NUMBER SUBSAMPLES 24	VOL (ml) SUBSAMPLES 1240	TIME INCREMENT 1 hr.	TOTAL VOLUME 29,760 ml.	
FLOW PROPORTIONAL COMPOSITE INFO*	SET VOLUME SUBSAMPLE		SET VOLUME FLOW	TOTAL VOLUME	

*FOR VARIABLE VOLUME SUBSAMPLES BASED ON FLOW (e.g. COMPOSITING "BY HAND") ATTACH SAMPLE AND FLOW INFORMATION ON SEPARATE SHEET

FIELD MEASUREMENTS

DISCHARGE TEMP (°C)	SAMPLE TEMP (°C)	DISCHARGE pH (S.U.)	SAMPLE TRC (mg/l)	DATE/TIME (e.g. 02/23/00 1835)	INITIALS
24.3	5.1	6.46	0	5/12/05 11:08	MLJ

MEASUREMENTS MUST BE TAKEN WITHIN 15 MINUTES OF SAMPLE OR LAST SUBSAMPLE COLLECTION.

COMMENTS:

Mark L. Johnson / URS Corporation — Mark L. Johnson — 5-12-05
(PRINTED NAME/AFFILIATION SAMPLER/ANALYST) (SIGNATURE) (DATE)

RELINQUISHED BY	DATE	TIME	RECEIVED BY
Mark L. Johnson /	5-12-05	16:00	
Mark L. Johnson	5/13/05	1000	D. Bright

SHIPPING METHOD: UPS ____ FEDEX X HAND DELIVERY ____ OTHER ____

CONDITION ON ARRIVAL: ACCEPTABLE ✓ OTHER ____

SAMPLE ARRIVAL TEMP: (°C) 2 ARRIVED ON ICE? YES ✓ NO ____

Client: URS Corporation
Project ID: URSR0601
Client Sample ID: BP Amoco/Fairfax Terminal Outfall 001
Permit No: VA0001872
Sample Period: 7/10/06 to 7/13/06

Coastal Bioanalysts, Inc.

Report of Analysis: Whole Effluent Toxicity (WET)

Submitted To:	Prepared By:
Mr. Mark Colonna URS Corporation 13825 Sunrise Valley Drive Suite 250 Herndon, VA 20171-4672	Coastal Bioanalysts, Inc. 6400 Enterprise Court Gloucester, VA 23061 (804) 694-8285 www.coastalbio.com Contact: Peter F. De Lisle, Technical Director

Acute Test Results*

Species-Test Method	48-h LC50	95% C.L.	$T.U._{Ac}$	NOAEC
C. dubia EPA 2002.0	>100	N/A	<1.00	100

Chronic Test Results*

Species-Test Method	Endpoint	NOEC	LOEC	ChrV	PMSD	$T.U._C$	IC25	48-h LC50	LC50 95% C.L.	$T.U._{Ac}$
C. dubia EPA 1002.0	Survival	100	>100	>100	N/A	1.00	N/A	>100	N/A	<1.00
	Reproduction	100	>100	>100	36	1.00	>100	N/A	N/A	N/A

Chronic Test Results* (*P. promelas* side-by-side UV treated and untreated)

Species-Test Method	Endpoint	NOEC	LOEC	ChrV	PMSD	$T.U._C$	IC25	48-h LC50	LC50 95% C.L.	$T.U._{Ac}$
P. promelas EPA 1001.0 UV	Survival	100	>100	>100	N/A	1.00	N/A	>100	N/A	<1.00
	Biomass	100	>100	>100	17	1.00	>100	N/A	N/A	N/A
P. promelas EPA 1001.0	Survival	100	>100	>100	N/A	1.00	N/A	>100	N/A	<1.00
	Biomass	100	>100	>100	16	1.00	>100	N/A	N/A	N/A

*Note: Details regarding test conduct and data analysis provided in attached bench sheets and printouts as applicable.

Acute Test Biological Summary Data

Species-Method	Endpoint	Sample Concentration (%)					
		Control	6.3	13	25	50	100
C. dubia EPA 2002.0	Survival (%):	100	100	100	100	100	100

Chronic Test Biological Summary Data

Species-Method	Endpoint	Sample Concentration (%)					
		Control	6.3	13	25	50	100
C. dubia EPA 1002.0	Survival (%):	100	100	100	100	100	90
	Repro (# young):	16.7	14.6	15.2	16.2	18.5	15.0

Chronic Test Biological Summary Data

Species-Method	Endpoint	Sample Concentration (%)					
		Control	6.3	13	25	50	100
P. promelas UV Treated EPA 1000.0	Survival (%):	93	95	95	98	98	88
	Biomass (mg):	0.489	0.513	0.494	0.468	0.411	0.412
P. promelas Untreated EPA 1000.0	Survival (%):	98	90	98	95	95	98
	Biomass (mg):	0.435	0.382	0.421	0.466	0.485	0.455

EPA Laboratory ID: VA01116

Client: URS Corporation
Project ID: URSR0601
Client Sample ID: BP Amoco/Fairfax Terminal Outfall 001
Permit No: VA0001872
Sample Period: 7/10/06 to 7/13/06

Coastal Bioanalysts, Inc.

Test Information Species-Method	Start Date/Time End Date/Time	Organism Source	Hatch/Harvest Date/Time	Acclimation Temp.	Acclimation Water	Test Aerated?
C. dubia EPA 2002.0	7/12/06 1405 7/14/06 1420	CBI Stock	7/11/06 1610 7/12/06 0925	25° C	Mod. Hard Syn. FW	No
C. dubia EPA 1002.0	7/11/06 1350 7/16/06 1250	CBI Stock	7/10/06 1650 7/10/06 2200	25° C	Mod. Hard Syn. FW	No
P. promelas UV Treated	7/11/06 1330 7/18/06 1245	Ches. Cultures	7/10/06 1530 7/11/06 0800	25° C	Mod. Hard Syn. FW	No
P. promelas Untreated	7/11/06 1330 7/18/06 1230	Ches. Cultures	7/10/06 1530 7/11/06 0800	25° C	Mod. Hard Syn. FW	No

Sample/Dilution Water Data	Acute Test		Chronic Test			
			Sample		Dilution Water*	
Water Quality Parameter (Units)	Sample	Dilution* Water	Mean	Std. Dev.	Mean	Std. Dev.
Arrival Temperature (°C)	3	N/A	3	0.6	N/A	N/A
Use Temperature (°C)	25	25	25	0.4	25	0
Conductivity (µS/cm)	60	269	61	1	286	12
pH (S.U.)	7.28	7.61	7.03	0.08	7.69	0.06
Dissolved Oxygen (mg/l)	8.2	8.2	8.2	0	8.2	0
Total Hardness (mg/l as $CaCO_3$)	28	80	25	4.2	83	3.8
Alkalinity (mg/l as $CaCO_3$)	23	59	24	1.5	59	1.8
Total Residual Chlorine (mg/l)	<Q.L.	N/A	<Q.L.	0	N/A	N/A
Ammonia (mg/l NH_3-N)	<1.0	N/A	<1.0	0	N/A	N/A

*Dilution water = Moderately hard synthetic freshwater made with ASTM Type I deionized water

Sample Aging/Use/Pretreatment				
CBI Sample I.D.	Collection Date/Time	Date(s)/Time(s) 1st Used in Tests	Date(s)/Time(s) Used in Renewals	Sample Adjustments
URSR0601-A	7/10/06 1200	7/11/06 1330- 1350	N/A	Aerated 2 min UV Treated
URSR0601-B	7/11/06 1400	7/12/06 1235-1400 7/12/06 1405*	7/13/06 1200-1405	Aerated 1-2 min UV Treated
URSR0601-C	7/13/06 0805	7/14/06 1300-1430	7/15/06 1145-1250 7/16/06 1135-1240 7/17/06 1135-1150	Aerated 2.5-3 min UV Treated

*acute test

Acute Test Water Quality (Mean/Std. Dev.)						
Test:	*C. dubia* 2002.0					
% Conc:	Cont.	6.3	13	25	50	100
Temp. (°C)	25 0	25 0	25 0	25 0	25 0	25 0
D.O. (mg/l)	8.1 0.1	8.1 0.1	8.1 0.1	8.1 0.1	8.1 0.1	8.0 0.2
pH (S.U.)	7.63 0.05	7.60 0.06	7.58 0.06	7.52 0.07	7.45 0.08	7.21 0.05

EPA Laboratory ID: VA01116

Client: URS Corporation
Project ID: URSR0601
Client Sample ID: BP Amoco/Fairfax Terminal Outfall 001
Permit No: VA0001872
Sample Period: 7/10/06 to 7/13/06

Coastal Bioanalysts, Inc.

Chronic Test Water Quality (Mean/Std. Dev.)						
Test:	*C. dubia* 1002.0					
% Conc:	Cont.	6.3	13	25	50	100
Temp. (°C)	25 0	25 0	25 0	25 0	25 0	25 0
D.O. (mg/l)	8.1 0.1	8.1 0.2	8.1 0.2	8.0 0.3	7.9 0.3	7.9 0.4
pH (S.U.)	7.40 0.15	7.38 0.12	7.38 0.12	7.32 0.11	7.20 0.19	6.85 0.28
Cond. (µS/cm)	282 10	264 14	251 14	225 13	170 8.2	62 2.6

Chronic Test Water Quality (Mean/Std. Dev.)												
Test:	*P. promelas* 1000.0-UV Treated						*P. promelas* 1000.0-Untreated					
% Conc:	Cont.	6.3	13	25	50	100	Cont.	6.3	13	25	50	100
Temp. (°C)	25 0	25 0	25 0	25 0	25 0	25 0	25 0	25 0	25 0	25 0	25 0	25 0
D.O. (mg/l)	8.1 0.1	8.1 0.2	8.0 0.2	7.9 0.3	7.9 0.4	7.8 0.5	8.1 0.1	8.0 0.2	8.0 0.2	7.9 0.3	7.8 0.3	7.7 0.4
pH (S.U.)	7.52 0.16	7.46 0.16	7.44 0.15	7.39 0.14	7.30 0.12	6.90 0.20	7.46 0.20	7.42 0.19	7.38 0.18	7.33 0.17	7.23 0.14	6.88 0.18
Cond. (µS/cm)	284 15	269 11	255 11	229 10	174 7.1	60 3.2	278 17	263 15	250 13	224 11	165 8.1	61 4.7

Acute Test QA/QC Reference Toxicant: KCl Units: mg/l Test Organism Source: CBI Stock Cultures					
Species-Method (Ref. Test Date)	Data Source	% Control Survival	48-h LC50	95% C.L./A.L. for LC50	RTT in Control?
C. dubia 2002.0 (7/17/06-7/19/06)	RTT	100	550	508-596	Yes
	CC	100	569	514-624	
P. promelas 2000.0 (7/17/06-7/19/06)	RTT	100	910	868-955	Yes
	CC	99	890	788-993	

Chronic Test QA/QC Reference Toxicant: KCl Units: mg/l Test Organism Source: CBI Stock Cultures									
Species-Method (Ref. Test Date)	Data Source	% Survival		Reproduction (# Young)					RTT in Control?
		Cont.	NOEC	Cont.	NOEC	PMSD	IC25	IC25 A.L.	
C. dubia 1002.0 (7/3/06-7/9/06)	RTT	100	500	22.6	250	22	299	N/A	Yes
	CC	99	500	22.0	250	22	337	267-407	

Chronic Test QA/QC Reference Toxicant: KCl Units: mg/l Test Organism Source: Ches. Cultures									
Species-Method (Ref. Test Date)	Data Source	% Survival		Reproduction (Biomass (mg)					RTT in Control?
		Cont.	NOEC	Cont.	NOEC	PMSD	IC25	IC25 A.L.	
P. promelas 1000.0 (7/11/06-7/18/06)	RTT	90	500	0.47	500	17	650	N/A	Yes
	CC	98	500	0.57	500	17	600	552-648	

Note: RTT = Reference Toxicant Test, CC = Control Chart, Cont. = Control group.

The results of analysis contained within this report relate only to the sample as received in the laboratory. This report shall not be reproduced except in full without written approval from the laboratory.

EPA Laboratory ID: VA01116

Client: URS Corporation
Project ID: URSR0601
Client Sample ID: BP Amoco/Fairfax Terminal Outfall 001
Permit No: VA0001872
Sample Period: 7/10/06 to 7/13/06

Coastal Bioanalysts, Inc.

APPROVED:

Peter F. De Lisle, Ph.D.
Technical Director

7/26/06
Date

GLOSSARY OF TERMS AND ABBREVIATIONS

A.L. (Acceptance Limits): The results of a given reference toxicant test are compared to the control chart mean value ± 2 standard deviations. These limits approximate the 95% probability limits for the "true" reference toxicant value.

Chronic Value (ChrV): The geometric mean of the NOEC and LOEC. Units are same as test concentration units.

C.L. (Confidence Limits): These are the probability limits, based on the data set and statistical model employed, that the "true value" lies within the limits specified. Typically limits are based on 95% or 99% probabilities.

Control chart: A cumulative summary chart of results from QC tests with reference toxicants. The results of a given reference toxicant test are compared to the control chart mean value and 95% Acceptance Limits (A.L.) (mean ± 2 standard deviations).

IC25: The concentration of sample or chemical, calculated from the data set using statistical models, causing a 25% reduction in test organism growth, reproduction, etc. The lower the IC25, the more toxic the chemical or sample. Units are same as test concentration units.

LC50: The concentration of sample or chemical, calculated from the data set using statistical models, causing a 50% reduction in test organism survival. The lower the LC50, the more toxic the chemical or sample. Units are same as test concentration units. Note: The LC50 value must always be associated with the duration of exposure. Thus 48-h LC50, 96-h LC50, etc. are calculated.

LOEC: Lowest-observable-effect-concentration. The lowest concentration of sample or chemical in a chronic test dilution series in which the test organisms exhibit a statistically significant reduction in any of the test end points (e.g. growth, survival, reproduction) compared to control organisms. Units are same as test concentration units.

PMSD: Percent Minimum Significant Difference: The minimum difference which can exist between a test treatment and the controls in a particular test and be statistically significant; a measure of test sensitivity. The lower the PMSD the more sensitive the test.

N/A: Not applicable.

N/D: Not determined or measured.

NOAEC: No-observable-acute-effect-concentration. The highest concentration of sample or chemical in an acute test dilution series in which the test organisms exhibit no statistically significant reduction in the test end point (e.g. survival) compared to control organisms. Units are same as test concentration units.

NOEC: No-observable-effect-concentration. The highest concentration of sample or chemical in a chronic test dilution series in which the test organisms exhibit no statistically significant reduction in any of the test end points (e.g. growth, survival, reproduction) compared to control organisms. Some regulatory definitions also require that the NOEC be less than the LOEC. Units are same as test concentration units.

Q.L.: Quantitation Limit. Level, concentration, or quantity of a target variable (analyte) that can be reported at a specified degree of confidence.

T.U.: Toxic units. Expresses the relative toxicity of an effluent in such a manner that the larger the toxic unit value the more toxic the effluent. $T.U._{Ac} = 100/LC50$. $T.U._{Chr} = 100/NOEC$. A dimensionless unit.

CERIODAPHNIA DUBIA STATIC ACUTE WET TEST (ACD)

COASTAL BIOANALYSTS, INC
FORM ETF1051A EFFECTIVE DATE: 5/15/02

% Effluent	I.D.	Day 0 Live	Day 1 Live	Day 2 Live	Final % Survival
Control	C-1	5	5	5	100
	C-2	5	5	5	
	C-3	5	5	5	
	C-4	5	5	5	
6.25	1-1	5	5	5	100
	1-2	5	5	5	
	1-3	5	5	5	
	1-4	5	5	5	
12.5	2-1	5	5	5	100
	2-2	5	5	5	
	2-3	5	5	5	
	2-4	5	5	5	
25	3-1	5	5	5	100
	3-2	5	5	5	
	3-3	5	5	5	
	3-4	5	5	5	
50	4-1	5	5	5	100
	4-2	5	5	5	
	4-3	5	5	5	
	4-4	5	5	5	
100	5-1	5	5	5	100
	5-2	5	5	5	
	5-3	5	5	5	
	5-4	5	5	5	
	Initials:	GD	PB	GD	
	Count Time:	1405	1015	1420	*Test End Time

NOTES:

Parameter	Treatment I.D.	Day 0	Day 1	Day 2
Temp. (°C)	C	25	25	25
	1	25	25	25
	2	25	25	25
	3	25	25	25
	4	25	25	25
	5	25	25	25
pH (S.U.)	C	7.68	7.62	7.58
	1	7.66	7.55	7.58
	2	7.64	7.55	7.54
	3	7.60	7.47	7.48
	4	7.54	7.39	7.43
	5	7.24	7.24	7.16
D.O. (mg/l)	C	8.2	8.1	8.0
	1	8.2	8.1	8.0
	2	8.2	8.1	8.0
	3	8.2	8.1	8.1
	4	8.2	8.1	8.0
	5	8.2	8.0	7.9
Conduct. (uS/cm)	C	269		265
	1	245		
	2	238		
	3	213		
	4	156		
	5	60		67
Replicate # Meas.:		1	5	3
Initials:		GD	PB	GD
TRC (mg/l) in highest conc. at end of test:				NA

Species: *Ceriodaphnia dubia*

Source: CBI stock cultures ✓

Other: _____

Brood Release: Date/time start: 2/11/06 1600

Date /time end: 2/12/06 0925

Acclimation: Water: Mod. hard syn. FW ✓

Other _____

Temperature (°C): 25

Feeding: Prior to test: YCT/*Selenastrum*
During test: Not Fed

Illumination: 16L:8D 10-20 uE/m²/s

Test chamber size: ✓ 30 _____ ml

Solution volume: ✓ 15 ml _____ ml

Number of replicates/treatment: 4

Initial number of daphnids/replicate: 5

Randomization template number: 8

Set up: Date (Day 0): 2/12/06

Time water added: 1400

Time daphnids added: 1405

Set up by (initials): GD

TEST I.D. UR5RA4A1 ACD

BASELINE TEST INFO – *Ceriodaphnia* 3-BROOD TEST

Coastal Bioanalysts, Inc
Form ETF0051A
Effective Date: 5/15/02

TEST ORGANISM INFO

Species: *Ceriodaphnia dubia*

Source: CBI Stock Cultures

Acclimation: **Water:** Mod. hard syn. FW ✓

Other: _____

Temp. (°C): 25

Brood Release: (start date/time) 2/10/06 1650

Brood Release: (end date/time) 2/10/06 2200

Feeding Prior to Test: *Selenastrum*/YCT 1X/day

Feeding During Test: *Selenastrum*/YCT 1X/day

TEST DESIGN

Test Chamber: Borosilicate vial ✓

Other _____

Solution Vol: 15 ml ✓

Other _____

Illumination: 16:8 L:D 10-20 uE/m²/s

Number of Replicates/Concentration: 10

Initial Number of Daphnids/Replicate: 1

Randomization Template No. 15

TEST SET UP (Day 0)

Set Up Date: 2/11/06

Set Up By: LM

Time Water Added: 1340

Time Animals Added: 1350

NOTES

Test I.D. UNSR06 01 -CCD

WATER QUALITY DATA – *Ceriodaphnia dubia* 3-BROOD TEST COASTAL BIOANALYSTS, INC FORM ETF0054A EFFECTIVE DATE: 5/15/02

Parameter	Treatment	Day 0 Initial	Day 1 Final	Day 1 Initial	Day 2 Final	Day 2 Initial	Day 3 Final	Day 3 Initial	Day 4 Final	Day 4 Initial	Day 5 Final	Day 5 Initial	Day 6 Final	Day 6 Initial	Day 7 Final
TEMP (°C)	C	25	25	25	25	25	25	25	25	25	25				
	1	25	25	25	25	25	25	25	25	25	25				
	2	25	25	25	25	25	25	25	25	25	25				
	3	25	25	25	25	25	25	25	25	25	25				
	4	25	25	25	25	25	25	25	25	25	25				
	5	25	25	25	25	25	25	25	25	25	25				
pH (S.U.)	C	7.52	7.44	7.46	7.30	7.62	7.27	7.47	7.11	7.49	7.34				
	1	7.49	7.37	7.35	7.26	7.56	7.24	7.44	7.25	7.51	7.20				
	2	7.46	7.31	7.35	7.39	7.57	7.19	7.41	7.29	7.52	7.28				
	3	7.40	7.32	7.30	7.44	7.46	7.17	7.28	7.23	7.42	7.16				
	4	7.32	7.21	7.23	7.52	7.35	7.09	7.10	7.09	7.28	6.81				
	5	6.87	6.84	6.90	7.55	6.99	6.69	6.74	6.63	6.78	6.54				
D.O. (mg/l)	C	8.2	8.1	8.2	8.1	8.2	8.1	8.2	8.0	8.2	7.8				
	1	8.2	8.1	8.2	8.1	8.2	8.1	8.2	8.0	8.2	7.6				
	2	8.2	8.0	8.2	8.0	8.2	8.0	8.2	7.9	8.2	7.6				
	3	8.2	7.8	8.2	7.9	8.2	7.9	8.2	7.7	8.2	7.4				
	4	8.2	7.8	8.2	7.9	8.2	7.7	8.2	7.6	8.2	7.3				
	5	8.2	7.7	8.2	7.8	8.2	7.6	8.2	7.6	8.2	7.2				
COND (uS/cm)	C	282		291		265		287		286					
	1	262		242		264		276		274					
	2	247		230		253		262		265					
	3	224		205		227		235		236					
	4	165		163		163		179		178					
	5	61		58		65		63		62					
Replicate:		1	5	5	2	2	10	10	7	7	3				
Initials:		GM	GM	GM	PO	PO	GA	GB	JH	JH	JH				

TEST I.D. UR5R0601 -CCD

REPRODUCTION/SURVIVAL DATA – *Ceriodaphnia* 3-BROOD TEST

Coastal Bioanalysts, Inc
Form ETF0053A
Effective Date: 5/15/02

Treatment	REP	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
C	1	0	0	5	7	10		
	2	0	0	4	6	0		
	3	0	0	5	6	8		
	4	0	0	4	7	9		
Lab	5	0	0	5	8	11		
Control	6	0	0	4	6	0		
	7	0	0	4	6	0		
	8	0	0	5	7	0		
	9	0	0	4	6	9		
	10	0	0	4	7	10		
1	1	0	0	3	0	6		
	2	0	0	5	7	0		
	3	0	0	3	7	10		
	4	0	0	4	6	10		
6.25	5	0	0	0	3	0		
Conc.	6	0	0	4	6	8		
	7	0	0	4	7	0		
	8	0	0	4	7	0		
2.5	9	0	0	3	8	10		
Spl. Vol.	10	0	0	5	7	9		
2	1	0	0	4	5	8		
	2	0	0	4	5	10		
	3	0	0	3	6	10		
	4	0	0	2	5	6		
12.5	5	0	0	0	3	6		
Conc.	6	0	0	2	6	0		
	7	0	0	3	5	0		
	8	0	0	5	7	11		
25	9	0	0	5	7	8		
Spl. Vol.	10	0	0	4	5	7		

Treatment	REP	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
3	1	0	0	4	4	8		
	2	0	0	4	7	0		
	3	0	0	4	7	11		
	4	0	0	3	8	7		
25	5	0	0	4	7	12		
Conc.	6	0	0	3	2	0		
	7	0	0	4	8	0		
	8	0	0	5	6	0		
50	9	0	0	3	8	10		
Spl. Vol.	10	0	0	5	8	10		
4	1	0	0	3	6	11		
	2	0	0	3	8	0		
	3	0	0	4	6	11		
	4	0	0	5	6	12		
50	5	0	0	5	7	12		
Conc.	6	0	0	3	8	12		
	7	0	0	4	6	0		
	8	0	0	4	8	0		
100	9	0	0	4	8	9		
Spl. Vol.	10	0	0	4	6	10		
5	1	0	0	0 10	–	–	–	
	2	0	0	3	7	0		
	3	0	0	3	6	6		
	4	0	0	3	4	10		
100	5	0	0	5	7	11		
Conc.	6	0	0	5	5	8		
	7	0	0	6	6	3		
	8	0	0	2	7	10		
200	9	0	0	2	6	7		
Spl. Vol.	10	0	0	3	5	10		

	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Count/Renewal Time*:	1235	1330	1430	1250	1250		
Initials:	GM	PB	GM	JH	JH		

*Time of final count (day 6 or 7) = test end time. See printout of statistical analyses for total number of offspring by replicate.

Note: "Spl. Vol." = Volume sample added to total volume of 200 ml for preparation of dilutions.

NOTES:

Test I.D. UT5R0641 -CCD

Ceriodaphnia Survival and Reproduction Test-5 Day Survival

Start Date:	7/11/2006 13:50	Test ID:	URSR0601CD	Sample ID:	FAIRFAX TERMINAL 001
End Date:	7/16/2006 12:50	Lab ID:	CBI	Sample Type:	WW
Sample Date:		Protocol:	EPAF 94-EPA Freshwater	Test Species:	CD-Ceriodaphnia dubia
Comments:					

Conc-%	1	2	3	4	5	6	7	8	9	10
CONTROL	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
6.25	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
12.5	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
25	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
50	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Conc-%	Mean	N-Mean	Resp	Not Resp	Total	N	Fisher's Exact P	1-Tailed Critical
CONTROL	1.0000	1.0000	0	10	10	10		
6.25	1.0000	1.0000	0	10	10	10	1.0000	0.0500
12.5	1.0000	1.0000	0	10	10	10	1.0000	0.0500
25	1.0000	1.0000	0	10	10	10	1.0000	0.0500
50	1.0000	1.0000	0	10	10	10	1.0000	0.0500
100	0.9000	0.9000	1	9	10	10	0.5000	0.0500

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Fisher's Exact Test	100	>100		1

ToxCalc v5.0.23

Reviewed by: PD

Ceriodaphnia Survival and Reproduction Test-Reproduction

Start Date:	7/11/2006 13:50	Test ID:	URSR0601CD	Sample ID:	FAIRFAX TERMINAL 001
End Date:	7/16/2006 12:50	Lab ID:	CBI	Sample Type:	WW
Sample Date:		Protocol:	EPAF 94-EPA Freshwater	Test Species:	CD-Ceriodaphnia dubia
Comments:					

Conc-%	1	2	3	4	5	6	7	8	9	10
CONTROL	22.000	10.000	19.000	20.000	24.000	10.000	10.000	12.000	19.000	21.000
6.25	9.000	12.000	20.000	20.000	3.000	18.000	11.000	11.000	21.000	21.000
12.5	17.000	19.000	19.000	13.000	9.000	8.000	8.000	23.000	20.000	16.000
25	16.000	11.000	22.000	18.000	23.000	5.000	12.000	11.000	21.000	23.000
50	20.000	11.000	21.000	23.000	24.000	23.000	10.000	12.000	21.000	20.000
100	0.000	10.000	15.000	17.000	23.000	18.000	15.000	19.000	15.000	18.000

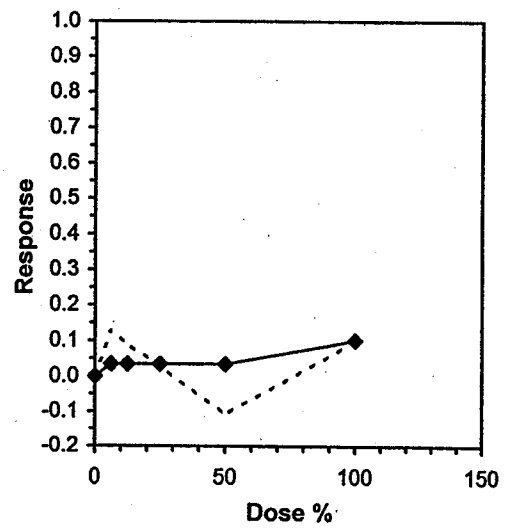
			Transform: Untransformed					Rank	1-Tailed	Isotonic	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical	Mean	N-Mean
CONTROL	16.700	1.0000	16.700	10.000	24.000	33.286	10			16.700	1.0000
6.25	14.600	0.8743	14.600	3.000	21.000	42.737	10	96.50	75.00	16.125	0.9656
12.5	15.200	0.9102	15.200	8.000	23.000	35.605	10	92.50	75.00	16.125	0.9656
25	16.200	0.9701	16.200	5.000	23.000	38.472	10	106.50	75.00	16.125	0.9656
50	18.500	1.1078	18.500	10.000	24.000	28.969	10	118.50	75.00	16.125	0.9656
100	15.000	0.8982	15.000	0.000	23.000	41.693	10	94.50	75.00	15.000	0.8982

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Kolmogorov D Test indicates non-normal distribution (p <= 0.01)	1.22033	1.035	-0.6178	-0.5293
Bartlett's Test indicates equal variances (p = 0.99)	0.49532	15.0863		

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Steel's Many-One Rank Test	100	>100		1

Linear Interpolation (200 Resamples)

Point	%	SD	95% CL	Skew
IC05	61.556			
IC10	98.667			
IC15	>100			
IC20	>100			
IC25	>100			
IC40	>100			
IC50	>100			



ToxCalc v5.0.23

Reviewed by: PP

Ceriodaphnia Survival and Reproduction Test-Reproduction

Start Date:	7/11/2006 13:50	Test ID:	URSR0601CD	Sample ID:	FAIRFAX TERMINAL 001
End Date:	7/16/2006 12:50	Lab ID:	CBI	Sample Type:	WW
Sample Date:		Protocol:	EPAF 94-EPA Freshwater	Test Species:	CD-Ceriodaphnia dubia
Comments:					

Conc-%	1	2	3	4	5	6	7	8	9	10
CONTROL	22.000	10.000	19.000	20.000	24.000	10.000	10.000	12.000	19.000	21.000
6.25	9.000	12.000	20.000	20.000	3.000	18.000	11.000	11.000	21.000	21.000
12.5	17.000	19.000	19.000	13.000	9.000	8.000	8.000	23.000	20.000	16.000
25	16.000	11.000	22.000	18.000	23.000	5.000	12.000	11.000	21.000	23.000
50	20.000	11.000	21.000	23.000	24.000	23.000	10.000	12.000	21.000	20.000
100	0.000	10.000	15.000	17.000	23.000	18.000	15.000	19.000	15.000	18.000

			Transform: Untransformed						1-Tailed	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
CONTROL	16.700	1.0000	16.700	10.000	24.000	33.286	10			
6.25	14.600	0.8743	14.600	3.000	21.000	42.737	10	0.802	2.287	5.989
12.5	15.200	0.9102	15.200	8.000	23.000	35.605	10	0.573	2.287	5.989
25	16.200	0.9701	16.200	5.000	23.000	38.472	10	0.191	2.287	5.989
50	18.500	1.1078	18.500	10.000	24.000	28.969	10	-0.687	2.287	5.989
100	15.000	0.8982	15.000	0.000	23.000	41.693	10	0.649	2.287	5.989

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Kolmogorov D Test indicates non-normal distribution (p <= 0.01)	1.22033	1.035	-0.6178	-0.5293
Bartlett's Test indicates equal variances (p = 0.99)	0.49532	15.0863		

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU	MSDu	MSDp	MSB	MSE	F-Prob	df
Dunnett's Test	100	>100		1	5.98915	0.35863	20.7467	34.3	0.69642	5, 54

FOR PMSD CALCULATION ONLY -PD

ToxCalc v5.0.23

Reviewed by: PD

BASELINE TEST INFO – FATHEAD 7 DAY TEST

Coastal Bioanalysts, Inc
Form ETF0041A
Effective Date: 5/15/02

TEST ORGANISM INFO

Species: *Pimephales promelas*

Source: CBI Stock Cultures: _____

Other: CC

Hatch Date/Time: 7/10/06 1530 (start)

Hatch Date/Time: 7/11/06 0800 (end)

Acclimation: **Water:** Mod. hard syn. FW ✓

Other: _____

Temp. (°C): 25

Feeding Prior to Test: *Artemia ad libitum* 2X/day

Feeding During Test: *Artemia* 0.15 g/rep 2X/day

Arrival Date: (non-CBI) 7/11/06

TEST DESIGN

Test Chamber: 1000 ml beaker ✓

600 ml beaker _____

Solution Vol: 500 ml ✓

Other _____

Illumination: 16:8 L:D 10-20 uE/m²/s

Number of Replicates/Concentration: 4

Initial Number of Fish/Replicate: 10

Randomization Template No. 2, 8, 11, 12

TEST SET UP (Day 0)

Set Up Date: 7/11/06

Set Up By: PD

Time Water Added: 1310

Time Animals Added: 1330

NOTES

Spl exposed to FW UV 1 hour prior to use

Test I.D. URSR0601 UV -CPP

WATER QUALITY DATA – *Pimephales promelas* 7-day Larval Test COASTAL BIOANALYSTS, INC FORM ETF0042A EFFECTIVE DATE: 5/15/02

Parameter	Treatment	Day 0 Initial	Day 1 Final	Day 1 Initial	Day 2 Final	Day 2 Initial	Day 3 Final	Day 3 Initial	Day 4 Final	Day 4 Initial	Day 5 Final	Day 5 Initial	Day 6 Final	Day 6 Initial	Day 7 Final
TEMP (°C)	C	25	25	25	25	25	25	25	25	25	25	25	25	25	25
	1	25	25	25	25	25	25	25	25	25	25	25	25	25	25
	2	25	25	25	25	25	25	25	25	25	25	25	25	25	25
	3	25	25	25	25	25	25	25	25	25	25	25	25	25	25
	4	25	25	25	25	25	25	25	25	25	25	25	25	25	25
	5	25	25	25	25	25	25	25	25	25	25	25	25	25	25
pH (S.U.)	C	7.73	7.54	7.75	7.47	7.51	7.45	7.58	7.29	7.60	7.34	7.60	7.36	7.49	7.25
	1	7.68	7.51	7.50	7.40	7.62	7.35	7.54	7.25	7.60	7.30	7.60	7.30	7.49	7.22
	2	7.56	7.42	7.46	7.34	7.62	7.34	7.56	7.24	7.60	7.27	7.60	7.33	7.60	7.21
	3	7.49	7.42	7.40	7.30	7.55	7.32	7.54	7.19	7.52	7.25	7.55	7.22	7.55	7.18
	4	7.35	7.34	7.27	7.22	7.40	7.29	7.52	7.15	7.30	7.25	7.34	7.14	7.49	7.13
	5	6.95	7.04	6.92	7.18	7.00	6.90	7.22	6.60	6.86	6.89	6.88	6.65	7.02	6.62
D.O. (mg/l)	C	8.2	8.1	8.2	8.1	8.2	8.0	8.2	7.9	8.2	8.0	8.2	8.0	8.2	8.0
	1	8.2	8.1	8.2	8.1	8.2	7.9	8.2	7.7	8.2	7.9	8.2	7.8	8.2	7.8
	2	8.2	8.1	8.2	8.1	8.2	7.8	8.2	7.7	8.2	7.7	8.2	7.6	8.2	7.7
	3	8.2	8.0	8.2	8.0	8.2	7.6	8.2	7.5	8.2	7.4	8.2	7.4	8.1	7.7
	4	8.2	8.1	8.2	8.0	8.2	7.6	8.2	7.4	8.2	7.2	8.2	7.4	8.1	7.6
	5	8.2	8.0	8.2	7.9	8.2	7.5	8.2	7.1	8.2	7.0	8.2	7.2	8.0	7.5
COND (uS/cm)	C	292		294		265		262		301		289		288	
	1	276		246		270		274		272		273		275	
	2	260		231		258		259		258		261		261	
	3	232		208		229		233		232		234		235	
	4	179		162		171		173		173		169		184	
	5	55		57		59		63		61		59		64	
Replicate:		1	4	3	1	2	3	4	2	1	1	3	3	4	2
Initials:		PB	GA	OA	PB	OA	GA	PB	GA	OA	PB	OA	CP	GA	CT

TEST I.D. ORSR0601 UV -CPP

SURVIVAL & GROWTH DATA – FATHEAD MINNOW 7 DAY TEST Coastal Analysts, Inc Form ETF0043D Effective Date: 2/3/05

Treatment[1]		Rep No.	Number of Live Fish: Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Fish Dry Weight Data (mg)[2]: Pan #	Tot. Wt.	Tare Wt.	Notes
C	CONTROL UV SFW	1	10	10	9	9	9	9	9	~~24~~ 25	10.15	5.07	
		2	10	9	9	9	9	9	9	~~26~~ 26	12.58	7.10	
		3	10	10	10	10	10	10	10	~~26~~ 27	12.15	6.64	
		4	10	9	9	9	9	9	9	28	10.74	5.24	
1	C: 6.25	1	10	10	9	9	9	9	9	~~28~~ 29	10.89	5.96	
		2	10	10	10	10	9	9	9	~~29~~ 30	10.77	6.26	
		3	10	10	10	10	10	10	10	31	11.27	5.88	
	V: 100	4	10	10	10	10	10	10	10	32	12.58	6.89	
2	C: 12.5	1	10	10	10	10	10	10	10	33	12.33	7.69	
		2	10	10	10	10	10	10	10	34	11.80	7.13	
		3	10	10	10	10	10	10	10	35	11.31	6.47	
	V: 200	4	10	10	8	8	8	8	8	36	11.62	6.02	
3	C: 25	1	10	9	9	9	9	9	9	37	11.27	6.88	
		2	10	10	10	10	10	10	10	38	11.24	6.43	
		3	10	10	10	10	10	10	10	39	10.39	5.87	
	V: 400	4	10	10	10	10	10	10	10	40	12.23	7.22	
4	C: 50	1	10	10	10	10	10	10	10	41	8.75	4.57	
		2	10	10	9	9	9	9	9	42	9.74	6.02	
		3	10	10	10	10	10	10	10	43	9.80	5.60	
	V: 800	4	10	10	10	10	10	10	10	44	10.64	6.30	
5	C: 100	1	10	10	9	9	9	9	9	45	10.72	6.14	
		2	10	10	10	9	9	9	9	46	10.26	6.67	
		3	10	7	7	7	7	7	7	47	10.06	5.57	
	V: 1600	4	10	10	10	10	10	10	10	48	10.49	6.68	
Renewal/Count Time:			1245	1405	1340	1220	1240	1135	1245[3]	Tare Wt: Date: 7/17	Calib. Check (10 mg[4]): 10.00	Init: CT	
Initials:			[illegible]	[illegible]	PB	[illegible]	[illegible]	GB	CT	Tot. Wt: Date: 7/19	Calib. Check (10 mg[4]): 10.00	Init: CT	

[1] C = Concentration; V = Volume (ml) sample added to total volume of 1600 ml for preparation of solutions. [2] See printout of statistical analyses for biomass weights by replicate. [3] Time of final count = test end time. [4] True value/estimated uncertainty of calibration weight (NIST traceable annual certification) = 10.00 / 10.05 mg

Test ID UTSR0601 UV -CPP

Larval Fish Growth and Survival Test-7 Day Survival

Start Date:	7/11/2006 13:30	Test ID:	URSR0601UV	Sample ID:	FAIRFAX TERMINAL 001
End Date:	7/18/2006 12:45	Lab ID:	CBI	Sample Type:	WW
Sample Date:		Protocol:	EPAF 94-EPA Freshwater	Test Species:	PP-Pimephales promelas
Comments:					

Conc-%	1	2	3	4
CONTROL	0.9000	0.9000	1.0000	0.9000
6.25	0.9000	0.9000	1.0000	1.0000
12.5	1.0000	1.0000	1.0000	0.8000
25	0.9000	1.0000	1.0000	1.0000
50	1.0000	0.9000	1.0000	1.0000
100	0.9000	0.9000	0.7000	1.0000

			Transform: Arcsin Square Root						1-Tailed	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
CONTROL	0.9250	1.0000	1.2898	1.2490	1.4120	6.318	4			
6.25	0.9500	1.0270	1.3305	1.2490	1.4120	7.072	4	-0.492	2.410	0.1996
12.5	0.9500	1.0270	1.3358	1.1071	1.4120	11.411	4	-0.556	2.410	0.1996
25	0.9750	1.0541	1.3713	1.2490	1.4120	5.942	4	-0.984	2.410	0.1996
50	0.9750	1.0541	1.3713	1.2490	1.4120	5.942	4	-0.984	2.410	0.1996
100	0.8750	0.9459	1.2253	0.9912	1.4120	14.199	4	0.779	2.410	0.1996

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.91881	0.884	-0.7915	0.4512
Bartlett's Test indicates equal variances (p = 0.63)	3.43725	15.0863		

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU	MSDu	MSDp	MSB	MSE	F-Prob	df
Dunnett's Test	100	>100		1	0.1368	0.14819	0.01239	0.01371	0.49997	5, 18

ToxCalc v5.0.23

Reviewed by: PO

Larval Fish Growth and Survival Test-7 Day Biomass

Start Date:	7/11/2006 13:30	Test ID:	URSR0601UV	Sample ID:	FAIRFAX TERMINAL 001
End Date:	7/18/2006 12:45	Lab ID:	CBI	Sample Type:	WW
Sample Date:		Protocol:	EPAF 94-EPA Freshwater	Test Species:	PP-Pimephales promelas
Comments:					

Conc-%	1	2	3	4
CONTROL	0.4080	0.5480	0.5510	0.4500
6.25	0.4930	0.4510	0.5390	0.5690
12.5	0.4640	0.4670	0.4840	0.5600
25	0.4390	0.4810	0.4520	0.5010
50	0.4180	0.3720	0.4200	0.4340
100	0.4580	0.3590	0.4490	0.3810

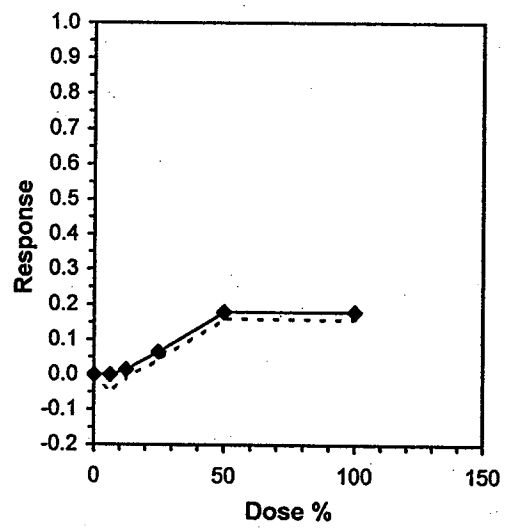
			Transform: Untransformed						1-Tailed		Isotonic	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD	Mean	N-Mean
CONTROL	0.4893	1.0000	0.4893	0.4080	0.5510	14.648	4				0.5011	1.0000
6.25	0.5130	1.0485	0.5130	0.4510	0.5690	10.101	4	-0.701	2.410	0.0817	0.5011	1.0000
12.5	0.4938	1.0092	0.4938	0.4640	0.5600	9.121	4	-0.133	2.410	0.0817	0.4938	0.9853
25	0.4683	0.9571	0.4683	0.4390	0.5010	5.983	4	0.620	2.410	0.0817	0.4683	0.9344
50	0.4110	0.8401	0.4110	0.3720	0.4340	6.559	4	2.309	2.410	0.0817	0.4114	0.8209
100	0.4118	0.8416	0.4118	0.3590	0.4580	11.943	4	2.287	2.410	0.0817	0.4114	0.8209

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.95848	0.884	-0.0192	-1.0241
Bartlett's Test indicates equal variances (p = 0.62)	3.54691	15.0863		

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU	MSDu	MSDp	MSB	MSE	F-Prob	df
Dunnett's Test	100	>100		1	0.08166	0.16692	0.00758	0.0023	0.02731	5, 18

Linear Interpolation (200 Resamples)

Point	%	SD	95% CL(Exp)		Skew
IC05	21.167	8.844	0.000	43.434	0.1743
IC10	32.577				
IC15	43.591				
IC20	>100				
IC25	>100				
IC40	>100				
IC50	>100				



ToxCalc v5.0.23

Reviewed by: PP

BASELINE TEST INFO – FATHEAD 7 DAY TEST

Coastal Bioanalysts, Inc
Form ETF0041A
Effective Date: 5/15/02

TEST ORGANISM INFO

Species: *Pimephales promelas*

Source: CBI Stock Cultures:_____

Other: CC

Hatch Date/Time: 7/10/06 1530 (start)

Hatch Date/Time: 7/11/06 0800 (end)

Acclimation: **Water:** Mod. hard syn. FW ✓

Other:_____

Temp. (°C): 25

Feeding Prior to Test: *Artemia ad libitum* 2X/day

Feeding During Test: *Artemia* 0.15 g/rep 2X/day

Arrival Date: (non-CBI) 7/11/06

TEST DESIGN

Test Chamber: 1000 ml beaker ✓

600 ml beaker_____

Solution Vol: 500 ml ✓

Other_____

Illumination: 16:8 L:D 10-20 uE/m²/s

Number of Replicates/Concentration: 4

Initial Number of Fish/Replicate: 10

Randomization Template No. 7, 7, 9, 11

TEST SET UP (Day 0)

Set Up Date: 7/11/06

Set Up By: RP

Time Water Added: 1250

Time Animals Added: 1330

NOTES

Test I.D. UB5RA601 -CPP

WATER QUALITY DATA – *Pimephales promelas* 7-day Larval Test COASTAL BIOANALYSTS, INC FORM ETF0042A EFFECTIVE DATE: 5/15/02

Parameter	Treatment	Day 0 Initial	Day 1 Final	Day 1 Initial	Day 2 Final	Day 2 Initial	Day 3 Final	Day 3 Initial	Day 4 Final	Day 4 Initial	Day 5 Final	Day 5 Initial	Day 6 Final	Day 6 Initial	Day 7 Final
TEMP (°C)	C	25	25	25	25	25	25	25	25	25	25	25	25	25	25
	1	25	25	25	25	25	25	25	25	25	25	25	25	25	25
	2	25	25	25	25	25	25	25	25	25	25	25	25	25	25
	3	25	25	25	25	25	25	25	25	25	25	25	25	25	25
	4	25	25	25	25	25	25	25	25	25	25	25	25	25	25
	5	25	25	25	25	25	25	25	25	25	25	25	25	25	25
pH (S.U.)	C	7.73	7.67	7.53	7.32	7.40	7.20	7.49	7.15	7.64	7.22	7.67	7.40	7.66	7.37
	1	7.65	7.62	7.45	7.21	7.41	7.13	7.47	7.15	7.57	7.22	7.65	7.40	7.61	7.33
	2	7.59	7.56	7.42	7.18	7.39	7.06	7.47	7.12	7.55	7.20	7.59	7.35	7.55	7.29
	3	7.55	7.48	7.37	7.19	7.34	7.03	7.43	7.09	7.51	7.20	7.54	7.20	7.42	7.22
	4	7.36	7.41	7.25	7.20	7.20	6.98	7.37	7.02	7.29	7.12	7.41	7.07	7.36	7.16
	5	6.95	7.02	6.94	7.07	6.89	6.64	7.12	6.57	6.82	7.06	6.94	6.67	7.00	6.72
D.O. (mg/l)	C	8.2	8.1	8.2	8.1	8.2	7.9	8.2	7.9	8.2	8.0	8.2	7.9	8.2	7.9
	1	8.2	8.1	8.2	8.1	8.1	7.8	8.2	7.7	8.2	8.0	8.2	7.8	8.1	7.7
	2	8.2	8.0	8.2	8.0	8.0	7.8	8.1	7.6	8.2	7.9	8.2	7.7	8.1	7.6
	3	8.2	8.0	8.2	7.9	8.0	7.7	8.0	7.5	8.2	7.6	8.1	7.4	8.1	7.6
	4	8.2	7.9	8.0	7.7	7.9	7.7	7.9	7.3	8.2	7.4	8.0	7.2	8.0	7.5
	5	8.2	7.9	7.9	7.6	7.9	7.6	7.9	7.1	8.2	7.0	8.0	7.1	8.0	7.5
COND (uS/cm)	C	291		261		254		268		282		295		296	
	1	273		244		242		259		269		274		278	
	2	261		234		230		247		255		260		261	
	3	231		209		209		224		231		233		230	
	4	167		159		151		169		165		174		173	
	5	52		63		61		59		60		66		65	
Replicate:		1	4	2	1	3	4	2	2	1	1	3	3	1	2
Initials:		PD	GA	OA	PB	OA	GA	PD	GA	OA	PB	OA	GT	PD	CT

TEST I.D. UT5RA6C1 -CPP

SURVIVAL & OWTH DATA – FATHEAD MINNOW 7 DAY TEST Coastal E ılysts, Inc Form ETF0043D Effective Date: 2/3/05

Treatment[1]		Rep No.	Number of Live Fish							Fish Dry Weight Data (mg)[2]			Notes
			Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Pan #	Tot. Wt.	Tare Wt.	
C	CONTROL	1	10	10	10	10	10	10	10	1	10.11	5.96	
		2	10	10	10	10	10	10	10	2	9.79	5.85	
		3	10	10	10	10	10	10	10	3	9.39	4.56	
		4	10	10	9	9	9	9	9	4	10.33	5.84	
1	C: 6.25	1	10	10	10	10	10	10	10	5	8.95	5.05	
		2	10	10	9	9	9	8	8	6	9.38	5.46	
		3	10	10	10	10	10	10	10	7	10.46	7.05	
	V: 100	4	10	10	9	9	89	9	8	8	8.63	4.57	
2	C: 12.5	1	10	10	10	10	10	10	10	9	8.94	4.88	
		2	10	10	10	10	10	10	10	10	9.70	5.43	
		3	10	10	10	10	10	10	10	11	10.38	6.04	
	V: 200	4	10	10	9	9	9	9	9	12	9.22	5.07	
3	C: 25	1	10	10	10	10	10	10	10	13	9.82	4.95	
		2	10	10	9	9	9	9	9	14	9.37	4.72	
		3	10	10	10	10	10	10	10	15	11.26	6.31	
	V: 400	4	10	10	9	9	9	9	9	16	9.92	5.75	
4	C: 50	1	10	10	10	10	10	10	10	17	11.21	5.77	
		2	10	10	9	8	8	8	8	18	10.04	6.05	
		3	10	10	10	10	10	10	10	19	11.08	5.48	
	V: 800	4	10	10	10	10	10	10	10	20	10.29	5.93	
5	C: 100	1	10	10	10	10	10	10	10	21	10.34	5.66	
		2	10	10	10	10	10	10	10	22	9.91	5.54	
		3	10	10	9	9	9	9	9	23	10.20	5.65	
	V: 1600	4	10	10	10	10	10	10	10	24	9.82	5.23	
Renewal/Count Time:			1400	1200	1300	1145	1135	1110	1230[3]	Tare Wt: Date: 7/17		Calib. Check (10 mg[4]): 10.00 Init: GT	
Initials:			[illegible]	[illegible]	PB	[illegible]	[illegible]	PO	CT	Tot. Wt: Date: 7/19		Calib. Check (10 mg[4]): 10.00 Init: GT	

[1] C = Concentration; V = Volume (ml) sample added to total volume of 1600 ml for preparation of solutions. [2]See printout of statistical analyses for biomass weights by replicate. [3]Time of final count = test end time. [4]True value/estimated uncertainty of calibration weight (NIST traceable annual certification) = 10.00 / 10.05 mg

Test ID [illegible] -CPP

Larval Fish Growth and Survival Test-7 Day Survival

Start Date:	7/11/2006 13:30	Test ID:	URSR0601PP	Sample ID:	FAIRFAX TERMINAL 001
End Date:	7/18/2006 12:30	Lab ID:	CBI	Sample Type:	UNTREATED SAMPLE
Sample Date:		Protocol:	EPAF 94-EPA Freshwater	Test Species:	PP-Pimephales promelas
Comments:					

Conc-%	1	2	3	4
CONTROL	1.0000	1.0000	1.0000	0.9000
6.25	1.0000	0.8000	1.0000	0.8000
12.5	1.0000	1.0000	1.0000	0.9000
25	1.0000	0.9000	1.0000	0.9000
50	1.0000	0.8000	1.0000	1.0000
100	1.0000	1.0000	0.9000	1.0000

			Transform: Arcsin Square Root						
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	Rank Sum	1-Tailed Critical
CONTROL	0.9750	1.0000	1.3713	1.2490	1.4120	5.942	4		
6.25	0.9000	0.9231	1.2596	1.1071	1.4120	13.974	4	15.00	10.00
12.5	0.9750	1.0000	1.3713	1.2490	1.4120	5.942	4	18.00	10.00
25	0.9500	0.9744	1.3305	1.2490	1.4120	7.072	4	16.00	10.00
50	0.9500	0.9744	1.3358	1.1071	1.4120	11.411	4	17.50	10.00
100	0.9750	1.0000	1.3713	1.2490	1.4120	5.942	4	18.00	10.00

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.01)	0.87519	0.884	-0.6526	-0.6089
Bartlett's Test indicates equal variances (p = 0.62)	3.5126	15.0863		

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Steel's Many-One Rank Test	100	>100		1

ToxCalc v5.0.23

Reviewed by: PP

Larval Fish Growth and Survival Test-7 Day Biomass

Start Date:	7/11/2006 13:30	Test ID:	URSR0601PP	Sample ID:	FAIRFAX TERMINAL 001
End Date:	7/18/2006 12:30	Lab ID:	CBI	Sample Type:	UNTREATED SAMPLE
Sample Date:		Protocol:	EPAF 94-EPA Freshwater	Test Species:	PP-Pimephales promelas
Comments:					

Conc-%	1	2	3	4
CONTROL	0.4150	0.3940	0.4830	0.4490
6.25	0.3900	0.3920	0.3410	0.4060
12.5	0.4060	0.4270	0.4340	0.4150
25	0.4870	0.4650	0.4950	0.4170
50	0.5440	0.3990	0.5600	0.4360
100	0.4680	0.4370	0.4550	0.4590

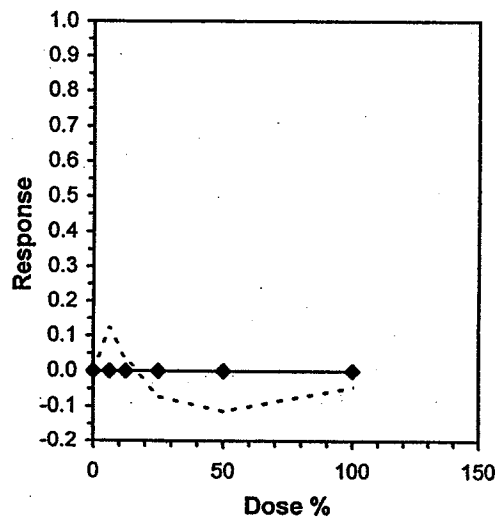
			Transform: Untransformed						1-Tailed		Isotonic	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD	Mean	N-Mean
CONTROL	0.4353	1.0000	0.4353	0.3940	0.4830	8.978	4				0.4406	1.0000
6.25	0.3823	0.8782	0.3823	0.3410	0.4060	7.431	4	1.819	2.410	0.0702	0.4406	1.0000
12.5	0.4205	0.9661	0.4205	0.4060	0.4340	2.961	4	0.506	2.410	0.0702	0.4406	1.0000
25	0.4660	1.0706	0.4660	0.4170	0.4950	7.520	4	-1.055	2.410	0.0702	0.4406	1.0000
50	0.4848	1.1137	0.4848	0.3990	0.5600	16.375	4	-1.699	2.410	0.0702	0.4406	1.0000
100	0.4548	1.0448	0.4548	0.4370	0.4680	2.864	4	-0.669	2.410	0.0702	0.4406	1.0000

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.97432	0.884	-0.2177	0.48261
Bartlett's Test indicates equal variances (p = 0.03)	12.1108	15.0863		

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU	MSDu	MSDp	MSB	MSE	F-Prob	df
Dunnett's Test	100	>100		1	0.07022	0.16133	0.00531	0.0017	0.03333	5, 18

Linear Interpolation (200 Resamples)

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



ToxCalc v5.0.23

Reviewed by: PP

EFFLUENT SAMPLE & DILUTION WATER CHARACTERISTICS
FRESHWATER TESTS

COASTAL BIOANALYSTS, INC
FORM ETF2031B EFFECTIVE DATE: 10/17/02

INITIAL SAMPLE CHARACTERIZATION					NOTES:
Sample Bottle[2]	A-1	B-1	C-1		
Tot. Resid. Chlorine (mg/l)	<QL	<QL	<QL		
Hardness (mg/l $CaCO_3$)	20	28	26		
Alkalinity (mg/l $CaCO_3$)	26	23	24		
NH_3-N (mg/l)	<1.0	<1.0	<1.0		
Color/Appearance[3]	CY	CY	CY		
Obvious Odor?	ND	ND	ND		
Date/Time	7/11 0950	7/12 1000	7/14 1040		
Initials	LM	LM	LM		

SAMPLE PREPARATION MEASUREMENTS (100% concentration)								Acute
Sample Bottle	A-1,2	B-1,2	B-2,3	C-1,2	C-3,4	C-5,6	C-6,7	B-1
Prep Temperature (°C)	25	25	25	26	25	25	25	25
Conductivity (uS/cm)[4]	60	60	NA	62	NA	NA	NA	60
D.O. (mg/l) After Warming	9.8	9.3	9.5	10.3	9.9	10.4	9.3	9.0
Aeration Time (min)	2.0	2.0	2.0	3.0	2.5	3.0	2.5	1.0
Adjusted D.O.	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2
Final pH (S.U.)	7.03	7.11	7.09	7.02	7.04	7.02	6.87	7.28
Tot. Resid. Chlorine (mg/l)[5]	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Sample Filtered (60 um)?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Date/Time	7/11 1035	7/12 1000	7/13 0930	7/14 1030	7/15 0930	7/16 0900	7/17 0940	7/13 1355
Initials	LM	LM	PB	LM	LM	PB	LM	LM

DILUTION WATER CHARACTERISTICS								Acute
Vat Number	2	1	1	2	2	1	1	1
Temperature (°C)	25	25	25	25	25	25	25	25
Conductivity (uS/cm)	292	269	269	291	289	295	298	269
D.O. (mg/l)	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2
pH (S.U.)	7.74	7.61	7.68	7.75	7.76	7.66	7.65	7.61
Hardness (mg/l $CaCO_3$)	82	80	80	88	88	80	80	80
Alkalinity (mg/l $CaCO_3$)	58	59	59	62	62	58	58	59
Date/Time	7/11 0830	7/12 0900	7/13 0930	7/14 0850	7/15 0940	7/16 0915	7/17 0950	7/13 0940
Initials	LM	LM	PB	LM	LM	PB	LM	LM

[1]Q.L. = Quantification Limit, N.D. = Not Determined/Measured, NA = Not Applicable
[2]Bottle number = 9th or 9th and 10th characters of Laboratory Sample I.D. (e.g. "A", "A-1", "A-2"; see SOP SPLS202)
[3]C-Clear, O-Opaque, T-Turbid, S-Solids (Sl-Slight, M-Moderate, H-Heavy), Y-Yellow, B-Brown, Bl-Black, G-Green
[4]Conductivity measured on first use of sample only
[5]Total residual chlorine measured after sample prep only if present in initial sample characterization

PROJECT I.D. UPSR0601
(First 8 characters of Laboratory Sample ID)

SAMPLE INFORMATION/CHAIN-OF-CUSTODY (FORM ETF2011B Rev. 5/15/02)

Coastal Bioanalysts, Inc.

NOTE: It is the responsibility of the sampler to insure that samples are properly collected, preserved (>0-6° C) and shipped. Sample hold time is 36 h. Additional costs may be incurred by improper sampling, preservation, shipping or receipt of samples after 3:p.m. or on weekends and holidays.
Questions? Call 804-694-8285

Laboratory Sample ID (Lab Use Only)

U	R	5	R	0	6	0	1	-	A
A	A	A	A	Y	Y	N	N		A

FACILITY INFORMATION

CLIENT NAME	URS Corporation	FACILITY	Fairfax Terminal
NPDES PERMIT NO	VPDES Permit Number VA0001872	OUTFALL # OR LOCATION	001
SAMPLE CHLORINATED?	SAMPLE DECHLORINATED?	IF CHLORINE PRESENT UPON ARRIVAL AT LAB, DOES PERMIT SPECIFY DECHLORINATION OF SAMPLES?	

TESTS REQUESTED:	SPECIES OR EPA METH #	C. dubia	ACUTE ☑	CHRONIC ☑
	SPECIES OR EPA METH #	P. promelas	ACUTE ☐	CHRONIC ☑
OTHER TESTS:				

*A SPECIFIC DILUTION SERIES MAY BE REQUIRED IN THE DISCHARGE PERMIT. A DEFAULT SERIES OF 100, 50, 25, 12.5 AND 6.3%, OR CONCENTRATIONS USED IN PRIOR TESTING OF THIS OUTFALL, WILL BE USED UNLESS INDICATED OTHERWISE. IF IN DOUBT PLEASE ATTACH A COPY OF APPLICABLE PERMIT PAGES.

GRAB SAMPLE INFORMATION

SAMPLE DATE	~~SAMPLE TIME~~	SAMPLE VOLUME

COMPOSITE SAMPLE INFORMATION

COMPOSITE START DATE & TIME	7/10/06 7/9/06 1300		COMPOSITE END DATE & TIME	7/10/06 1200 #	
TIME PROPORTIONAL COMPOSITE INFO	NUMBER SUBSAMPLES 24	VOL (ml) SUBSAMPLES 500	TIME INCREMENT 1 hr	TOTAL VOLUME 12,000 mL	
FLOW PROPORTIONAL COMPOSITE INFO*	SET VOLUME SUBSAMPLE		SET VOLUME FLOW	TOTAL VOLUME	

*FOR VARIABLE VOLUME SUBSAMPLES BASED ON FLOW (e.g. COMPOSITING "BY HAND") ATTACH SAMPLE AND FLOW INFORMATION ON SEPARATE SHEET

FIELD MEASUREMENTS

DISCHARGE TEMP (°C)	SAMPLE TEMP (°C)	DISCHARGE pH (S.U.)	SAMPLE TRC (mg/l)	DATE/TIME (e.g. 02/23/00 1835)	INITIALS
17.8	3.7	7.42	0	07/10/06 1332	emh

MEASUREMENTS MUST BE TAKEN WITHIN 15 MINUTES OF SAMPLE OR LAST SUBSAMPLE COLLECTION.

COMMENTS:

Erika Hintz/URS Corporation — (PRINTED NAME/AFFILIATION SAMPLER/ANALYST)

Erika Hintz — (SIGNATURE)

7/10/06 — (DATE)

RELINQUISHED BY	DATE	TIME	RECEIVED BY
Erika Hintz	7/10/06	15:40	
Erika Hintz	7/11/06	0445	B. Bm

SHIPPING METHOD: UPS____ FEDEX X HAND DELIVERY____ OTHER____

CONDITION ON ARRIVAL: ACCEPTABLE ✓ OTHER____

SAMPLE ARRIVAL TEMP: (°C) 3 ARRIVED ON ICE? YES ✓ NO____

per phone conversation with Erika Hintz 7/25/06 [illegible]

SAMPLE INFORMATION/CHAIN-OF-CUSTODY (FORM ETF2011B Rev. 5/15/02)

CBI
Coastal Bioanalysts, Inc.

NOTE: It is the responsibility of the sampler to insure that samples are properly collected, preserved (>0-6° C) and shipped. Sample hold time is 36 h. Additional costs may be incurred by improper sampling, preservation, shipping or receipt of samples after 3:p.m. or on weekends and holidays. Questions? Call 804-694-8285

Laboratory Sample ID (Lab Use Only): D R S R D 6 D P - B
A A A A Y Y N N A

B3 & B4

FACILITY INFORMATION

CLIENT NAME	URS Corporation	FACILITY	Fairfax Terminal
NPDES PERMIT NO	VPDES Permit Number VA0001872	OUTFALL # OR LOCATION	001
SAMPLE CHLORINATED?	SAMPLE DECHLORINATED?	IF CHLORINE PRESENT UPON ARRIVAL AT LAB, DOES PERMIT SPECIFY DECHLORINATION OF SAMPLES?	

TESTS REQUESTED:	SPECIES OR EPA METH #	C. dubia	ACUTE ☐	CHRONIC ☑
	SPECIES OR EPA METH #	P. prom/ag	ACUTE ☐	CHRONIC ☑
OTHER TESTS:				

*A SPECIFIC DILUTION SERIES MAY BE REQUIRED IN THE DISCHARGE PERMIT. A DEFAULT SERIES OF 100, 50, 25, 12.5 AND 6.3%, OR CONCENTRATIONS USED IN PRIOR TESTING OF THIS OUTFALL, WILL BE USED UNLESS INDICATED OTHERWISE. IF IN DOUBT PLEASE ATTACH A COPY OF APPLICABLE PERMIT PAGES.

GRAB SAMPLE INFORMATION

SAMPLE DATE	SAMPLE TIME	SAMPLE VOLUME

COMPOSITE SAMPLE INFORMATION

E. Hintz telephone 7/18/06

COMPOSITE START DATE & TIME	7/11/06 1500	COMPOSITE END DATE & TIME	7/11/06 1400	*
TIME PROPORTIONAL COMPOSITE INFO	NUMBER SUBSAMPLES 24	VOL (ml) SUBSAMPLES 1000	TIME INCREMENT 1 hour	TOTAL VOLUME 24,000 mL
FLOW PROPORTIONAL COMPOSITE INFO*	SET VOLUME SUBSAMPLE	SET VOLUME FLOW		TOTAL VOLUME

*FOR VARIABLE VOLUME SUBSAMPLES BASED ON FLOW (e.g. COMPOSITING "BY HAND") ATTACH SAMPLE AND FLOW INFORMATION ON SEPARATE SHEET

FIELD MEASUREMENTS

DISCHARGE TEMP (°C)	SAMPLE TEMP (°C)	DISCHARGE pH (S.U.)	SAMPLE TRC (mg/l)	DATE/TIME (e.g. 02/23/00 1835)	INITIALS
15.1	6.1	6.32	0	07/11/06 1402	[illegible]

MEASUREMENTS MUST BE TAKEN WITHIN 15 MINUTES OF SAMPLE OR LAST SUBSAMPLE COLLECTION.

COMMENTS:

Erika Hintz / URS Corporation — [signature] — 7/11/06
(PRINTED NAME/AFFILIATION SAMPLER/ANALYST) (SIGNATURE) (DATE)

RELINQUISHED BY	DATE	TIME	RECEIVED BY
Erika Hintz /	7/11/06	1530	
[signature]	7/12/06	0955	D. Brig

SHIPPING METHOD: UPS ___ FEDEX X HAND DELIVERY ___ OTHER ___

CONDITION ON ARRIVAL: ACCEPTABLE ✓ OTHER ___

SAMPLE ARRIVAL TEMP: (°C) 3 ARRIVED ON ICE? YES ✓ NO ___

* per phone conversation w/ Erika Hintz 7/25/ P.B

SAMPLE INFORMATION/CHAIN-OF-CUSTODY (FORM ETF2011B Rev. 5/15/02)

CBI
Coastal Bioanalysts, Inc.

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Laboratory Sample ID (Lab Use Only)

U	R	S	R	0	6	0	1	-	B
A	A	A	A	Y	Y	N	N		A

B1+2

FACILITY INFORMATION

CLIENT NAME	URS Corporation	FACILITY	Fairfax Terminal
NPDES PERMIT NO	VPDES Permit Number VA0001872	OUTFALL # OR LOCATION	001
SAMPLE CHLORINATED?	SAMPLE DECHLORINATED?	IF CHLORINE PRESENT UPON ARRIVAL AT LAB, DOES PERMIT SPECIFY DECHLORINATION OF SAMPLES?	

TESTS REQUESTED:	SPECIES OR EPA METH #	C. dubia	ACUTE ☑	CHRONIC ☑
	SPECIES OR EPA METH #	P. prom/95	ACUTE ☐	CHRONIC ☑
OTHER TESTS:				

*A SPECIFIC DILUTION SERIES MAY BE REQUIRED IN THE DISCHARGE PERMIT. A DEFAULT SERIES OF 100, 50, 25, 12.5 AND 6.3%, OR CONCENTRATIONS USED IN PRIOR TESTING OF THIS OUTFALL, WILL BE USED UNLESS INDICATED OTHERWISE. IF IN DOUBT PLEASE ATTACH A COPY OF APPLICABLE PERMIT PAGES.

GRAB SAMPLE INFORMATION

SAMPLE DATE	SAMPLE TIME	SAMPLE VOLUME

COMPOSITE SAMPLE INFORMATION

COMPOSITE START DATE & TIME	7/10/06 1500		COMPOSITE END DATE & TIME	7/11/06 1400 *	
TIME PROPORTIONAL COMPOSITE INFO	NUMBER SUBSAMPLES 24	VOL (ml) SUBSAMPLES 1000	TIME INCREMENT 1hour	TOTAL VOLUME 24,000	
FLOW PROPORTIONAL COMPOSITE INFO*	SET VOLUME SUBSAMPLE		SET VOLUME FLOW	TOTAL VOLUME	

*FOR VARIABLE VOLUME SUBSAMPLES BASED ON FLOW (e.g. COMPOSITING "BY HAND") ATTACH SAMPLE AND FLOW INFORMATION ON SEPARATE SHEET

FIELD MEASUREMENTS

DISCHARGE TEMP (°C)	SAMPLE TEMP (°C)	DISCHARGE pH (S.U.)	SAMPLE TRC (mg/l)	DATE/TIME (e.g. 02/23/00 1835)	INITIALS
14.5	4.7	7.24	0	07/11/06 1415	emh

MEASUREMENTS MUST BE TAKEN WITHIN 15 MINUTES OF SAMPLE OR LAST SUBSAMPLE COLLECTION.

COMMENTS:

Erika Hintz/URS Corporation — Erika Hintz — 7/11/06
(PRINTED NAME/AFFILIATION SAMPLER/ANALYST) (SIGNATURE) (DATE)

RELINQUISHED BY	DATE	TIME	RECEIVED BY
Erika Hintz	7/11/06	1545	
Erika Hintz	7/12/06	0955	S. Bray

SHIPPING METHOD: UPS____ FEDEX X HAND DELIVERY____ OTHER____

CONDITION ON ARRIVAL: ACCEPTABLE ✓ OTHER____

SAMPLE ARRIVAL TEMP: (°C) 3 ARRIVED ON ICE? YES ✓ NO____

* per phone conversation with Erika Hintz 7/25/06 P.B.

SAMPLE INFORMATION/CHAIN-OF-CUSTODY (FORM ETF2011B Rev. 5/15/02)

CBI
Coastal Bioanalysts, Inc.

NOTE: It is the responsibility of the sampler to insure that samples are properly collected, preserved (>0-6° C) and shipped. Sample hold time is 36 h. Additional costs may be incurred by improper sampling, preservation, shipping or receipt of samples after 3:p.m. or on weekends and holidays. Questions? Call 804-694-8285

Laboratory Sample ID (Lab Use Only)

U	R	S	R	A	6	0	1	-	C
A	A	A	A	Y	Y	N	N		A

FACILITY INFORMATION

CLIENT NAME: URS Corporation		FACILITY: Fairfax Terminal	
NPDES PERMIT NO: VPDES Permit Number VA0001872		OUTFALL # OR LOCATION: 001	
SAMPLE CHLORINATED?	SAMPLE DECHLORINATED?	IF CHLORINE PRESENT UPON ARRIVAL AT LAB, DOES PERMIT SPECIFY DECHLORINATION OF SAMPLES?	

TESTS REQUESTED:

SPECIES OR EPA METH #: C. dubia	ACUTE ☐	CHRONIC ☑
SPECIES OR EPA METH #: P. prom/45	ACUTE ☐	CHRONIC ☑

OTHER TESTS:

*A SPECIFIC DILUTION SERIES MAY BE REQUIRED IN THE DISCHARGE PERMIT. A DEFAULT SERIES OF 100, 50, 25, 12.5 AND 6.3%, OR CONCENTRATIONS USED IN PRIOR TESTING OF THIS OUTFALL, WILL BE USED UNLESS INDICATED OTHERWISE. IF IN DOUBT PLEASE ATTACH A COPY OF APPLICABLE PERMIT PAGES.

GRAB SAMPLE INFORMATION

SAMPLE DATE	SAMPLE TIME	SAMPLE VOLUME

COMPOSITE SAMPLE INFORMATION

COMPOSITE START DATE & TIME: 7/12/06 0905		COMPOSITE END DATE & TIME: 7/13/06 0805		
TIME PROPORTIONAL COMPOSITE INFO	NUMBER SUBSAMPLES: 24	VOL (ml) SUBSAMPLES: 1240	TIME INCREMENT: 1hr	TOTAL VOLUME: 29,760ml
FLOW PROPORTIONAL COMPOSITE INFO*	SET VOLUME SUBSAMPLE:	SET VOLUME FLOW:		TOTAL VOLUME:

*FOR VARIABLE VOLUME SUBSAMPLES BASED ON FLOW (e.g. COMPOSITING "BY HAND") ATTACH SAMPLE AND FLOW INFORMATION ON SEPARATE SHEET

FIELD MEASUREMENTS

DISCHARGE TEMP (°C)	SAMPLE TEMP (°C)	DISCHARGE pH (S.U.)	SAMPLE TRC (mg/l)	DATE/TIME (e.g. 02/23/00 1835)	INITIALS
14.2		6.08	0	07/13/06 0820	emh

MEASUREMENTS MUST BE TAKEN WITHIN 15 MINUTES OF SAMPLE OR LAST SUBSAMPLE COLLECTION.

COMMENTS:

Erika Hintz/URS Corporation — Erika Hintz — 7/13/06

(PRINTED NAME/AFFILIATION SAMPLER/ANALYST) (SIGNATURE) (DATE)

RELINQUISHED BY	DATE	TIME	RECEIVED BY
	2/14/06	0955	D. Bragg

SHIPPING METHOD: UPS____ FEDEX ✓ HAND DELIVERY____ OTHER____

CONDITION ON ARRIVAL: ACCEPTABLE ✓ OTHER____

SAMPLE ARRIVAL TEMP: (°C) 2 ARRIVED ON ICE? YES ✓ NO____

Client: URS Corporation
Project ID: URSR0701
Client Sample ID: BP Amoco/Fairfax Terminal Outfall 001
Permit No: VA0001872
Sample Period: 5/14/07 to 5/17/07

Coastal Bioanalysts, Inc.

Report of Analysis: Whole Effluent Toxicity (WET)

Submitted To:	**Prepared By:**
Mr. Mark Colonna URS Corporation 13825 Sunrise Valley Drive Suite 250 Herndon, VA 20171-4672	Coastal Bioanalysts, Inc. 6400 Enterprise Court Gloucester, VA 23061 (804) 694-8285 www.coastalbio.com Contact: Peter F. De Lisle, Technical Director

Acute Test Results*

Species-Test Method	48-h LC50	95% C.L.	$T.U._{Ac}$	NOAEC
C. dubia EPA 2002.0	>100	N/A	<1.00	100

Chronic Test Results*

Species-Test Method	Endpoint	NOEC	LOEC	ChrV	PMSD	$T.U._C$	IC25	48-h LC50	LC50 95% C.L.	$T.U._{Ac}$
C. dubia EPA 1002.0	Survival	100	>100	>100	N/A	1.00	N/A	>100	N/A	<1.00
	Reproduction	100	>100	>100	28	1.00	>100	N/A	N/A	N/A

Chronic Test Results* (*P. promelas* side-by-side UV treated and untreated)

Species-Test Method	Endpoint	NOEC	LOEC	ChrV	PMSD	$T.U._C$	IC25	48-h LC50	LC50 95% C.L.	$T.U._{Ac}$
P. promelas EPA 1001.0 UV	Survival	100	>100	>100	N/A	1.00	N/A	>100	N/A	<1.00
	Biomass	100	>100	>100	19	1.00	>100	N/A	N/A	N/A
P. promelas EPA 1001.0	Survival	12.5	25	17.7	N/A	8.00	N/A	>100	N/A	<1.00
	Biomass	12.5	25	17.7	21	8.00	36.4	N/A	N/A	N/A

*Note: Details regarding test conduct and data analysis provided in attached bench sheets and printouts as applicable.

Acute Test Biological Summary Data

Species-Method	Endpoint	Sample Concentration (%)					
		Control	6.3	13	25	50	100
C. dubia EPA 2002.0	Survival (%):	100	95	100	100	100	100

Chronic Test Biological Summary Data

Species-Method	Endpoint	Sample Concentration (%)					
		Control	6.3	13	25	50	100
C. dubia EPA 1002.0	Survival (%):	100	100	100	100	100	90
	Repro (# young):	20.3	22.3	21.7	21.5	19.9	20.0

Chronic Test Biological Summary Data

Species-Method	Endpoint	Sample Concentration (%)					
		Control	6.3	13	25	50	100
P. promelas UV Treated EPA 1000.0	Survival (%):	100	98	93	98	93	90
	Biomass (mg):	0.730	0.702	0.723	0.747	0.691	0.645
P. promelas Untreated EPA 1000.0	Survival (%):	100	75	80	88	60	35
	Biomass (mg):	0.754	0.656	0.655	0.694	0.442	0.242

Client: URS Corporation
Project ID: URSR0701
Client Sample ID: BP Amoco/Fairfax Terminal Outfall 001
Permit No: VA0001872
Sample Period: 5/14/07 to 5/17/07

Coastal Bioanalysts, Inc.

Test Information Species-Method	Start Date/Time End Date/Time	Organism Source	Hatch/Harvest Date/Time	Acclimation Temp.	Acclimation Water	Test Aerated?
C. dubia EPA 2002.0	5/16/07 1625 5/18/07 1605	CBI Stock	5/15/07 1625 5/16/07 0950	25° C	Mod. Hard Syn. FW	No
C. dubia EPA 1002.0	5/15/07 1230 5/21/07 1530	CBI Stock	5/14/07 1625 5/14/07 2200	25° C	Mod. Hard Syn. FW	No
P. promelas UV Treated	5/15/07 1310 5/22/07 1300	CBI Stock	5/14/07 1600 5/15/07 0900	25° C	Mod. Hard Syn. FW	No
P. promelas Untreated	5/15/07 1335 5/22/07 1250	CBI Stock	5/14/07 1600 5/15/07 0900	25° C	Mod. Hard Syn. FW	No

Sample/Dilution Water Data	Acute Test		Chronic Test			
			Sample		Dilution Water*	
Water Quality Parameter (Units)	Sample	Dilution* Water	Mean	Std. Dev.	Mean	Std. Dev.
Arrival Temperature (°C)	2	N/A	3	0.6	N/A	N/A
Use Temperature (°C)	24	25	25	0.6	25	0
Conductivity (µS/cm)	189	296	177	5.3	296	1.7
pH (S.U.)	7.15	7.69	7.16	0.06	7.66	0.07
Dissolved Oxygen (mg/l)	8.2	8.2	8.2	0	8.2	0
Total Hardness (mg/l as $CaCO_3$)	26	86	30	6.9	91	5.5
Alkalinity (mg/l as $CaCO_3$)	24	57	26	1.5	58	1.3
Total Residual Chlorine (mg/l)	<Q.L.	N/A	<Q.L.	0	N/A	N/A
Ammonia (mg/l NH_3-N)	<1.0	N/A	<1.0	0	N/A	N/A

*Dilution water = Moderately hard synthetic freshwater made with ASTM Type I deionized water

Sample Aging/Use/Pretreatment				
CBI Sample I.D.	Collection Date/Time	Date(s)/Time(s) 1st Used in Tests	Date(s)/Time(s) Used in Renewals	Sample Adjustments
URSR0701-A	5/14/07 1100	5/15/07 1230- 1335	N/A	Aerated 3 min UV Treated
URSR0701-B	5/15/07 1020	5/16/07 1200-1330 5/16/07 1625*	5/17/07 1315-1445	Aerated 1-2 min UV Treated
URSR0701-C	5/17/07 1100	5/18/07 1350-1440	5/19/07 1125-1245 5/20/07 1030-1200 5/21/07 1240-1325	Aerated 2.5-3 min UV Treated

*acute test

Acute Test Water Quality (Mean/Std. Dev.)						
Test:	*C. dubia* 2002.0					
% Conc:	Cont.	6.3	13	25	50	100
Temp. (°C)	25 0	25 0	25 0	25 0	25 0	25 0
D.O. (mg/l)	8.1 0.1	8.1 0.1	8.1 0.1	8.1 0.1	8.1 0.2	8.1 0.2
pH (S.U.)	7.78 0.03	7.78 0.03	7.75 0.03	7.72 0.03	7.62 0.04	7.36 0.14

Client: URS Corporation
Project ID: URSR0701
Client Sample ID: BP Amoco/Fairfax Terminal Outfall 001
Permit No: VA0001872
Sample Period: 5/14/07 to 5/17/07

CBI
Coastal Bioanalysts, Inc.

Chronic Test Water Quality (Mean/Std. Dev.)						
Test:	*C. dubia* 1002.0					
% Conc:	Cont.	6.3	13	25	50	100
Temp. (°C)	25 0.3	25 0.3	25 0.3	25 0	25 0	25 0
D.O. (mg/l)	8.1 0.2	8.0 0.2	7.9 0.4	7.8 0.5	7.6 0.6	7.6 0.7
pH (S.U.)	7.59 0.09	7.55 0.10	7.51 0.12	7.45 0.09	7.35 0.10	7.12 0.08
Cond. (µS/cm)	294 7.4	293 7.0	286 6.2	270 4.9	237 6.2	167 4.0

Chronic Test Water Quality (Mean/Std. Dev.)												
Test:	*P. promelas* 1000.0-UV Treated						*P. promelas* 1000.0-Untreated					
% Conc:	Cont.	6.3	13	25	50	100	Cont.	6.3	13	25	50	100
Temp. (°C)	25 0.3	25 0	25 0	25 0	25 0.3	25 0.5	25 0	25 0	25 0	25 0	25 0	25 0.3
D.O. (mg/l)	8.1 0.2	8.0 0.2	7.9 0.3	7.9 0.4	7.8 0.5	7.7 0.7	8.0 0.2	8.0 0.3	7.9 0.3	7.8 0.4	7.8 0.5	7.7 0.6
pH (S.U.)	7.57 0.20	7.50 0.20	7.49 0.21	7.43 0.21	7.34 0.19	7.11 0.16	7.50 0.25	7.44 0.25	7.41 0.29	7.36 0.30	7.27 0.29	7.04 0.21
Cond. (µS/cm)	298 2.3	296 5.2	290 4.9	273 3.6	240 2.6	168 6.0	295 4.1	296 4.9	290 4.6	274 4.4	240 4.9	168 5.1

Acute Test QA/QC Reference Toxicant: KCl Units: mg/l Test Organism Source: CBI Stock Cultures					
Species-Method (Ref. Test Date)	Data Source	% Control Survival	48-h LC50	95% C.L./A.L. For LC50	RTT in Control?
C. dubia 2002.0 (5/23/07-5/25/07)	RTT	100	560	517-607	Yes
	CC	100	580	496-664	

Chronic Test QA/QC Reference Toxicant: KCl Units: mg/l Test Organism Source: CBI Stock Cultures										
Species-Method (Ref. Test Date)	Data Source	% Survival		Reproduction (# Young) or Biomass (mg)					RTT in Control?
		Cont.	NOEC	Cont.	NOEC	PMSD	IC25	IC25 A.L.	
C. dubia 1002.0 (5/8/07-5/14/07)	RTT	90	500	21.4	250	19	357	N/A	Yes
	CC	98	500	21.9	250	22	346	268-423	
P. promelas 1000.0 (5/8/07-5/15/07)	RTT	100	500	0.69	500	12	625	N/A	Yes
	CC	96	500	0.59	500	18	604	552-656	

Note: RTT = Reference Toxicant Test, CC = Control Chart, Cont. = Control group.

The results of analysis contained within this report relate only to the sample as received in the laboratory. This report shall not be reproduced except in full without written approval from the laboratory.

APPROVED:

Peter F. De Lisle, Ph.D.
Technical Director

5/30/07
Date

Total No. Printouts/Bench Sheets Attached: 23

EPA Laboratory ID: VA01116

Client: URS Corporation
Project ID: URSR0701
Client Sample ID: BP Amoco/Fairfax Terminal Outfall 001
Permit No: VA0001872
Sample Period: 5/14/07 to 5/17/07

Coastal Bioanalysts, Inc.

GLOSSARY OF TERMS AND ABBREVIATIONS

A.L. (Acceptance Limits): The results of a given reference toxicant test are compared to the control chart mean value ± 2 standard deviations. These limits approximate the 95% probability limits for the "true" reference toxicant value.

Chronic Value (ChrV): The geometric mean of the NOEC and LOEC. Units are same as test concentration units.

C.L. (Confidence Limits): These are the probability limits, based on the data set and statistical model employed, that the "true value" lies within the limits specified. Typically limits are based on 95% or 99% probabilities.

Control chart: A cumulative summary chart of results from QC tests with reference toxicants. The results of a given reference toxicant test are compared to the control chart mean value and 95% Acceptance Limits (A.L.) (mean ± 2 standard deviations).

IC25: The concentration of sample or chemical, calculated from the data set using statistical models, causing a 25% reduction in test organism growth, reproduction, etc. The lower the IC25, the more toxic the chemical or sample. Units are same as test concentration units.

LC50: The concentration of sample or chemical, calculated from the data set using statistical models, causing a 50% reduction in test organism survival. The lower the LC50, the more toxic the chemical or sample. Units are same as test concentration units. Note: The LC50 value must always be associated with the duration of exposure. Thus 48-h LC50, 96-h LC50, etc. are calculated.

LOEC: Lowest-observable-effect-concentration. The lowest concentration of sample or chemical in a chronic test dilution series in which the test organisms exhibit a statistically significant reduction in any of the test end points (e.g. growth, survival, reproduction) compared to control organisms. Units are same as test concentration units.

PMSD: Percent Minimum Significant Difference: The minimum difference which can exist between a test treatment and the controls in a particular test and be statistically significant; a measure of test sensitivity. The lower the PMSD the more sensitive the test.

N/A: Not applicable.

N/D: Not determined or measured.

NOAEC: No-observable-acute-effect-concentration. The highest concentration of sample or chemical in an acute test dilution series in which the test organisms exhibit no statistically significant reduction in the test end point (e.g. survival) compared to control organisms. Units are same as test concentration units.

NOEC: No-observable-effect-concentration. The highest concentration of sample or chemical in a chronic test dilution series in which the test organisms exhibit no statistically significant reduction in any of the test end points (e.g. growth, survival, reproduction) compared to control organisms. Some regulatory definitions also require that the NOEC be less than the LOEC. Units are same as test concentration units.

Q.L.: Quantitation Limit. Level, concentration, or quantity of a target variable (analyte) that can be reported at a specified degree of confidence.

T.U.: Toxic units. Expresses the relative toxicity of an effluent in such a manner that the larger the toxic unit value the more toxic the effluent. $T.U._{Ac} = 100/LC50$. $T.U._{Chr} = 100/NOEC$. A dimensionless unit.

CERIODAPHNIA DUBIA STATIC ACUTE WET TEST (ACD)

COASTAL BIOANALYSTS, INC
FORM ETF1051A EFFECTIVE DATE: 5/15/02

% Effluent	I.D.	Day 0 Live	Day 1 Live	Day 2 Live	Final % Survival
Control	C-1	5	5	5	100
	C-2	5	5	5	
	C-3	5	5	5	
	C-4	5	5	5	
6.25	1-1	5	5	4	95
	1-2	5	5	5	
	1-3	5	5	5	
	1-4	5	5	5	
12.5	2-1	5	5	5	100
	2-2	5	5	5	
	2-3	5	5	5	
	2-4	5	5	5	
25	3-1	5	5	5	100
	3-2	5	5	5	
	3-3	5	5	5	
	3-4	5	5	5	
50	4-1	5	5	5	100
	4-2	5	5	5	
	4-3	5	5	5	
	4-4	5	5	5	
100	5-1	5	5	5	100
	5-2	5	5	5	
	5-3	5	5	5	
	5-4	5	5	5	
	Initials:	CB	PB	CB	
	Count Time:	1625	1015	1605	*Test End Time

NOTES:

Parameter	Treatment I.D.	Day 0	Day 1	Day 2
Temp. (°C)	C	25	25	25
	1	25	25	25
	2	25	25	25
	3	25	25	25
	4	25	25	25
	5	25	25	25
pH (S.U.)	C	7.75	7.80	7.79
	1	7.75	7.80	7.79
	2	7.72	7.77	7.77
	3	7.68	7.74	7.73
	4	7.58	7.64	7.65
	5	7.27	7.53	7.29
D.O. (mg/l)	C	8.2	8.1	8.1
	1	8.2	8.1	8.1
	2	8.2	8.1	8.0
	3	8.2	8.0	8.0
	4	8.2	8.1	7.9
	5	8.2	8.1	7.9
Conduct. (uS/cm)	C	294		301
	1	296		
	2	289		
	3	271		
	4	234		
	5	174		168
Replicate # Meas.:		7	5	3
Initials:		CB	PB	CB
TRC (mg/l) in highest conc. at end of test:				NA

Species: *Ceriodaphnia dubia*

Source: CBI stock cultures ✓

Other: _____

Brood Release: **Date/time start:** 5/15/07 1625

Date /time end: 5/16/07 0950

Acclimation: **Water:** Mod. hard syn. FW ✓

Other _____

Temperature (°C): 25

Feeding: **Prior to test:** YCT/*Selenastrum*
During test: Not Fed

Illumination: 16L:8D 10-20 uE/m²/s

Test chamber size: ✓ 30 _____ ml

Solution volume: ✓ 15 ml _____ ml

Number of replicates/treatment: 4

Initial number of daphnids/replicate: 5

Randomization template number: 3

Set up: **Date (Day 0):** 5/16/07

Time water added: 1620

Time daphnids added: 1625

Set up by (initials): CB

TEST I.D. WRSR0701 ACD

Acute Ceriodaphnia Test-48 Hr Survival

Start Date:	5/16/2007 16:25	Test ID:	URSR0701	Sample ID:	FAIRFAX TERMINAL 001
End Date:	5/18/2007 16:05	Lab ID:	CBI	Sample Type:	WW
Sample Date:		Protocol:	EPAA 91-EPA Acute	Test Species:	CD-Ceriodaphnia dubia
Comments:					

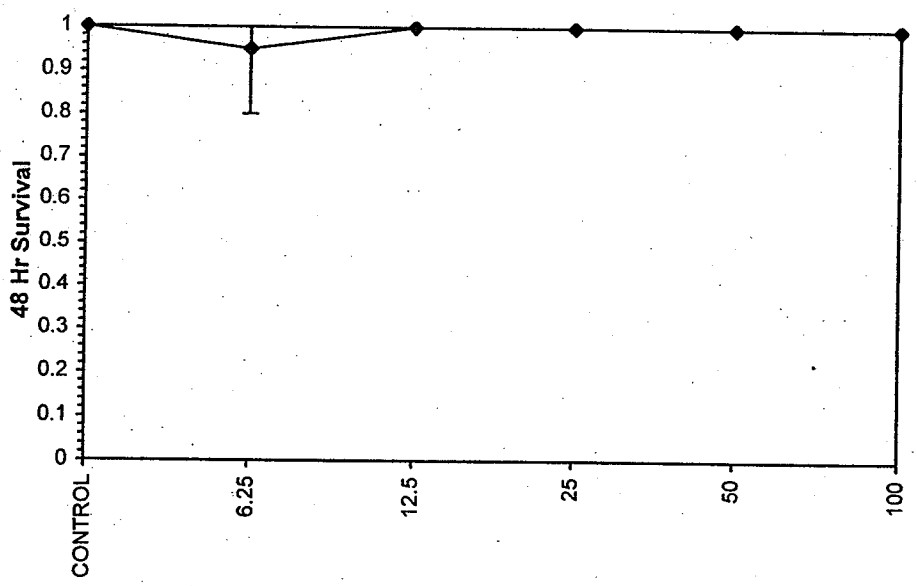
Conc-%	1	2	3	4
CONTROL	1.0000	1.0000	1.0000	1.0000
6.25	0.8000	1.0000	1.0000	1.0000
12.5	1.0000	1.0000	1.0000	1.0000
25	1.0000	1.0000	1.0000	1.0000
50	1.0000	1.0000	1.0000	1.0000
100	1.0000	1.0000	1.0000	1.0000

			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
CONTROL	1.0000	1.0000	1.3453	1.3453	1.3453	0.000	4		
6.25	0.9500	0.9500	1.2857	1.1071	1.3453	9.261	4	16.00	10.00
12.5	1.0000	1.0000	1.3453	1.3453	1.3453	0.000	4	18.00	10.00
25	1.0000	1.0000	1.3453	1.3453	1.3453	0.000	4	18.00	10.00
50	1.0000	1.0000	1.3453	1.3453	1.3453	0.000	4	18.00	10.00
100	1.0000	1.0000	1.3453	1.3453	1.3453	0.000	4	18.00	10.00

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.01)	0.46508	0.884	-3.0206	13.9892
Equality of variance cannot be confirmed				

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Steel's Many-One Rank Test	100	>100		1

Dose-Response Plot



ToxCalc v5.0.23

Reviewed by: RD

BASELINE TEST INFO – *Ceriodaphnia* 3-BROOD TEST

Coastal Bioanalysts, Inc
Form ETF0051A
Effective Date: 5/15/02

TEST ORGANISM INFO

Species: *Ceriodaphnia dubia*

Source: CBI Stock Cultures

Acclimation: **Water:** Mod. hard syn. FW. ✓

Other: _____

Temp. (°C): 25

Brood Release: (start date/time) 051407 1625

Brood Release: (end date/time) 051407 2200

Feeding Prior to Test: *Selenastrum*/YCT 1X/day

Feeding During Test: *Selenastrum*/YCT 1X/day

TEST DESIGN

Test Chamber: Borosilicate vial ✓

Other _____

Solution Vol: 15 ml ✓

Other _____

Illumination: 16:8 L:D 10-20 uE/m²/s

Number of Replicates/Concentration: 10

Initial Number of Daphnids/Replicate: 1

Randomization Template No. 8

TEST SET UP (Day 0)

Set Up Date: 05 15 07

Set Up By: AW

Time Water Added: 1220

Time Animals Added: 1230

NOTES

Test I.D. URS07 01 -CCD

WATER QUALITY DATA – *Ceriodaphnia dubia* 3-BROOD TEST COASTAL BIOANALYSTS, INC FORM ETF0054A EFFECTIVE DATE: 5/15/02

Parameter	Treatment	Day 0 Initial	Day 1 Final	Day 1 Initial	Day 2 Final	Day 2 Initial	Day 3 Final	Day 3 Initial	Day 4 Final	Day 4 Initial	Day 5 Final	Day 5 Initial	Day 6 Final	Day 6 Initial	Day 7 Final
TEMP (°C)	C	25	25	25	25	24	25	25	25	25	25	25	25		
	1	25	25	25	25	24	25	25	25	25	25	25	25		
	2	25	25	25	25	24	25	25	25	25	25	25	25		
	3	25	25	25	25	25	25	25	25	25	25	25	25		
	4	25	25	25	25	25	25	25	25	25	25	25	25		
	5	26	25	25	25	25	25	25	25	25	25	25	25		
pH (S.U.)	C	7.60	7.46	7.62	7.49	7.63	7.60	7.59	7.49	7.69	7.50	7.63	7.76		
	1	7.55	7.44	7.57	7.41	7.65	7.57	7.56	7.48	7.65	7.51	7.60	7.70		
	2	7.52	7.33	7.53	7.55	7.64	7.35	7.50	7.34	7.63	7.47	7.58	7.68		
	3	7.50	7.32	7.48	7.45	7.59	7.39	7.41	7.35	7.57	7.36	7.53	7.50		
	4	7.40	7.31	7.36	7.38	7.48	7.36	7.22	7.15	7.47	7.25	7.40	7.42		
	5	7.13	7.05	7.09	7.24	7.17	7.09	7.07	6.98	7.24	7.06	7.15	7.12		
D.O. (mg/l)	C	8.2	7.8	8.2	7.8	8.2	8.1	8.2	8.0	8.2	8.0	8.2	8.1		
	1	8.2	7.6	8.2	7.5	8.2	8.0	8.2	7.9	8.2	7.9	8.2	8.0		
	2	8.2	7.2	8.2	7.2	8.2	7.8	8.2	7.6	8.2	7.6	8.2	7.8		
	3	8.2	7.1	8.2	7.0	8.2	7.5	8.2	7.3	8.2	7.3	8.2	7.6		
	4	8.2	6.9	8.2	6.9	8.2	7.3	8.2	7.1	8.2	7.0	8.2	7.3		
	5	8.2	6.8	8.2	6.6	8.2	7.0	8.2	7.0	8.2	6.9	8.2	7.2		
COND (uS/cm)	C	300		293		300		300		284		286			
	1	296		296		300		296		282		286			
	2	290		290		292		289		277		280			
	3	273		272		274		274		263		265			
	4	236		238		247		241		230		232			
	5	166		162		170		173		164		167			
Replicate:		1	2	2	3	3	5	5	1	1	6	6	10		
Initials:		AW	AW	AW	AW	AW	CG	CG	CS	CS	CS	CS	CG		

TEST I.D. UR5R07-01 -CCD

REPRODUCTION/SURVIVAL DATA – *Ceriodaphnia* 3-BROOD TEST

Coastal Bioanalysts, Inc
Form ETF0053A
Effective Date: 5/15/02

Treatment	REP	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
C	1	0	0	3	6	0	12	
	2	0	0	3	1	6	14	
	3	0	0	0	3	6	14	
	4	0	0	2	3	6	12	
Lab Control	5	0	0	0	5	8	14	
	6	0	0	4	6	0	12	
	7	0	0	2	4	0	15	
	8	0	0	4	6	0	10	
	9	0	0	0	4	6	16	
	10	0	0	0	4	6	12	
1	1	0	0	3	6	0	15	
	2	0	0	0	4	6	14	
	3	0	0	0	4	6	14	
	4	0	0	2	4	8	13	
6.25% Conc.	5	0	0	0	4	6	12	
	6	0	0	2	6	0	13	
	7	0	0	3	6	0	14	
	8	0	0	3	6	0	12	
12.5	9	0	0	0	4	6	14	
Vol.	10	0	0	0	4	6	16	
2	1	0	0	3	6	0	11	
	2	0	0	0	2	6	13	
	3	0	0	0	4	6	12	
	4	0	0	2	0	4	12	
12.5% Conc.	5	0	0	0	4	6	18	
	6	0	0	2	6	0	10	
	7	0	0	3	6	0	11	
	8	0	0	2	6	0	10	
25	9	0	0	0	4	6	16	
Spl. Vol.	10	0	0	0	4	8	14	

Treatment	REP	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
3	1	0	0	0	2	0	12	
	2	0	0	0	2	4	12	
	3	0	0	0	6	8	16	
	4	0	0	0	4	8	15	
25% Conc.	5	0	0	0	3	6	11	
	6	0	0	5	8	0	12	
	7	0	0	3	6	0	12	
	8	0	0	3	5	0	2	
50	9	0	0	0	3	6	12	
Spl. Vol.	10	0	0	0	4	6	12	
4	1	0	0	2	2	3	12	
	2	0	0	3	0	6	14	
	3	0	0	1	4	6	16	
	4	0	0	4	0	8	14	
50% Conc.	5	0	0	0	1	5	14	
	6	0	0	3	6	0	12	
	7	0	0	3	6	0	10	
	8	0	0	3	0	5	11	
100	9	0	0	0	2	6	16	
Spl. Vol.	10	0	0	0	4	8	12	
5	1	0	0	5	8	0	14	
	2	0	0	1	1	4	15	
	3	0	0	1	3	6	15	
	4	0	0	2	4	6	12	
100% Conc.	5	0	0	0	3	6	12	
	6	0	0	2	6	0	16	
	7	0	0	2	6	0	14	
	8	0	0	3	6	0	12	
200	9	0	0	0	6	8	16	
Spl. Vol.	10	0	0	0	4	8	15	

	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Count/Renewal Time*:	1200	1315	1350	1125	1030	1530	
Initials:	[illegible]	[illegible]	GD	CS	CS	GD	

*Time of final count (day 6 or 7) = test end time. See printout of statistical analyses for total number of offspring by replicate.

Note: "Spl. Vol." = Volume sample added to total volume of 200 ml for preparation of dilutions.

NOTES:

Test I.D. DRS20701 -CCD

Ceriodaphnia Survival and Reproduction Test-Reproduction

Start Date:	5/15/2007 12:30	Test ID:	URSR0701CD	Sample ID:	FAIRFAX TERMINAL 001
End Date:	5/21/2007 15:30	Lab ID:	CBI	Sample Type:	UNTREATED SAMPLE
Sample Date:		Protocol:	EPAF 94-EPA Freshwater	Test Species:	CD-Ceriodaphnia dubia
Comments:					

Conc-%	1	2	3	4	5	6	7	8	9	10
CONTROL	21.000	10.000	23.000	11.000	27.000	22.000	21.000	20.000	26.000	22.000
6.25	24.000	24.000	24.000	14.000	22.000	21.000	23.000	21.000	24.000	26.000
12.5	20.000	21.000	22.000	18.000	28.000	18.000	20.000	18.000	26.000	26.000
25	16.000	18.000	30.000	27.000	20.000	25.000	21.000	15.000	21.000	22.000
50	7.000	23.000	11.000	26.000	20.000	21.000	19.000	19.000	24.000	29.000
100	27.000	6.000	10.000	12.000	21.000	24.000	22.000	21.000	30.000	27.000

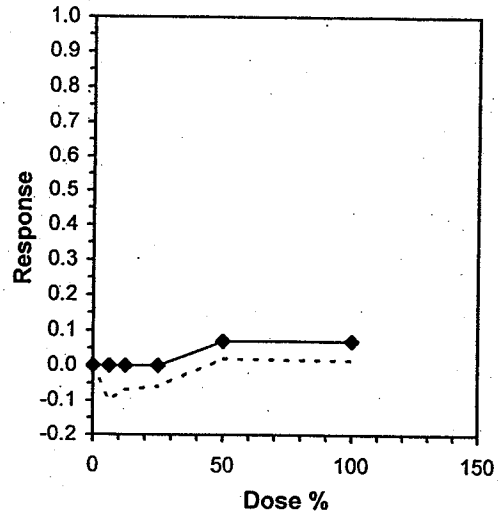
			Transform: Untransformed					Rank	1-Tailed	Isotonic	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical	Mean	N-Mean
CONTROL	20.300	1.0000	20.300	10.000	27.000	27.677	10			21.450	1.0000
6.25	22.300	1.0985	22.300	14.000	26.000	14.805	10	119.00	75.00	21.450	1.0000
12.5	21.700	1.0690	21.700	18.000	28.000	17.112	10	103.00	75.00	21.450	1.0000
25	21.500	1.0591	21.500	15.000	30.000	22.062	10	105.00	75.00	21.450	1.0000
50	19.900	0.9803	19.900	7.000	29.000	33.287	10	101.00	75.00	19.950	0.9301
100	20.000	0.9852	20.000	6.000	30.000	40.139	10	108.50	75.00	19.950	0.9301

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Kolmogorov D Test indicates non-normal distribution (p <= 0.01)	1.11269	1.035	-0.6409	0.27436
Bartlett's Test indicates equal variances (p = 0.09)	9.60326	15.0863		

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Steel's Many-One Rank Test	100	>100		1

Linear Interpolation (200 Resamples)

nt	%	SD	95% CL	Skew
IC05	42.875			
IC10	>100			
IC15	>100			
IC20	>100			
IC25	>100			
IC40	>100			
IC50	>100			



ToxCalc v5.0.23

Reviewed by: PD

Ceriodaphnia Survival and Reproduction Test-Reproduction

Start Date:	5/15/2007 12:30	Test ID:	URSR0701CD	Sample ID:	FAIRFAX TERMINAL 001
End Date:	5/21/2007 15:30	Lab ID:	CBI	Sample Type:	UNTREATED SAMPLE
Sample Date:		Protocol:	EPAF 94-EPA Freshwater	Test Species:	CD-Ceriodaphnia dubia
Comments:					

Conc-%	1	2	3	4	5	6	7	8	9	10
CONTROL	21.000	10.000	23.000	11.000	27.000	22.000	21.000	20.000	26.000	22.000
6.25	24.000	24.000	24.000	14.000	22.000	21.000	23.000	21.000	24.000	26.000
12.5	20.000	21.000	22.000	18.000	28.000	18.000	20.000	18.000	26.000	26.000
25	16.000	18.000	30.000	27.000	20.000	25.000	21.000	15.000	21.000	22.000
50	7.000	23.000	11.000	26.000	20.000	21.000	19.000	19.000	24.000	29.000
100	27.000	6.000	10.000	12.000	21.000	24.000	22.000	21.000	30.000	27.000

			Transform: Untransformed						1-Tailed	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
CONTROL	20.300	1.0000	20.300	10.000	27.000	27.677	10			
6.25	22.300	1.0985	22.300	14.000	26.000	14.805	10	-0.801	2.287	5.710
12.5	21.700	1.0690	21.700	18.000	28.000	17.112	10	-0.561	2.287	5.710
25	21.500	1.0591	21.500	15.000	30.000	22.062	10	-0.481	2.287	5.710
50	19.900	0.9803	19.900	7.000	29.000	33.287	10	0.160	2.287	5.710
100	20.000	0.9852	20.000	6.000	30.000	40.139	10	0.120	2.287	5.710

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Kolmogorov D Test indicates non-normal distribution (p <= 0.01)	1.11269	1.035	-0.6409	0.27436
Bartlett's Test indicates equal variances (p = 0.09)	9.60326	15.0863		

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU	MSDu	MSDp	MSB	MSE	F-Prob	df
Dunnett's Test	100	>100		1	5.71023	0.28129	10.23	31.1796	0.89385	5, 54

FOR PMSD ONLY

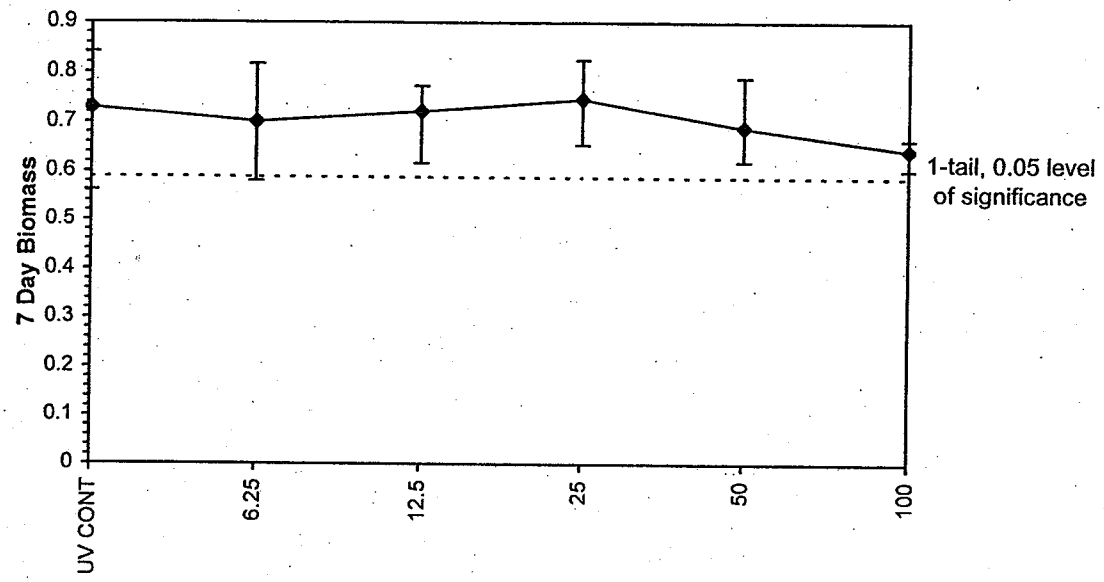
ToxCalc v5.0.23

Reviewed by: PP

Larval Fish Growth and Survival Test-7 Day Biomass

Start Date:	5/15/2007 13:10	Test ID:	URSR0701UV	Sample ID:	FAIRFAX TERMINAL 001
End Date:	5/22/2007 13:00	Lab ID:	CBI	Sample Type:	UV TREATED
Sample Date:		Protocol:	EPAF 94-EPA Freshwater	Test Species:	PP-Pimephales promelas
Comments:					

Dose-Response Plot



ToxCalc v5.0.23

Reviewed by: PD

BASELINE TEST INFO – FATHEAD 7 DAY TEST

Coastal Bioanalysts, Inc
Form ETF0041A
Effective Date: 5/15/02

TEST ORGANISM INFO

Species: *Pimephales promelas*

Source: CBI Stock Cultures: ✓

Other: _____

Hatch Date/Time: 05/14/07 1600 (start)

Hatch Date/Time: 05/15/07 0900 (end)

Acclimation: **Water:** Mod. hard syn. FW ✓

Other: _____

Temp. (°C): 25

Feeding Prior to Test: *Artemia ad libitum* 2X/day

Feeding During Test: *Artemia* 0.15 g/rep 2X/day

Arrival Date: (non-CBI) N/A

TEST DESIGN

Test Chamber: 1000 ml beaker ✓

600 ml beaker _____

Solution Vol: 500 ml ✓

Other _____

Illumination: 16:8 L:D 10-20 uE/m²/s

Number of Replicates/Concentration: 4

Initial Number of Fish/Replicate: 10

Randomization Template No. 8, 3, 1, 6

TEST SET UP (Day 0)

Set Up Date: 05/15/07

Set Up By: bja

Time Water Added: 1245

Time Animals Added: 1310

NOTES

Spl exposed to SW UV 1hr+ prior to use
SFW also exposed to SW UV 1hr+ prior to use

Test I.D. URSR0701 UV -CPP

ATER .LITY DATA – *Pimephales promelas* 7-day Larval Test COA..AL BIOANALYSTS, INC FORM ETF0042A EFFECTIVE DATE: 5/15/02

Parameter	Treatment	Day 0 Initial	Day 1 Final	Day 1 Initial	Day 2 Final	Day 2 Initial	Day 3 Final	Day 3 Initial	Day 4 Final	Day 4 Initial	Day 5 Final	Day 5 Initial	Day 6 Final	Day 6 Initial	Day 7 Final
TEMP (°C)	C	26	25	25	25	25	25	25	25	25	25	25	25	25	25
	1	25	25	25	25	25	25	25	25	25	25	25	25	25	25
	2	25	25	25	25	25	25	25	25	25	25	25	25	25	25
	3	25	25	25	25	25	25	25	25	25	25	25	25	25	25
	4	26	25	25	25	25	25	25	25	25	25	25	25	25	25
	5	26	25	26	25	26	25	25	25	25	25	25	25	25	25
pH (S.U.)	C	7.86	7.58	7.76	7.45	7.72	7.43	7.74	7.51	7.64	7.41	7.68	7.15	7.74	7.42
	1	7.75	7.50	7.74	7.37	7.70	7.36	7.70	7.34	7.63	7.30	7.67	7.15	7.71	7.32
	2	7.71	7.46	7.71	7.32	7.68	7.34	7.66	7.31	7.61	7.31	7.65	7.09	7.72	7.29
	3	7.67	7.42	7.65	7.28	7.63	7.23	7.59	7.21	7.57	7.20	7.55	7.12	7.69	7.27
	4	7.54	7.36	7.54	7.26	7.48	7.15	7.55	7.10	7.45	7.13	7.46	7.04	7.56	7.12
	5	7.20	7.06	7.24	7.17	7.19	6.86	7.35	6.99	7.20	7.00	7.20	6.83	7.25	6.94
D.O. (mg/l)	C	8.2	8.1	8.2	8.0	8.2	7.9	8.2	7.9	8.2	8.0	8.2	7.8	8.2	7.7
	1	8.2	8.1	8.2	8.0	8.2	7.8	8.2	7.8	8.2	7.9	8.2	7.6	8.2	7.5
	2	8.2	8.0	8.2	7.9	8.2	7.6	8.2	7.7	8.2	7.8	8.2	7.5	8.2	7.2
	3	8.2	7.9	8.2	7.9	8.2	7.5	8.2	7.6	8.2	7.8	8.2	7.1	8.2	7.1
	4	8.2	8.0	8.2	7.8	8.2	7.3	8.2	7.5	8.2	7.5	8.2	6.8	8.2	6.8
	5	8.2	8.0	8.2	7.8	8.2	7.1	8.2	7.4	8.2	7.5	8.2	6.1	8.2	6.5
COND (uS/cm)	C	299		300		300		299		296		294		299	
	1	291		302		303		298		291		294		297 304	
	2	284		292		295		292		283		287		294	
	3	268		276		276		277		271		270		276	
	4	236		243		241		243		239		238		240	
	5	156		167		168		176		170		168		170	
Replicate:		4	3	2	1	2	1	2	3	1	2	1	4	3	1
Initials:		bja	GB	[illegible]	RB	[illegible]	GB	RB	CS	CS	CS	CS	GB	[illegible]	GB

TEST I.D. URSR0701 UV -CPP

SURVIVAL & GROWTH DATA – FATHEAD MINNOW 7 DAY TEST Coast[illegible]oanalysts, Inc Form ETF0043D

Treatment[1]		Rep No.	Number of Live Fish							Fish Dry Weight Data (mg)[2]			Notes
			Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Pan #	Tot. Wt.	Tare Wt.	
C	CONTROL UV	1	10	10	10	10	10	10	10	1	10.16	4.54	
		2	10	10	10	10	10	10	10	2	14.17	6.69	
		3	10	10	10	10	10	10	10	3	14.57	6.89	
		4	10	10	10	10	10	10	10	4	13.95	5.55	
1	C: 6.25%	1	10	10	10	10	10	10	10	5	14.88	6.71	
		2	10	10	10	10	10	10	10	6	13.42	6.64	
		3	10	10	10	10	10	9	9	7	13.46	6.13	
	V: 100	4	10	10	10	10	10	10	10	8	14.02	8.21	
2	C: 12.5%	1	10	10	10	10	10	10	10	9	14.16	6.86	
		2	10	10	10	9	9	9	9	10	15.90	8.19	
		3	10	10	10	10	10	9	9	11	13.73	7.56	
	V: 200	4	10	10	10	9	9	9	9	12	15.25	7.52	
3	C: 25%	1	10	10	10	10	10	10	10	13	15.18	7.34	
		2	10	10	10	10	10	10	10	14	15.18	6.92	
		3	10	10	10	10	10	10	9	15	13.72	7.16	
	V: 400	4	10	10	10	10	10	10	10	16	13.84	6.61	
4	C: 50%	1	10	10	10	10	10	9	9	17	13.46	7.25	
		2	10	10	10	10	10	10	10	18	15.09	7.19	
		3	10	10	10	10	10	8	8	19	12.37	5.88	
	V: 800	4	10	10	10	10	10	10	10	20	13.92	6.89	
5	C: 100%	1	10	10	10	10	10	8	8	21	12.85	6.41	
		2	10	10	10	10	~~8~~ 9	9	9	22	12.96	6.42	
		3	10	9	9	9	9	9	9	23	14.09	7.43	
	V: 1600	4	10	10	10	10	10	10	10	24	14.84	8.19	
Renewal/Count Time:			1330	1400	1400	1245	1200	1240	1300[3]	Tare Wt: Date: 5/21 Calib. Check (10 mg[4]): 9.8 Init: CS			
Initials:			AW	AW	AB	CS	CS	AW	[illegible]	Tot. Wt: Date: 5/23 Calib. Check (10 mg[4]): 10.0 Init: CS			

[1] C = Concentration; V = Volume (ml) sample added to total volume of 1600 ml for preparation of solutions. [2]See printout of statistical analyses for biomass weights by replicate. [3]Time of final count = test end time. [4]True value/estimated uncertainty of calibration weight (NIST traceable annual certification) = 10.00 / 0.05 mg

Test ID UNSR0201 UV -CPP

Larval Fish Growth and Survival Test-7 Day Survival

Start Date:	5/15/2007 13:10	Test ID:	URSR0701UV	Sample ID:	FAIRFAX TERMINAL 001
End Date:	5/22/2007 13:00	Lab ID:	CBI	Sample Type:	UV TREATED
Sample Date:		Protocol:	EPAF 94-EPA Freshwater	Test Species:	PP-Pimephales promelas
Comments:					

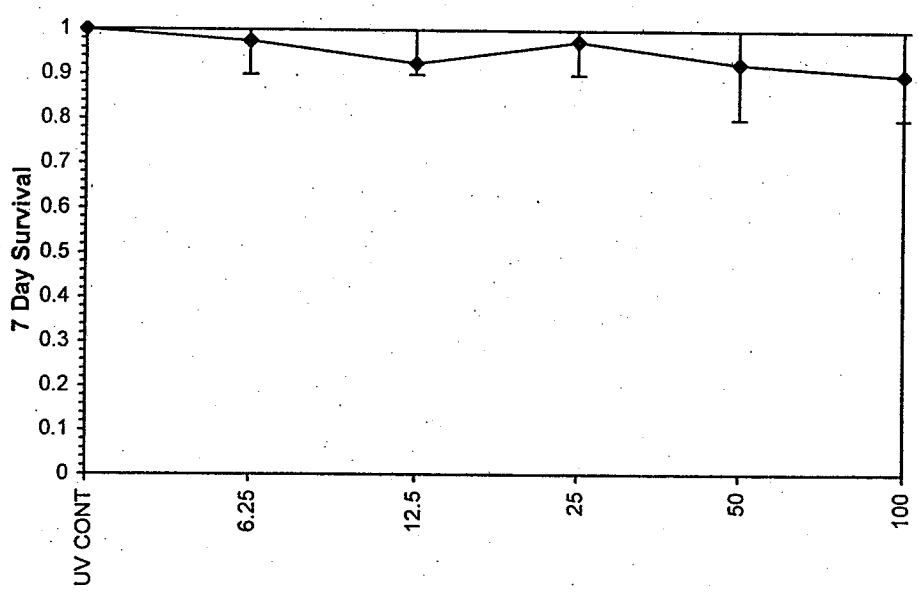
Conc-%	1	2	3	4
UV CONT	1.0000	1.0000	1.0000	1.0000
6.25	1.0000	1.0000	0.9000	1.0000
12.5	1.0000	0.9000	0.9000	0.9000
25	1.0000	1.0000	0.9000	1.0000
50	0.9000	1.0000	0.8000	1.0000
100	0.8000	0.9000	0.9000	1.0000

			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
UV CONT	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	4		
6.25	0.9750	0.9750	1.3713	1.2490	1.4120	5.942	4	16.00	10.00
12.5	0.9250	0.9250	1.2898	1.2490	1.4120	6.318	4	12.00	10.00
25	0.9750	0.9750	1.3713	1.2490	1.4120	5.942	4	16.00	10.00
50	0.9250	0.9250	1.2951	1.1071	1.4120	11.347	4	14.00	10.00
100	0.9000	0.9000	1.2543	1.1071	1.4120	9.935	4	12.00	10.00

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.95092	0.884	-0.3267	0.04052
Equality of variance cannot be confirmed				

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Steel's Many-One Rank Test	100	>100		1

Dose-Response Plot



ToxCalc v5.0.23

Reviewed by: PP

Larval Fish Growth and Survival Test-7 Day Biomass

Start Date:	5/15/2007 13:10	Test ID:	URSR0701UV	Sample ID:	FAIRFAX TERMINAL 001
End Date:	5/22/2007 13:00	Lab ID:	CBI	Sample Type:	UV TREATED
Sample Date:		Protocol:	EPAF 94-EPA Freshwater	Test Species:	PP-Pimephales promelas
Comments:					

Conc-%	1	2	3	4
UV CONT	0.5620	0.7480	0.7680	0.8400
6.25	0.8170	0.6780	0.7330	0.5810
12.5	0.7300	0.7710	0.6170	0.7730
25	0.7840	0.8260	0.6560	0.7230
50	0.6210	0.7900	0.6490	0.7030
100	0.6440	0.6040	0.6660	0.6650

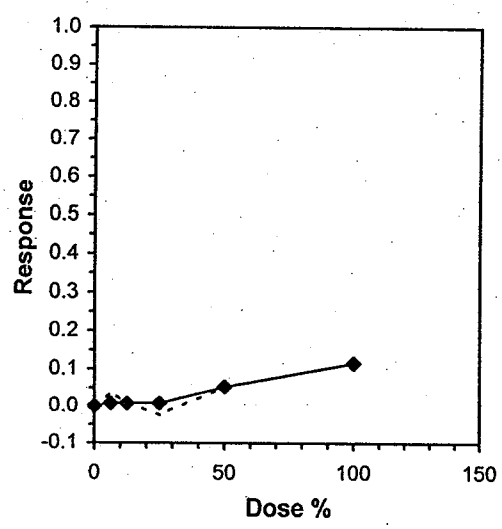
			Transform: Untransformed						1-Tailed		Isotonic	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD	Mean	N-Mean
UV CONT	0.7295	1.0000	0.7295	0.5620	0.8400	16.237	4				0.7295	1.0000
6.25	0.7023	0.9626	0.7023	0.5810	0.8170	14.097	4	0.466	2.410	0.1410	0.7241	0.9926
12.5	0.7228	0.9907	0.7228	0.6170	0.7730	10.132	4	0.115	2.410	0.1410	0.7241	0.9926
25	0.7473	1.0243	0.7473	0.6560	0.8260	9.915	4	-0.303	2.410	0.1410	0.7241	0.9926
50	0.6908	0.9469	0.6908	0.6210	0.7900	10.772	4	0.662	2.410	0.1410	0.6908	0.9469
100	0.6448	0.8838	0.6448	0.6040	0.6660	4.498	4	1.449	2.410	0.1410	0.6448	0.8838

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.96372	0.884	-0.5089	-0.0825
Bartlett's Test indicates equal variances (p = 0.48)	4.50332	15.0863		

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU	MSDu	MSDp	MSB	MSE	F-Prob	df
Dunnett's Test	100	>100		1	0.14097	0.19325	0.00523	0.00684	0.58772	5, 18

Linear Interpolation (200 Resamples)

nt	%	SD	95% CL(Exp)	Skew
IC05	48.294			
IC10	87.174			
IC15	>100			
IC20	>100			
IC25	>100			
IC40	>100			
IC50	>100			



ToxCalc v5.0.23

Reviewed by: PP

BASELINE TEST INFO – FATHEAD 7 DAY TEST

Coastal Bioanalysts, Inc
Form ETF0041A
Effective Date: 5/15/02

TEST ORGANISM INFO

Species: *Pimephales promelas*

Source: CBI Stock Cultures: ✓

Other: _____

Hatch Date/Time: 05 14 07 1600 (start)

Hatch Date/Time: 05 15 07 0900 (end)

Acclimation: **Water:** Mod. hard syn. FW ✓

Other: _____

Temp. (°C): 25

Feeding Prior to Test: *Artemia ad libitum* 2X/day

Feeding During Test: *Artemia* 0.15 g/rep 2X/day

Arrival Date: (non-CBI) N/A

TEST DESIGN

Test Chamber: 1000 ml beaker ✓

600 ml beaker _____

Solution Vol: 500 ml ✓

Other _____

Illumination: 16:8 L:D 10-20 uE/m²/s

Number of Replicates/Concentration: 4

Initial Number of Fish/Replicate: 10

Randomization Template No. 1, 3, 5, 7

TEST SET UP (Day 0)

Set Up Date: 051507

Set Up By: AW

Time Water Added: 1320

Time Animals Added: 1335

NOTES

Test I.D. URSR0701 -CPP

WATER QUALITY DATA – *Pimephales promelas* 7-day Larval Test COASTAL BIOANALYSTS, INC FORM ETF0042A EFFECTIVE DATE: 5/15/02

Parameter	Treatment	Day 0 Initial	Day 1 Final	Day 1 Initial	Day 2 Final	Day 2 Initial	Day 3 Final	Day 3 Initial	Day 4 Final	Day 4 Initial	Day 5 Final	Day 5 Initial	Day 6 Final	Day 6 Initial	Day 7 Final
TEMP (°C)	C	25	25	25	25	25	25	25	25	25	25	25	25	25	25
	1	25	25	25	25	25	25	25	25	25	25	25	25	25	25
	2	25	25	25	25	25	25	25	25	25	25	25	25	25	25
	3	25	25	25	25	25	25	25	25	25	25	25	25	25	25
	4	25	25	25	25	25	25	25	25	25	25	25	25	25	25
	5	26	25	25	25	25	25	25	25	25	25	25	25	25	25
pH (S.U.)	C	7.72	7.57	7.78	7.38	7.70	7.23	7.43	7.21	7.66	7.23	7.74	7.30	7.78	7.08
	1	7.66	7.47	7.74	7.27	7.70	7.16	7.42	7.16	7.66	7.16	7.58	7.18	7.72	7.09
	2	7.69	7.45	7.71	7.18	7.68	7.08	7.61	7.04	7.64	7.08	7.61	7.15	7.72	7.03
	3	7.67	7.46	7.65	7.17	7.63	7.03	7.57	7.01	7.61	7.03	7.59	7.09	7.66	6.92
	4	7.58	7.37	7.53	7.14	7.52	6.92	7.50	6.89	7.49	6.90	7.49	7.03	7.50	6.85
	5	7.32	7.01	7.18	7.03	7.19	6.82	7.33	6.78	7.20	6.84	7.20	6.77	7.16	6.75
D.O. (mg/l)	C	8.2	7.9	8.2	7.9	8.2	8.0	8.2	7.9	8.2	7.9	8.2	7.7	8.2	7.7
	1	8.2	7.8	8.2	7.8	8.2	7.8	8.2	7.8	8.2	7.8	8.2	7.6	8.2	7.5
	2	8.2	7.8	8.2	7.6	8.2	7.6	8.2	7.7	8.2	7.6	8.2	7.4	8.2	7.3
	3	8.2	7.7	8.2	7.4	8.2	7.6	8.2	7.6	8.2	7.6	8.2	7.2	8.2	7.1
	4	8.2	7.6	8.2	7.4	8.2	7.6	8.2	7.5	8.2	7.4	8.2	7.0	8.2	7.0
	5	8.2	7.6	8.2	7.2	8.2	7.5	8.2	7.5	8.2	7.4	8.2	6.4	8.2	6.8
COND (uS/cm)	C	300		292		295		295		293		288		299	
	1	302		298		301		298		291		289		296	
	2	289		292		297		291		285		283		291	
	3	272		275		278		277		270		268		280	
	4	237		234		249		242		238		237		241	
	5	164		+171		164		178		168		164		169	
Replicate:		4	3	2	1	2	1	2	3	1	3	2	4	3	1
Initials:		AW	CS	AW	PB	AW	CB	PB	CS	CS	CS	CS	CB	AW	CB

TEST I.D. UR5R0701 -CPP

SURVIVAL & GROWTH DATA – FATHEAD MINNOW 7 DAY TEST Coastal Bioanalysts, Inc Form ETF0043D

Treatment[1]		Rep No.	Number of Live Fish: Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Fish Dry Weight Data (mg)[2]: Pan #	Tot. Wt.	Tare Wt.	Notes
C	CONTROL	1	10	10	10	10	10	10	10	25	14.63	6.97	
		2	10	10	10	10	10	10	10	26	14.67	6.98	
		3	10	10	10	10	10	10	10	27	14.29	6.50	
		4	10	10	10	10	10	10	10	28	12.75	5.73	
1	C: 6.25%	1	10	10	9	9	9	7	7	29	12.87	6.94	
		2	10	9	9	9	7	7	7	30	12.55	6.51	
		3	10	7	7	7	7	6	6	31	12.51	6.07	
	V: 100	4	10	10	10	10	10	10	10	32	15.61	7.79	
2	C: 12.5%	1	10	9	7	6	5	5	5	33	11.06	6.83	
		2	10	9	8	8	8	8	8	34	13.42	6.13	
		3	10	10	10	10	10	10	10	35	13.21	5.85	
	V: 200	4	10	10	10	10	9	9	9	36	13.85	6.52	
3	C: 25%	1	10	10	10	8	8	8	8	37	13.75	7.01	
		2	10	9	9	9	9	9	9	38	14.47	7.00	
		3	10	10	10	10	9	9	9	39	14.24	7.50	
	V: 400	4	10	10	9	9	9	9	9	40	13.77	6.95	
4	C: 50%	1	10	10	9	8	8	7	7	41	11.84	6.27	
		2	10	10	7	5	5	5	5	42	11.13	7.61	
		3	10	10	10	10	10	10	10	43	12.80	5.91	
	V: 800	4	10	9	3	3	2	2	2	44	8.60	6.91	
5	C: 100%	1	10	10	10	10	7	7	7	45	11.60	6.33	
		2	10	9	3	2	1	1	1	46	7.67	7.01	
		3	10	10	8	5	3	3	3	47	9.82	8.09	
	V: 1600	4	10	10	6	4	3	3	3	48	8.44	6.44	
Renewal/Count Time:			1300	1445	1440	1147	1135	1325	1250[3]	Tare Wt: Date: 5/21	Calib. Check (10 mg[4]): 9.98	Init: GB	
Initials:			AW	AW	PB	CS	CS	AW	AW	Tot. Wt: Date: 5/23	Calib. Check (10 mg[4]): 10.02	Init: GB	

[1] C = Concentration; V = Volume (ml) sample added to total volume of 1600 ml for preparation of solutions. [2]See printout of statistical analyses for biomass weights by replicate. [3]Time of final count = test end time. [4]True value/estimated uncertainty of calibration weight (NIST traceable annual certification) = 10.00 / 0.05 mg

Test ID URSR0701 -CPP

Larval Fish Growth and Survival Test-7 Day Survival

Start Date:	5/15/2007 13:35	Test ID:	URSR0701PP	Sample ID:	FAIRFAX TERMINAL 001
End Date:	5/22/2007 12:50	Lab ID:	CBI	Sample Type:	UNTREATED SAMPLE
Sample Date:		Protocol:	EPAF 94-EPA Freshwater	Test Species:	PP-Pimephales promelas

Comments:

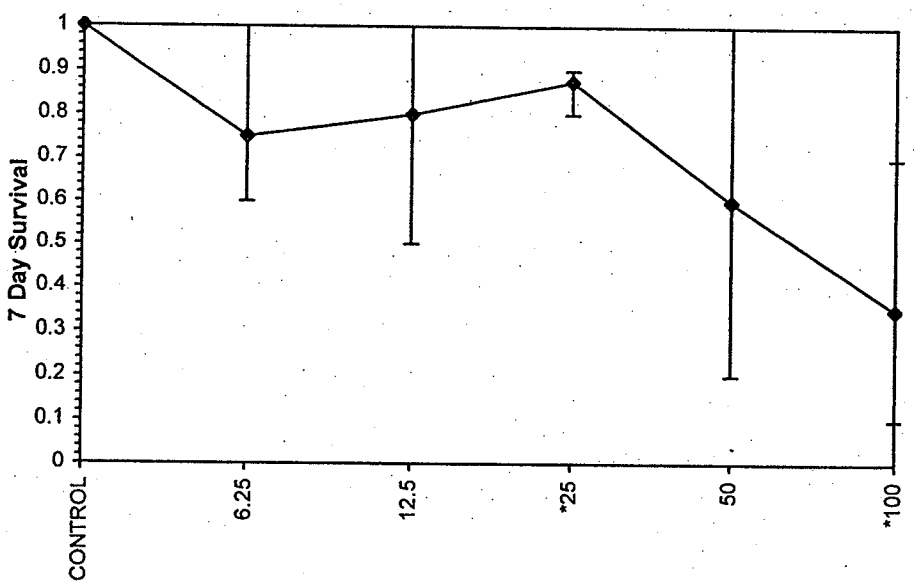
Conc-%	1	2	3	4
CONTROL	1.0000	1.0000	1.0000	1.0000
6.25	0.7000	0.7000	0.6000	1.0000
12.5	0.5000	0.8000	1.0000	0.9000
25	0.8000	0.9000	0.9000	0.9000
50	0.7000	0.5000	1.0000	0.2000
100	0.7000	0.1000	0.3000	0.3000

			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
CONTROL	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	4		
6.25	0.7500	0.7500	1.0701	0.8861	1.4120	21.798	4	12.00	10.00
12.5	0.8000	0.8000	1.1384	0.7854	1.4120	23.390	4	12.00	10.00
*25	0.8750	0.8750	1.2136	1.1071	1.2490	5.846	4	10.00	10.00
50	0.6000	0.6000	0.9131	0.4636	1.4120	43.503	4	12.00	10.00
*100	0.3500	0.3500	0.6180	0.3218	0.9912	44.796	4	10.00	10.00

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.94617	0.884	0.307	0.7174
Equality of variance cannot be confirmed				

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Steel's Many-One Rank Test	12.5	25	17.6777	8

Dose-Response Plot



ToxCalc v5.0.23

Reviewed by: BD

Larval Fish Growth and Survival Test-7 Day Biomass

Start Date:	5/15/2007 13:35	Test ID:	URSR0701PP	Sample ID:	FAIRFAX TERMINAL 001
End Date:	5/22/2007 12:50	Lab ID:	CBI	Sample Type:	UNTREATED SAMPLE
Sample Date:		Protocol:	EPAF 94-EPA Freshwater	Test Species:	PP-Pimephales promelas

nments:

Conc-%	1	2	3	4
CONTROL	0.7660	0.7690	0.7790	0.7020
6.25	0.5930	0.6040	0.6440	0.7820
12.5	0.4230	0.7290	0.7360	0.7330
25	0.6740	0.7470	0.6740	0.6820
50	0.5570	0.3520	0.6890	0.1690
100	0.5270	0.0660	0.1730	0.2000

			Transform: Untransformed						1-Tailed		Isotonic	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD	Mean	N-Mean
CONTROL	0.7540	1.0000	0.7540	0.7020	0.7790	4.656	4				0.7540	1.0000
6.25	0.6558	0.8697	0.6558	0.5930	0.7820	13.263	4	1.329	2.180	0.1611	0.6684	0.8865
12.5	0.6553	0.8690	0.6553	0.4230	0.7360	23.634	4	1.336	2.180	0.1611	0.6684	0.8865
25	0.6943	0.9208	0.6943	0.6740	0.7470	5.094	4				0.6684	0.8865
50	0.4418	0.5859	0.4418	0.1690	0.6890	51.763	4				0.4418	0.5859
100	0.2415	0.3203	0.2415	0.0660	0.5270	82.375	4				0.2415	0.3203

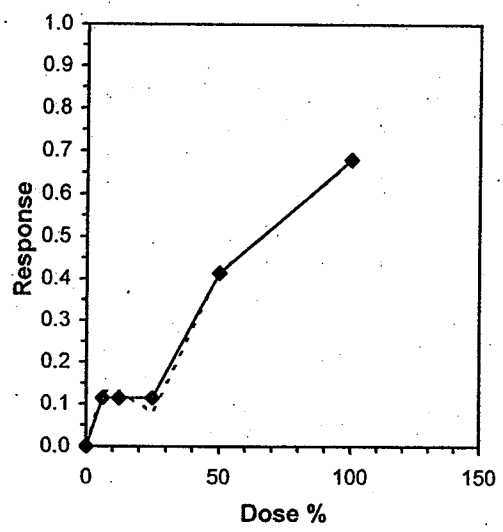
Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.90203	0.805	-1.2422	2.47879
Bartlett's Test indicates equal variances (p = 0.10)	4.60807	9.21034		

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU	MSDu	MSDp	MSB	MSE	F-Prob	df
Dunnett's Test	12.5	>12.5		8	0.16113	0.2137	0.01294	0.01093	0.34955	2, 9

Linear Interpolation (200 Resamples)

Point	%	SD	95% CL(Exp)		Skew
IC05*	2.753	5.104	1.202	38.804	3.4921
IC10*	5.506	10.197	2.404	47.583	0.7288
IC15	28.035	10.113	0.000	50.197	-0.5990
IC20	32.193	7.882	0.000	63.792	0.1805
IC25	36.351	8.676	20.806	68.266	0.8448
IC40	48.825				
IC50	66.167				

* indicates IC estimate less than the lowest concentration



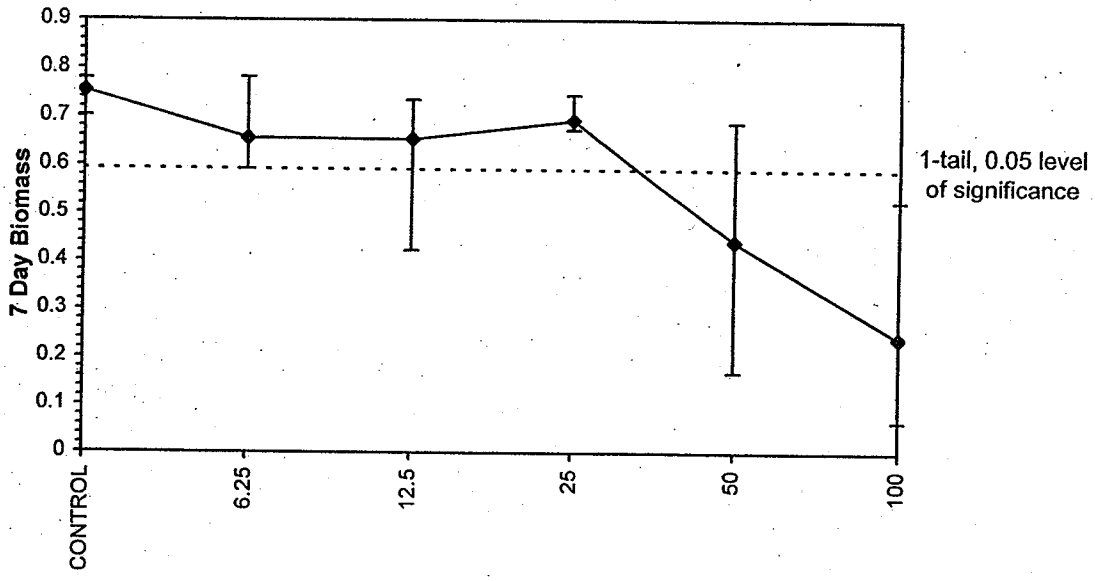
ToxCalc v5.0.23

Reviewed by: PD

Larval Fish Growth and Survival Test-7 Day Biomass

Start Date:	5/15/2007 13:35	Test ID:	URSR0701PP	Sample ID:	FAIRFAX TERMINAL 001
End Date:	5/22/2007 12:50	Lab ID:	CBI	Sample Type:	UNTREATED SAMPLE
Sample Date:		Protocol:	EPAF 94-EPA Freshwater	Test Species:	PP-Pimephales promelas
Comments:					

Dose-Response Plot



ToxCalc v5.0.23

Reviewed by: PD

EFFLUENT SAMPLE & DILUTION WATER CHARACTERISTICS
FRESHWATER TESTS

COASTAL BIOANALYSTS, INC
FORM ETF2031B EFFECTIVE DATE: 10/17/02

INITIAL SAMPLE CHARACTERIZATION				
Sample Bottle[2]	A-1	B-1	C-1	
Tot. Resid. Chlorine (mg/l)	<QL	<QL	<QL	
Hardness (mg/l $CaCO_3$)	38	26	26	
Alkalinity (mg/l $CaCO_3$)	27	24	26	
NH_3-N (mg/l)	<1.0	<1.0	<1.0	
Color/Appearance[3]	CYSSl	CYSSl	CYSSl	
Obvious Odor?	ND	ND	ND	
Date/Time	5/15 1000	5/16 1400	5/18 1035	
Initials	GB	GB	GB	

NOTES:

SAMPLE PREPARATION MEASUREMENTS (100% concentration)								ALL
Sample Bottle	A-1,2	B-1,2	B-3,4	C-1,2	C-2,3,4	C-4,5	C-6,7	B-3
Prep Temperature (°C)	25	25	26	25	25	25	24	24
Conductivity (uS/cm)[4]	173	183	NA	175	NA	NA	NA	189
D.O. (mg/l) After Warming	9.9	8.7	8.6	9.2	9.5	9.5	9.1	9.1
Aeration Time (min)	3.0	2.0	2.0	2.5	3.0	3.0	3.0	1.0
Adjusted D.O.	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2
Final pH (S.U.)	7.23	7.17	7.12	7.14	7.10	7.11	7.25	7.15
Tot. Resid. Chlorine (mg/l)[5]	N.D.	N.D.	N.D.	N.D	N.D	N.D	N.D.	N.D
Sample Filtered (60 um)?	Yes	yes	yes	Yes	Yes	Yes	Yes	ND
Date/Time	5/15 1030	5/16 1150	5/17 1100	5/18 1040	5/19 0900	5/20	5/21 0940	5/16 1025
Initials	GB	SW	SW	GB	CS	CS	GB	GB

DILUTION WATER CHARACTERISTICS								ALL
Vat Number	1	2	2	2	1	1	2	2
Temperature (°C)	25	25	25	25	25	25	25	25
Conductivity (uS/cm)	297	296	295	297	297	293	298	296
D.O. (mg/l)	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2
pH (S.U.)	7.63	7.69	7.71	7.63	7.86	7.78	7.62	7.69
Hardness (mg/l $CaCO_3$)	88	86	86	86	96	96	98	86
Alkalinity (mg/l $CaCO_3$)	59	57	57	57	59	59	60	57
Date/Time	5/15 0830	5/16 0830	5/17 0930	5/18 0830	5/19 0900	5/20 0930	5/21 0830	5/16 0830
Initials	GB	GB	GB	GB	CS	CS	GB	GB

[1]Q.L. = Quantification Limit, N.D. = Not Determined/Measured, NA = Not Applicable
[2]Bottle number = 9th or 9th and 10th characters of Laboratory Sample I.D. (e.g. "A", "A-1", "A-2"; see SOP SPLS202)
[3]C-Clear, O-Opaque, T-Turbid, S-Solids (Sl-Slight, M-Moderate, H-Heavy), Y-Yellow, B-Brown, Bl-Black, G-Green
[4]Conductivity measured on first use of sample only
[5]Total residual chlorine measured after sample prep only if present in initial sample characterization

PROJECT I.D. URSR0701
(First 8 characters of Laboratory Sample ID)

SAMPLE INFORMATION/CHAIN-OF-CUSTODY (FORM ETF2011B Rev. 5/15/02)

Coastal Bioanalysts, Inc.

NOTE: It is the responsibility of the sampler to insure that samples are properly collected, preserved (>0-6° C) and shipped. Sample hold time is 36 h. Additional costs may be incurred by improper sampling, preservation, shipping or receipt of samples after 3:p.m. or on weekends and holidays.
estions? Call 804-694-8285

Laboratory Sample ID (Lab Use Only)

U	R	5	R	0	7	0	1	-	A
A	A	A	A	Y	Y	N	N		A

FACILITY INFORMATION

CLIENT NAME	URS Corporation	FACILITY	Fairfax Terminal
NPDES PERMIT NO	VPDES Permit Number VA0001872	OUTFALL # OR LOCATION	001
SAMPLE CHLORINATED?	SAMPLE DECHLORINATED?	IF CHLORINE PRESENT UPON ARRIVAL AT LAB, DOES PERMIT SPECIFY DECHLORINATION OF SAMPLES?	

TESTS REQUESTED:

SPECIES OR EPA METH #	C. dubia	ACUTE ☐	CHRONIC ☑
SPECIES OR EPA METH #	P. promelas	ACUTE ☐	CHRONIC ☑

OTHER TESTS:

*A SPECIFIC DILUTION SERIES MAY BE REQUIRED IN THE DISCHARGE PERMIT. A DEFAULT SERIES OF 100, 50, 25, 12.5 AND 6.3%, OR CONCENTRATIONS USED IN PRIOR TESTING OF THIS OUTFALL, WILL BE USED UNLESS INDICATED OTHERWISE. **IF IN DOUBT PLEASE ATTACH A COPY OF APPLICABLE PERMIT PAGES.**

GRAB SAMPLE INFORMATION

SAMPLE DATE	SAMPLE TIME	SAMPLE VOLUME

COMPOSITE SAMPLE INFORMATION

COMPOSITE START DATE & TIME	5-13-07 12:00			COMPOSITE END DATE & TIME	5-14-07 11:00		
TIME PROPORTIONAL COMPOSITE INFO	NUMBER SUBSAMPLES	24	VOL (ml) SUBSAMPLES	620	TIME INCREMENT	1 hr.	TOTAL VOLUME 14,880 ml.
FLOW PROPORTIONAL COMPOSITE INFO*	SET VOLUME SUBSAMPLE			SET VOLUME FLOW			TOTAL VOLUME

*FOR VARIABLE VOLUME SUBSAMPLES BASED ON FLOW (e.g. COMPOSITING "BY HAND") ATTACH SAMPLE AND FLOW INFORMATION ON SEPARATE SHEET

FIELD MEASUREMENTS

DISCHARGE TEMP (°C)	SAMPLE TEMP (°C)	DISCHARGE pH (S.U.)	SAMPLE TRC (mg/l)	DATE/TIME (e.g. 02/23/00 1835)	INITIALS
23.8	5.3	6.37	0	11:04 5-14-07	MLP

MEASUREMENTS MUST BE TAKEN WITHIN 15 MINUTES OF SAMPLE OR LAST SUBSAMPLE COLLECTION.

COMMENTS:

Mark L. Johnson / URS Corporation — Mark L. Johnson — 5-14-07
(PRINTED NAME/AFFILIATION SAMPLER ANALYST) (SIGNATURE) (DATE)

RELINQUISHED BY	DATE	TIME	RECEIVED BY
Mark L. Johnson /	5-14-07	16:00	
Mark L. Johnson	5/15/07	0955	D. Bay

SHIPPING METHOD: UPS____ FEDEX X HAND DELIVERY____ OTHER____

CONDITION ON ARRIVAL: ACCEPTABLE__ OTHER____

SAMPLE ARRIVAL TEMP: (°C) 3 ARRIVED ON ICE? YES ✓ NO____

SAMPLE INFORMATION/CHAIN-OF-CUSTODY (FORM ETF2011B Rev. 5/15/02)

Coastal Bioanalysts, Inc.

NOTE: It is the responsibility of the sampler to insure that samples are properly collected, preserved (>0-6° C) and shipped. Sample hold time is 36 h. Additional costs may be incurred by improper sampling, preservation, shipping or receipt of samples after 3:p.m. or on weekends and holidays. Questions? Call 804-694-8285

Laboratory Sample ID (Lab Use Only)

U	R	5	R	0	7	0	1	-	B
A	A	A	A	Y	Y	N	N		A

FACILITY INFORMATION

CLIENT NAME	URS Corporation	FACILITY	Fairfax Terminal
NPDES PERMIT NO	VPDES Permit Number VA0001872	OUTFALL # OR LOCATION	001
SAMPLE CHLORINATED?	SAMPLE DECHLORINATED?	IF CHLORINE PRESENT UPON ARRIVAL AT LAB, DOES PERMIT SPECIFY DECHLORINATION OF SAMPLES?	

TESTS REQUESTED:

SPECIES OR EPA METH #			
C. dubia	ACUTE ☑	CHRONIC ☑
P. promelas	ACUTE ☐	CHRONIC ☑

OTHER TESTS:

*A SPECIFIC DILUTION SERIES MAY BE REQUIRED IN THE DISCHARGE PERMIT. A DEFAULT SERIES OF 100, 50, 25, 12.5 AND 6.3%, OR CONCENTRATIONS USED IN PRIOR TESTING OF THIS OUTFALL, WILL BE USED UNLESS INDICATED OTHERWISE. IF IN DOUBT PLEASE ATTACH A COPY OF APPLICABLE PERMIT PAGES.

GRAB SAMPLE INFORMATION

SAMPLE DATE	SAMPLE TIME	SAMPLE VOLUME

COMPOSITE SAMPLE INFORMATION

COMPOSITE START DATE & TIME	5-14-07 11:20		COMPOSITE END DATE & TIME	5-15-07 10:20	
TIME PROPORTIONAL COMPOSITE INFO	NUMBER SUBSAMPLES 24	VOL (ml) SUBSAMPLES 1200	TIME INCREMENT 1 hr.	TOTAL VOLUME 28,800 ml.	
FLOW PROPORTIONAL COMPOSITE INFO*	SET VOLUME SUBSAMPLE		SET VOLUME FLOW	TOTAL VOLUME	

*FOR VARIABLE VOLUME SUBSAMPLES BASED ON FLOW (e.g. COMPOSITING "BY HAND") ATTACH SAMPLE AND FLOW INFORMATION ON SEPARATE SHEET

FIELD MEASUREMENTS

DISCHARGE TEMP (°C)	SAMPLE TEMP (°C)	DISCHARGE pH (S.U.)	SAMPLE TRC (mg/l)	DATE/TIME (e.g. 02/23/00 1835)	INITIALS
24.5	5.6	6.39	0	10:25 5-15-07	MLJ

MEASUREMENTS MUST BE TAKEN WITHIN 15 MINUTES OF SAMPLE OR LAST SUBSAMPLE COLLECTION.

COMMENTS:

Mark L. Johnson / URS Corporation — Mark L. Johnson — 5-15-07

(PRINTED NAME/AFFILIATION SAMPLER/ANALYST) (SIGNATURE) (DATE)

RELINQUISHED BY	DATE	TIME	RECEIVED BY
Mark L. Johnson /	5-15-07	16:00	
Mark L. Johnson	5/16/07	1050	D. Bragg

SHIPPING METHOD: UPS____ FEDEX X HAND DELIVERY____ OTHER____

CONDITION ON ARRIVAL: ACCEPTABLE ✓ OTHER____

SAMPLE ARRIVAL TEMP: (°C) 2 ARRIVED ON ICE? YES ✓ NO____

SAMPLE INFORMATION/CHAIN-OF-CUSTODY (FORM ETF2011B Rev. 5/15/02)

Coastal Bioanalysts, Inc.

NOTE: It is the responsibility of the sampler to insure that samples are properly collected, preserved (>0-6°C) and shipped. Sample hold time is 36 h. Additional costs may be incurred by improper sampling, preservation, shipping or receipt of samples after 3:p.m. or on weekends and holidays.
Questions? Call 804-694-8285

Laboratory Sample ID (Lab Use Only)

U	R	S	R	0	7	0	1	-	C
A	A	A	A	Y	Y	N	N		A

FACILITY INFORMATION

CLIENT NAME	URS Corporation	FACILITY	Fairfax Terminal
NPDES PERMIT NO	VPDES Permit Number VA0001872	OUTFALL # OR LOCATION	001
SAMPLE CHLORINATED?	SAMPLE DECHLORINATED?	IF CHLORINE PRESENT UPON ARRIVAL AT LAB, DOES PERMIT SPECIFY DECHLORINATION OF SAMPLES?	

TESTS REQUESTED:	SPECIES OR EPA METH #			
		Ceriodubia	ACUTE ☐	CHRONIC ☑
	SPECIES OR EPA METH #			
		P. promelas	ACUTE ☐	CHRONIC ☑

OTHER TESTS:

*A SPECIFIC DILUTION SERIES MAY BE REQUIRED IN THE DISCHARGE PERMIT. A DEFAULT SERIES OF 100, 50, 25, 12.5 AND 6.3%, OR CONCENTRATIONS USED IN PRIOR TESTING OF THIS OUTFALL, WILL BE USED UNLESS INDICATED OTHERWISE. IF IN DOUBT PLEASE ATTACH A COPY OF APPLICABLE PERMIT PAGES.

GRAB SAMPLE INFORMATION

SAMPLE DATE	SAMPLE TIME	SAMPLE VOLUME

COMPOSITE SAMPLE INFORMATION

COMPOSITE START DATE & TIME	5-16-07 12:00			COMPOSITE END DATE & TIME	5-17-07 11:00		
TIME PROPORTIONAL COMPOSITE INFO	NUMBER SUBSAMPLES	24	VOL (ml) SUBSAMPLES	1200	TIME INCREMENT	1 hr.	TOTAL VOLUME 28,800 ml
FLOW PROPORTIONAL COMPOSITE INFO*	SET VOLUME SUBSAMPLE			SET VOLUME FLOW			TOTAL VOLUME

*FOR VARIABLE VOLUME SUBSAMPLES BASED ON FLOW (e.g. COMPOSITING "BY HAND") ATTACH SAMPLE AND FLOW INFORMATION ON SEPARATE SHEET

FIELD MEASUREMENTS

DISCHARGE TEMP (°C)	SAMPLE TEMP (°C)	DISCHARGE pH (S.U.)	SAMPLE TRC (mg/l)	DATE/TIME (e.g. 02/23/00 1835)	INITIALS
22.7	5.3	6.41	0	5-17-07 11:07	MLJ

MEASUREMENTS MUST BE TAKEN WITHIN 15 MINUTES OF SAMPLE OR LAST SUBSAMPLE COLLECTION.

COMMENTS:

Mark L. Johnson / URS Corporation — Mark L. Johnson — 5-17-07
(PRINTED NAME/AFFILIATION SAMPLER/ANALYST) (SIGNATURE) (DATE)

RELINQUISHED BY	DATE	TIME	RECEIVED BY
Mark L. Johnson /	5-17-07	16:00	
Mark L. Johnson	5/18/07	1030	D. Bing

SHIPPING METHOD: UPS____ FEDEX X HAND DELIVERY____ OTHER____

CONDITION ON ARRIVAL: ACCEPTABLE ✓ OTHER____

SAMPLE ARRIVAL TEMP: (°C) 3 ARRIVED ON ICE? YES ✓ NO____

Client: URS Corporation
Project ID: URSR0801
Client Sample ID: BP Amoco/Fairfax Terminal Outfall 001
Permit No: VA0001872
Sample Period: 5/19/08 to 5/22/08

Coastal Bioanalysts, Inc.

Report of Analysis: Whole Effluent Toxicity (WET)

Submitted To:	Prepared By:
Mr. Mark Colonna URS Corporation 13825 Sunrise Valley Drive Suite 250 Herndon, VA 20171-4672	Coastal Bioanalysts, Inc. 6400 Enterprise Court Gloucester, VA 23061 (804) 694-8285 www.coastalbio.com Contact: Peter F. De Lisle, Technical Director

Acute Test Results*

Species-Test Method	48-h LC50	95% C.L.	$T.U._{Ac}$	NOAEC
C. dubia EPA 2002.0	>100	N/A	<1.00	100

Chronic Test Results*

Species-Test Method	Endpoint	NOEC	LOEC	ChrV	PMSD	$T.U._C$	IC25	48-h LC50	LC50 95% C.L.	$T.U._{Ac}$
C. dubia	Survival	100	>100	>100	N/A	1.00	N/A	>100	N/A	<1.00
EPA 1002.0	Reproduction	100	>100	>100	41	1.00	>100	N/A	N/A	N/A

Chronic Test Results* (*P. promelas* side-by-side UV treated and untreated)

Species-Test Method	Endpoint	NOEC	LOEC	ChrV	PMSD	$T.U._C$	IC25	48-h LC50	LC50 95% C.L.	$T.U._{Ac}$
P. promelas	Survival	100	>100	>100	N/A	1.00	N/A	>100	N/A	<1.00
EPA 1001.0 UV	Biomass	100	>100	>100	17	1.00	>100	N/A	N/A	N/A
P. promelas	Survival	100	>100	>100	N/A	1.00	N/A	>100	N/A	<1.00
EPA 1001.0	Biomass	50	100	70.7	31	2.00	75.6	N/A	N/A	N/A

*Note: Details regarding test conduct and data analysis provided in attached bench sheets and printouts as applicable.

Acute Test Biological Summary Data		Sample Concentration (%)					
Species-Method	Endpoint	Control	6.5	13	25	50	100
C. dubia EPA 2002.0	Survival (%):	100	100	100	100	100	100

Chronic Test Biological Summary Data		Sample Concentration (%)					
Species-Method	Endpoint	Control	6.5	13	25	50	100
C. dubia EPA 1002.0	Survival (%):	100	90	90	100	100	80
	Repro (# young):	20.3	19.2	20.7	20.3	20.5	19.6

Chronic Test Biological Summary Data		Sample Concentration (%)					
Species-Method	Endpoint	Control	6.5	13	25	50	100
P. promelas UV Treated	Survival (%):	100	100	98	95	93	93
EPA 1000.0	Biomass (mg):	0.784	0.655	0.746	0.654	0.663	0.669
P. promelas Untreated	Survival (%):	100	93	93	88	93	65
EPA 1000.0	Biomass (mg):	0.781	0.716	0.831	0.683	0.715	0.478

EPA Laboratory ID: VA01116

Client: URS Corporation
Project ID: URSR0801
Client Sample ID: BP Amoco/Fairfax Terminal Outfall 001
Permit No: VA0001872
Sample Period: 5/19/08 to 5/22/08

Coastal Bioanalysts, Inc.

Test Information Species-Method	Start Date/Time End Date/Time	Organism Source	Hatch/Harvest Date/Time	Acclimation Temp.	Acclimation Water	Test Aerated?
C. dubia EPA 2002.0	5/21/08 1320 5/23/08 1330	CBI Stock	5/20/08 1610 5/21/08 0920	25° C	Mod. Hard Syn. FW	No
C. dubia EPA 1002.0	5/20/08 1525 5/26/08 1400	CBI Stock	5/19/08 1600 5/19/08 2200	25° C	Mod. Hard Syn. FW	No
P. promelas UV Treated	5/20/08 1355 5/27/08 1350	CBI Stock	5/19/08 1530 5/20/08 1000	25° C	Mod. Hard Syn. FW	No
P. promelas Untreated	5/20/08 1435 5/27/08 1445	CBI Stock	5/19/08 1530 5/20/08 1000	25° C	Mod. Hard Syn. FW	No

Sample/Dilution Water Data	Acute Test		Chronic Test			
			Sample		Dilution Water*	
Water Quality Parameter (Units)	Sample	Dilution* Water	Mean	Std. Dev.	Mean	Std. Dev.
Arrival Temperature (°C)	2	N/A	2	0	N/A	N/A
Use Temperature (°C)	25	25	25	0.4	25	0
Conductivity (µS/cm)	81	294	81	4.9	299	5.0
pH (S.U.)	7.19	7.82	7.43	0.17	7.76	0.07
Dissolved Oxygen (mg/l)	8.2	8.2	8.2	0	8.2	0
Total Hardness (mg/l as $CaCO_3$)	16	92	21	5.0	97	4.3
Alkalinity (mg/l as $CaCO_3$)	4	58	17	12	59	0.5
Total Residual Chlorine (mg/l)	<Q.L.	N/A	<Q.L.	0	N/A	N/A
Ammonia (mg/l NH_3-N)	<1.0	N/A	<1.0	0	N/A	N/A

*Dilution water = Moderately hard synthetic freshwater made with ASTM Type I deionized water

Sample Aging/Use/Pretreatment				
CBI Sample I.D.	Collection Date/Time	Date(s)/Time(s) 1st Used in Tests	Date(s)/Time(s) Used in Renewals	Sample Adjustments
URSR0801-A	5/19/08 1100	5/20/08 1355- 1525	N/A	Aerated 1.5 min UV Treated
URSR0801-B	5/20/08 1130	5/21/08 1330-1430 5/21/08 1320*	5/22/08 1330-1415	Aerated 1.5 min UV Treated
URSR0801-C	5/22/08 1000	5/23/08 1420-1535	5/24/08 1410-1600 5/25/08 1305-1430 5/26/08 1325-1350	Aerated 3-4 min UV Treated

*acute test

Acute Test Water Quality (Mean/Std. Dev.)						
Test:	*C. dubia* 2002.0					
% Conc:	Cont.	6.5	13	25	50	100
Temp. (°C)	25 0.6	25 0.6	25 0.6	25 0.6	25 0.6	25 0.6
D.O. (mg/l)	8.1 0.1	8.1 0.1	8.1 0.1	8.1 0.1	8.1 0.1	8.1 0.1
pH (S.U.)	7.78 0.05	7.81 0.05	7.81 0.07	7.79 0.10	7.75 0.13	7.33 0.17

EPA Laboratory ID: VA01116

Client: URS Corporation
Project ID: URSR0801
Client Sample ID: BP Amoco/Fairfax Terminal Outfall 001
Permit No: VA0001872
Sample Period: 5/19/08 to 5/22/08

Coastal Bioanalysts, Inc.

Chronic Test Water Quality (Mean/Std. Dev.)						
Test:	*C. dubia* 1002.0					
% Conc:	**Cont.**	**6.5**	**13**	**25**	**50**	**100**
Temp.	25	25	25	25	25	25
(°C)	0.4	0.3	0.3	0.3	0.4	0.4
D.O.	8.1	8.1	8.1	8.1	8.0	8.0
(mg/l)	0.1	0.2	0.2	0.2	0.3	0.3
pH	7.64	7.65	7.65	7.64	7.57	7.36
(S.U.)	0.12	0.11	0.10	0.10	0.12	0.21
Cond.	288	287	274	250	197	87
(µS/cm)	6.5	1.5	2.3	2.9	7.1	10

Chronic Test Water Quality (Mean/Std. Dev.)												
Test:	*P. promelas* 1000.0-UV Treated						*P. promelas* 1000.0-Untreated					
% Conc:	**Cont.**	**6.5**	**13**	**25**	**50**	**100**	**Cont.**	**6.5**	**13**	**25**	**50**	**100**
Temp.	25	25	25	25	25	25	25	25	25	25	25	25
(°C)	0.4	0.4	0.4	0.5	0.5	0.5	0	0	0	0	0	0
D.O.	8.0	8.0	8.0	8.0	8.0	7.9	8.0	8.0	8.0	8.0	8.0	7.9
(mg/l)	0.3	0.3	0.3	0.3	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.5
pH	7.62	7.63	7.62	7.60	7.53	7.26	7.66	7.63	7.61	7.57	7.51	7.27
(S.U.)	0.14	0.17	0.18	0.19	0.17	0.12	0.22	0.29	0.31	0.33	0.33	0.23
Cond.	291	290	275	252	203	85	293	287	274	248	200	83
(µS/cm)	11	9.0	2.1	2.4	4.7	9.8	8.7	2.1	2.3	5.8	5.9	12

Acute Test QA/QC Reference Toxicant: KCl Units: mg/l Test Organism Source: CBI Stock Cultures					
Species-Method (Ref. Test Date)	**Data Source**	**% Control Survival**	**48-h LC50**	**95% C.L./A.L. For LC50**	**RTT in Control?**
C. dubia 2002.0	RTT	100	560	517-607	Yes
(5/23/08-5/25/08)	CC	100	580	496-664	

Chronic Test QA/QC Reference Toxicant: KCl Units: mg/l Test Organism Source: CBI Stock Cultures									
Species-Method	**Data**	**% Survival**		**Reproduction (# Young) or Biomass (mg)**					**RTT in**
(Ref. Test Date)	**Source**	**Cont.**	**NOEC**	**Cont.**	**NOEC**	**PMSD**	**IC25**	**IC25 A.L.**	**Control?**
C. dubia 1002.0	RTT	90	500	21.4	250	19	357	N/A	Yes
(5/8/08-5/14/08)	CC	98	500	21.9	250	22	346	268-423	
P. promelas 1000.0	RTT	100	500	0.69	500	12	625	N/A	Yes
(5/8/08-5/15/08)	CC	96	500	0.59	500	18	604	552-656	

Note: RTT = Reference Toxicant Test, CC = Control Chart, Cont. = Control group.

The results of analysis contained within this report relate only to the sample as received in the laboratory. This report shall not be reproduced except in full without written approval from the laboratory.

APPROVED:

Peter F. DeLisle, Ph.D.
Technical Director

6/3/08
Date

Total No. Printouts/Bench Sheets Attached: 22

EPA Laboratory ID: VA01116

Coastal Bioanalysts, Inc.

GLOSSARY OF TERMS AND ABBREVIATIONS

A.L. (Acceptance Limits): The results of a given reference toxicant test are compared to the control chart mean value ± 2 standard deviations. These limits approximate the 95% probability limits for the "true" reference toxicant value.

Chronic Value (ChrV): The geometric mean of the NOEC and LOEC. Units are same as test concentration units.

C.L. (Confidence Limits): These are the probability limits, based on the data set and statistical model employed, that the "true value" lies within the limits specified. Typically limits are based on 95% or 99% probabilities.

Control chart: A cumulative summary chart of results from QC tests with reference toxicants. The results of a given reference toxicant test are compared to the control chart mean value and 95% Acceptance Limits (A.L.) (mean ± 2 standard deviations).

IC25: The concentration of sample or chemical, calculated from the data set using statistical models, causing a 25% reduction in test organism growth, reproduction, etc. The lower the IC25, the more toxic the chemical or sample. Units are same as test concentration units.

LC50: The concentration of sample or chemical, calculated from the data set using statistical models, causing a 50% reduction in test organism survival. The lower the LC50, the more toxic the chemical or sample. Units are same as test concentration units. Note: The LC50 value must always be associated with the duration of exposure. Thus 48-h LC50, 96-h LC50, etc. are calculated.

LOEC: Lowest-observable-effect-concentration. The lowest concentration of sample or chemical in a chronic test dilution series in which the test organisms exhibit a statistically significant reduction in any of the test end points (e.g. growth, survival, reproduction) compared to control organisms. Units are same as test concentration units.

PMSD: Percent Minimum Significant Difference: The minimum difference which can exist between a test treatment and the controls in a particular test and be statistically significant; a measure of test sensitivity. The lower the PMSD the more sensitive the test.

N/A: Not applicable.

N/D: Not determined or measured.

NOAEC: No-observable-acute-effect-concentration. The highest concentration of sample or chemical in an acute test dilution series in which the test organisms exhibit no statistically significant reduction in the test end point (e.g. survival) compared to control organisms. Units are same as test concentration units.

NOEC: No-observable-effect-concentration. The highest concentration of sample or chemical in a chronic test dilution series in which the test organisms exhibit no statistically significant reduction in any of the test end points (e.g. growth, survival, reproduction) compared to control organisms. Some regulatory definitions also require that the NOEC be less than the LOEC. Units are same as test concentration units.

Q.L.: Quantitation Limit. Level, concentration, or quantity of a target variable (analyte) that can be reported at a specified degree of confidence.

T.U.: Toxic units. Expresses the relative toxicity of an effluent in such a manner that the larger the toxic unit value the more toxic the effluent. $T.U._{Ac} = 100/LC50$. $T.U._{Chr} = 100/NOEC$. A dimensionless unit.

CERIODAPHNIA DUBIA STATIC ACUTE WET TEST (ACD) FORM ETF1051C

COASTAL BIOANALYSTS, INC
EFFECTIVE DATE: 11/26/07

% Effluent	I.D.	Day 0 Live	Day 1 Live	Day 2 Live	Final % Survival
Control	C-a	5	5	5	100
	C-b	5	5	5	
	C-c	5	5	5	
	C-d	5	5	5	
6.5	1-a	5	5	5	100
	1-b	5	5	5	
	1-c	5	5	5	
	1-d	5	5	5	
13	2-a	5	5	5	100
	2-b	5	5	5	
	2-c	5	5	5	
	2-d	5	5	5	
25	3-a	5	5	5	100
	3-b	5	5	5	
	3-c	5	5	5	
	3-d	5	5	5	
50	4-a	5	5	5	100
	4-b	5	5	5	
	4-c	5	5	5	
	4-d	5	5	5	
100	5-a	5	5	5	100
	5-b	5	5	5	
	5-c	5	5	5	
	5-d	5	5	5	
	Initials:	GB	PB	GB	
	Count Time:	1320	0835	1330	Test end time

NOTES:

Parameter	Treatment I.D.	Day 0	Day 1	Day 2
Temp. (°C)	C	26	25	25
	1	26	25	25
	2	26	25	25
	3	26	25	25
	4	26	25	25
	5	26	25	25
pH (S.U.)	C	7.74	7.77	7.84
	1	7.78	7.78	7.86
	2	7.80	7.74	7.88
	3	7.86	7.69	7.84
	4	7.77	7.61	7.86
	5	7.19	7.27	7.52
D.O. (mg/l)	C	8.2	8.1	8.1
	1	8.2	8.1	8.1
	2	8.2	8.1	8.0
	3	8.2	8.1	8.0
	4	8.2	8.1	8.0
	5	8.2	8.0	8.0
Conduct. (uS/cm)	C	285		296
	1	284		
	2	275		
	3	253		
	4	201		
	5	81		85
Replicate Meas.:		S	S	B
Initials:		GB	PB	GB
TRC (mg/l) in highest conc. at end of test:				NA

Species: *Ceriodaphnia dubia*

Source: CBI stock cultures ✓

Other: _____

Brood Release: Date/time start: 5/20/08 1610

Date /time end: 5/21/08 0920

Acclimation: Water: Mod. hard syn. FW ✓

Other _____

Temperature (°C): 25

Feeding: Prior to test: YCT/*Selenastrum*
During test: Not Fed

Illumination: 16L:8D 10-20 uE/m²/s

Test chamber size: ✓ **30 ml**

Solution volume: ✓ **15 ml** _____ **ml**

Number of replicates/treatment: 4

Initial number of daphnids/replicate: 5

Randomization template number: 6

Set up: Date (Day 0): 5/21/08

Time water added: 1310

Time daphnids added: 1320

Set up by (initials): GB

TEST I.D. UR5R0801 ACD

BASELINE TEST INFO – *Ceriodaphnia* 3-BROOD TEST

Coastal Bioanalysts, Inc
Form ETF0051D
Effective Date: 9/25/07

TEST ORGANISM INFO

Species: *Ceriodaphnia dubia*

Source: CBI Stock Cultures

Acclimation: **Water:** Mod. hard syn. FW ✓

Other:_____

Temp. (°C): 25

Brood Release: 05/19/08 1600
(start date/time)

Brood Release: 05/19/08 2200
(end date/time)

Feeding Prior to Test: *Selenastrum* + YCT mix[1]

Feeding During Test: *Selenastrum* + YCT mix[1]

TEST DESIGN

Test Chamber: ~30 ml glass vial ✓

Other_____

Solution Vol: 15 ml ✓

Other_____

Illumination: 16:8 L:D 10-20 uE/m^2/s

Number of Replicates/Concentration: 10

Initial Number of Daphnids/Replicate: 1

Randomization Template No. 14

TEST SET UP (Day 0)

Set Up Date: 05/20/08

Set Up By: bja

Time Water Added: 1505

Time Animals Added: 1525

NOTES

[1]Food added to dilution water and test solutions for a final feeding level of 0.2 ml of YCT + algae mix per chamber (chamber algae concentration 2-2.3E5 cells/ml)

Test I.D. URSRA901-CCD

REPRODUCTION/SURVIVAL DATA – *Ceriodaphnia* 3-BROOD TEST

Coastal Bioanalysts, Inc
Form ETF0053D
Effective Date: 11/26/07

Treatment	REP	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
C	A	0	0	0	3	7	12	
	B	0	0	4	0	8	17	
	C	0	0	0	2	5	6	
	D	0	0	5	0	13	18	
Lab Control	E	0	0	3	9	0	13	
	F	0	0	0	5	11	14	
	G	0	0	4	0	2	10	
	H	0	0	0	1	4	10	
	I	0	0	0	0	3	0	
	J	0	0	0	0	4	10	
1	A	0	0	0	5	9	13	
	B	0	0	2	0	6	11	
	C	0	0	1	0	5	6	
	D	0	0	3	8	0	16	
6.5% Conc.	E	0	0	3	8	0	10	
	F	0	0	5	7	0	0/D	–
	G	0	0	4	7	10	12	
	H	0	0	0	2	0	10	
13 Spl. Vol.	I	0	0	0	6	4	10	
	J	0	0	0	4	7	10	
2	A	0	0	0	3	7	13	
	B	0	0	4	0	7	14	
	C	0	0	4	0	6	6	
	D	0	0	4	0	12	16	
13% Conc.	E	0	0	3	8	0	11	
	F	0	0	0	5	8	13	
	G	0	0	4	7	1/D	–	–
	H	0	0	0	3	6	0	
26 Spl. Vol.	I	0	0	0	2	11	0	
	J	0	0	0	5	9	15	

Treatment	REP	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
3	A	0	0	0	4	7	9	
	B	0	0	0	2	5	10	
	C	0	0	4	0	9	8	
	D	0	0	4	0	8	12	
25% Conc.	E	0	0	4	8	0	12	
	F	0	0	0	5	9	16	
	G	0	0	3	5	0	13	
	H	0	0	0	0	0	4	
56 Spl. Vol.	I	0	0	0	5	8	0	
	J	0	0	0	6	7	16	
4	A	0	0	0	5	13	14	
	B	0	0	4	0	8	13	
	C	0	0	2	5	0	12	
	D	0	0	3	8	10	16	
50% Conc.	E	0	0	0	2	10	0	
	F	0	0	0	6	0	16	
	G	0	0	3	7	0	18	
	H	0	0	0	0	3	6	
100 Spl. Vol.	I	0	0	0	3	7	0	
	J	0	0	0	5	10	12	
5	A	0	0	0	5	6	15	
	B	0	0	5	0	7	12	
	C	0	0	2	7	0/D	–	–
	D	0	0	3	9	0	16	
100% Conc.	E	0	0	4	8	0	15	
	F	0	0	0	4	9	9	
	G	0	0	3	0	6	10	
	H	0	0	0	0	10	0	
200 Spl. Vol.	I	0	0	0	0	4/D	–	–
	J	0	0	0	6	9	12	

	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Count/Renewal Time*:	1430	1412	1420	1600	1356	1400	
Initials:	PB	ES	LA	ST	ST	ST	

*Counts are number of live offspring at renewal; dead adults indicated by a "D" with dashes (-) for subsequent test days. Time of final count (day 6 or 7) = test end time. See printout of statistical analyses for total number of offspring by replicate.

Note: "Spl. Vol." = Volume sample added to total volume of 200 ml for preparation of dilutions.

NOTES:

Test I.D. URS120801 -CCD

WATE! 'ALITY DATA – *Ceriodaphnia dubia* 3-BROOD TEST COAS BIOANALYSTS, INC FORM ETF0054B EFFECTIVE DA . . . 6/30/07

Para-meter	Treat-ment	Day 0 Initial	Day 1 Final	Day 1 Initial	Day 2 Final	Day 2 Initial	Day 3 Final	Day 3 Initial	Day 4 Final	Day 4 Initial	Day 5 Final	Day 5 Initial	Day 6 Final	Day 6 Initial	Day 7 Final
TEMP (°C)	C	25	25	25	25	25	25	26	26	25	25	25	25		
	1	25	25	25	25	25	25	26	25	25	25	25	25		
	2	25	25	25	25	25	25	26	25	25	25	25	25		
	3	25	25	25	25	25	25	26	25	25	25	25	25		
	4	26	25	25	25	25	25	26	25	25	25	25	25		
	5	26	25	25	25	25	25	26	25	25	25	25	25		
pH (S.U.)	C	7.73	7.66	7.70	7.39	7.67	7.50	7.20	7.53	7.76	7.51	7.77	7.72		
	1	7.73	7.69	7.70	7.44	7.75	7.55	7.43	7.57	7.76	7.53	7.77	7.68		
	2	7.72	7.71	7.74	7.49	7.77	7.57	7.56	7.61	7.74	7.55	7.75	7.66		
	3	7.66	7.66	7.73	7.51	7.77	7.57	7.46	7.63	7.72	7.56	7.71	7.68		
	4	7.57	7.51	7.54	7.44	7.69	7.54	7.28	7.59	7.70	7.55	7.70	7.67		
	5	7.20	7.28	7.23	7.24	7.32	7.23	7.20	7.28	7.71	7.25	7.69	7.74		
D.O. (mg/l)	C	8.2	8.1	8.2	7.8	8.2	8.0	8.2	8.2	8.2	8.2	~~8.0~~ 8.2	8.0		
	1	8.2	8.1	8.2	7.8	8.2	7.9	8.2	8.1	8.2	8.2	~~7.8~~ 8.2	7.8		
	2	8.2	8.0	8.2	7.8	8.2	7.8	8.2	8.2	8.2	8.2	~~7.8~~ 8.2	7.9		
	3	8.2	7.9	8.2	7.8	8.2	7.7	8.2	8.2	8.2	8.2	~~7.8~~ 8.2	7.9		
	4	8.2	7.7	8.2	7.7	8.2	7.6	8.2	8.2	8.2	8.2	~~7.8~~ 8.2	7.8		
	5	8.2	7.7	8.2	7.6	8.2	7.4	8.2	8.1	8.2	8.2	~~7.8~~ 8.2	7.9		
COND (uS/cm)	C	295		290		279		284		279		290			
	1	286		284		288		287		287		288			
	2	271		272		275		277		276		275			
	3	247		247		250		253		254		250			
	4	185		195		194		204		203		200			
	5	73		77		~~82~~ 83		95		95		97			
Replicate:		J	A	A	B	B	E	E	C	B	C	C	A		
Initials:		bja	PD.	PD	ES	ES	GD.	GD	ST	ST	ST	ST/PD	ST		

O.K. D.O. wrong test recorded PD.

TEST I.D. URSR0801 -CCD

Ceriodaphnia Survival and Reproduction Test-6 Day Survival

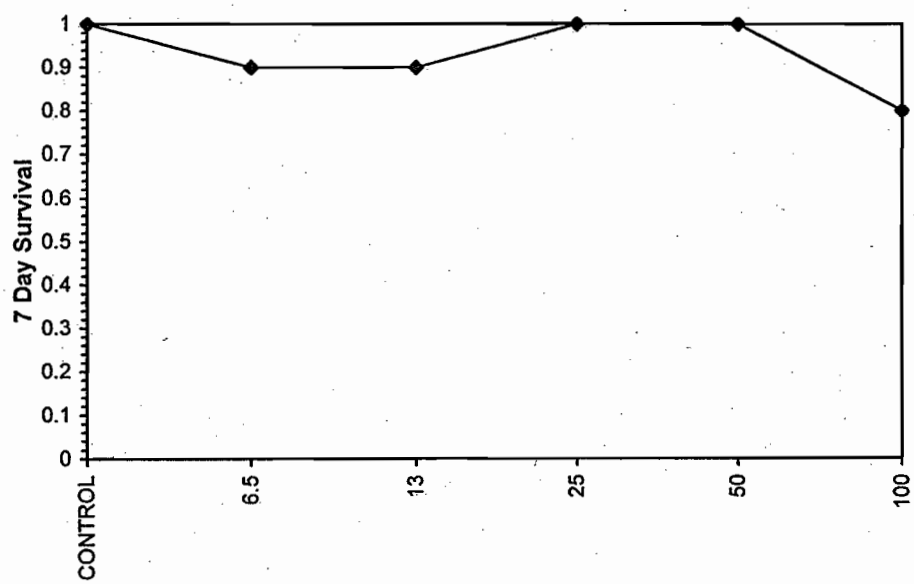
Start Date:	5/20/2008 15:25	Test ID:	URSR0801CD	Sample ID:	FAIRFAX TERMINAL 001
End Date:	5/26/2008 14:00	Lab ID:	CBI	Sample Type:	WW
Sample Date:		Protocol:	EPAF 94-EPA Freshwater	Test Species:	CD-Ceriodaphnia dubia
Comments:					

Conc-%	1	2	3	4	5	6	7	8	9	10
CONTROL	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
6.5	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000
13	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000
25	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
50	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000

Conc-%	Mean	N-Mean	Resp	Not Resp	Total	N	Fisher's Exact P	1-Tailed Critical
CONTROL	1.0000	1.0000	0	10	10	10		
6.5	0.9000	0.9000	1	9	10	10	0.5000	0.0500
13	0.9000	0.9000	1	9	10	10	0.5000	0.0500
25	1.0000	1.0000	0	10	10	10	1.0000	0.0500
50	1.0000	1.0000	0	10	10	10	1.0000	0.0500
100	0.8000	0.8000	2	8	10	10	0.2368	0.0500

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Fisher's Exact Test	100	>100		1

Dose-Response Plot



ToxCalc v5.0.23

Reviewed by: _____

Ceriodaphnia Survival and Reproduction Test-Reproduction

Start Date:	5/20/2008 15:25	Test ID:	URSR0801CD	Sample ID:	FAIRFAX TERMINAL 001
End Date:	5/26/2008 14:00	Lab ID:	CBI	Sample Type:	WW
Sample Date:		Protocol:	EPAF 94-EPA Freshwater	Test Species:	CD-Ceriodaphnia dubia
Comments:					

Conc-%	1	2	3	4	5	6	7	8	9	10
CONTROL	22.000	29.000	13.000	36.000	25.000	30.000	16.000	15.000	3.000	14.000
6.5	27.000	19.000	12.000	27.000	21.000	12.000	21.000	12.000	20.000	21.000
13	23.000	25.000	16.000	32.000	22.000	26.000	12.000	9.000	13.000	29.000
25	20.000	17.000	21.000	24.000	24.000	30.000	21.000	4.000	13.000	29.000
50	32.000	25.000	19.000	21.000	12.000	22.000	28.000	9.000	10.000	27.000
100	26.000	24.000	9.000	28.000	27.000	22.000	19.000	10.000	4.000	27.000

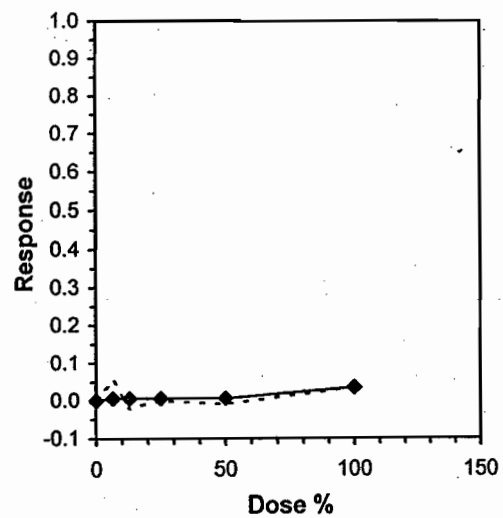
			Transform: Untransformed						1-Tailed		Isotonic	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD	Mean	N-Mean
CONTROL	20.300	1.0000	20.300	3.000	36.000	48.713	10				20.300	1.0000
6.5	19.200	0.9458	19.200	12.000	27.000	29.442	10	0.305	2.287	8.239	20.175	0.9938
13	20.700	1.0197	20.700	9.000	32.000	37.562	10	-0.111	2.287	8.239	20.175	0.9938
25	20.300	1.0000	20.300	4.000	30.000	37.735	10	0.000	2.287	8.239	20.175	0.9938
50	20.500	1.0099	20.500	9.000	32.000	38.838	10	-0.056	2.287	8.239	20.175	0.9938
100	19.600	0.9655	19.600	4.000	28.000	44.815	10	0.194	2.287	8.239	19.600	0.9655

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Kolmogorov D Test indicates normal distribution (p > 0.01)	0.85672	1.035	-0.3594	-0.6236
Bartlett's Test indicates equal variances (p = 0.74)	2.77097	15.0863		

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU	MSDu	MSDp	MSB	MSE	F-Prob	df
Dunnett's Test	100	>100		1	8.23858	0.40584	3.32	64.9037	0.99829	5, 54

Linear Interpolation (200 Resamples)

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



ToxCalc v5.0.23

Reviewed by: RO

BASELINE TEST INFO – FATHEAD 7 DAY TEST

Coastal Bioanalysts, Inc
Form ETF0041B
Effective Date: 6/30/07

TEST ORGANISM INFO

Species: *Pimephales promelas*

Source: CBI Stock Cultures: ✓

Other: _____

Hatch Date/Time: 05/19/08 1530
(start)

Hatch Date/Time: 05/20/08 1000
(end)

Acclimation: **Water:** Mod. hard syn. FW ✓

Other: _____

Temp. (°C): 25

Feeding Prior to Test: *Artemia ad libitum* 2X/day

Feeding During Test: *Artemia* 0.15 g/rep 2X/day

Arrival Date: NA
(non-CBI)

TEST DESIGN

Test Chamber: 1000 ml Tri-pour beaker ✓

Other _____

Solution Vol: 500 ml ✓

Other _____

Illumination: 16:8 L:D 10-20 uE/m²/s

Number of Replicates/Concentration: 4

Initial Number of Fish/Replicate: 10

Randomization Template No. 1, 4, 7, 12

TEST SET UP (Day 0)

Set Up Date: 05/20/08

Set Up By: bja

Time Water Added: 1340

Time Animals Added: 1355

NOTES

SFW for control & sample exposed to SW UV 1.5+ hours before use

Test I.D. UR5R0801 UV -CPP

WATER QUALITY DATA – *Pimephales promelas* 7-day Larval Test COASTAL BIOANALYSTS, INC FORM ETF0042B EFFECTIVE DATE: 6/30/07

Parameter	Treatment	Day 0 Initial	Day 1 Final	Day 1 Initial	Day 2 Final	Day 2 Initial	Day 3 Final	Day 3 Initial	Day 4 Final	Day 4 Initial	Day 5 Final	Day 5 Initial	Day 6 Final	Day 6 Initial	Day 7 Final
TEMP (°C)	C	26	25	25	25	25	26	26	25	25	25	25	25	25	25
	1	26	25	25	25	25	26	25	25	25	25	25	25	25	25
	2	26	25	25	25	25	26	25	25	25	25	25	25	25	25
	3	26	25	26	25	25	26	26	25	25	25	25	25	25	25
	4	26	25	26	25	26	26	26	25	25	25	25	25	25	25
	5	26	25	26	25	26	26	26	25	25	25	25	25	25	25
pH (S.U.)	C	7.85	7.52	7.78	7.50	7.71	7.59	7.67	7.26	7.76	7.61	7.64	7.55	7.62	7.60
	1	7.93	7.47	7.78	7.48	7.73	7.58	7.78	7.30	7.76	7.59	7.69	7.51	7.70	7.52
	2	7.88	7.39	7.78	7.43	7.74	7.55	7.77	7.33	7.78	7.52	7.76	7.51	7.75	7.51
	3	7.81	7.25	7.73	7.43	7.68	7.52	7.78	7.33	7.76	7.48	7.79	7.49	7.78	7.50
	4	7.72	7.21	7.61	7.31	7.62	7.48	7.66	7.32	7.69	7.48	7.72	7.40	7.73	7.44
	5	7.24	7.22	7.24	7.26	7.20	7.12	7.34	7.11	7.50	7.36	7.37	7.19	7.36	7.06
D.O. (mg/l)	C	8.2	8.0	8.2	8.1	8.2	8.1	8.2	7.2	8.2	8.0	8.2	8.0	8.2	7.8
	1	8.2	8.0	8.2	8.1	8.2	8.1	8.2	7.2	8.2	7.9	8.2	8.0	8.2	7.7
	2	8.2	7.9	8.2	8.0	8.2	8.1	8.2	7.2	8.2	8.0	8.2	7.6	8.2	7.6
	3	8.2	7.8	8.2	8.0	8.2	8.1	8.2	7.2	8.2	8.0	8.2	7.4	8.2	7.6
	4	8.2	7.8	8.2	7.9	8.2	8.1	8.2	7.2	8.2	7.9	8.2	7.4	8.2	7.6
	5	8.2	7.8	8.2	7.7	8.2	8.0	8.2	7.2	8.2	7.4	8.2	7.2	8.2	7.6
COND (uS/cm)	C	303		297		297		295		294		276		276	
	1	307		288		287		295		287		283		280	
	2	278		275		274		277		277		274		272	
	3	248		253		250		252		255		253		250	
	4	196		201		199		205		206		208		208	
	5	75		77		75		81		91		95.7		96.7	
Replicate:		D	C	A	B	C	A	B	A	B	C	B	C	D	B
Initials:		bja	GB	bja	BB	bja	GB	bja	ES	ES	ST	ES	ES	ES	GB

TEST I.D. URSRA801 UV -CPP

SURVIVA & GROWTH DATA – FATHEAD MINNOW 7 DAY TEST Coa Bioanalysts, Inc Form ETF0043F Effectiv ate: 11/26/07

Treatment[1]		Rep Ltr.	Number of Live Fish							Fish Dry Weight Data (mg)[2]			Notes
			Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Pan #	Tot. Wt.	Tare Wt.	
C	CONTROL	A	10	10	10	10	10	10	10	25	15.57	6.91	
		B	10	10	10	10	10	10	10	26	16.61	8.82	
		C	10	10	10	10	10	10	10	27	13.97	6.84	
		D	10	10	10	10	10	10	10	28	14.99	7.23	
1	C: 6.5 %	A	10	10	10	10	10	10	10	29	13.50	6.57	
		B	10	10	10	10	10	10	10	30	14.40	7.03	
		C	10	10	10	10	10	10	10	31	11.74	5.60	
	V: 104	D	10	10	10	10	10	10	10	32	12.78	7.01	
2	C: 13 %	A	10	10	10	10	10	10	10	33	14.78	7.68	
		B	10	10	10	10	10	10	10	34	15.15	7.29	
		C	10	10	10	10	9	9	9	35	13.98	7.64	
	V: 208	D	10	10	10	10	10	10	10	36	16.61	8.09	
3	C: 25 %	A	10	10	10	10	10	10	10	37	15.08	8.86	
		B	10	10	10	10	9	9	9	38	13.25	6.67	
		C	10	10	10	10	9	9	9	39	14.69	8.23	
	V: 400	D	10	10	10	10	10	10	10	40	14.37	7.48	
4	C: 50 %	A	10	10	10	10	10	10	10	41	14.40	6.62	
		B	10	10	10	10	10	9	9	42	13.27	7.00	
		C	10	10	10	10	10	9	9	43	13.38	6.82	
	V: 800	D	10	10	10	10	9	9	9	44	12.53	6.64	
5	C: 100 %	A	10	10	10	10	10	10	10	45	14.23	6.92	
		B	10	10	10	10	10	9	9	46	14.25	8.13	
		C	10	10	10	10	9	8	8	47	12.95	7.52	
	V: 1600	D	10	10	10	10	10	10	10	48	15.32	7.41	
Renewal/Count Time:			1420	1330	1450	1410	1430	1300	1350[3]	Tare Wt: Date: 5/24 Calib. Check (10 mg[4]): 9.96 Init: GA			
Initials:			bja	bja	bja	ES	ES	ES	bja	Tot. Wt: Date: 5/30 Calib. Check (10 mg[4]): 9.95 Init: PB			

[1] C = Concentration; V = Volume (ml) sample added to total volume of 1600 ml for preparation of solutions. [2] See printout of statistical analyses for biomass weights. [3] Time final count = test end time. [4] True value ± estimated uncertainty of calib. weight (NIST traceable annual certification) = 10.00 ± 0.05 mg

Test ID URSR0801 UV -CPP

Larval Fish Growth and Survival Test-7 Day Survival

Start Date:	5/20/2008 13:55	Test ID:	URSR0801UV	Sample ID:	FAIRFAX TERMINAL 001
End Date:	5/27/2008 13:50	Lab ID:	CBI	Sample Type:	UV TREATED
Sample Date:		Protocol:	EPAF 94-EPA Freshwater	Test Species:	PP-Pimephales promelas
Comments:					

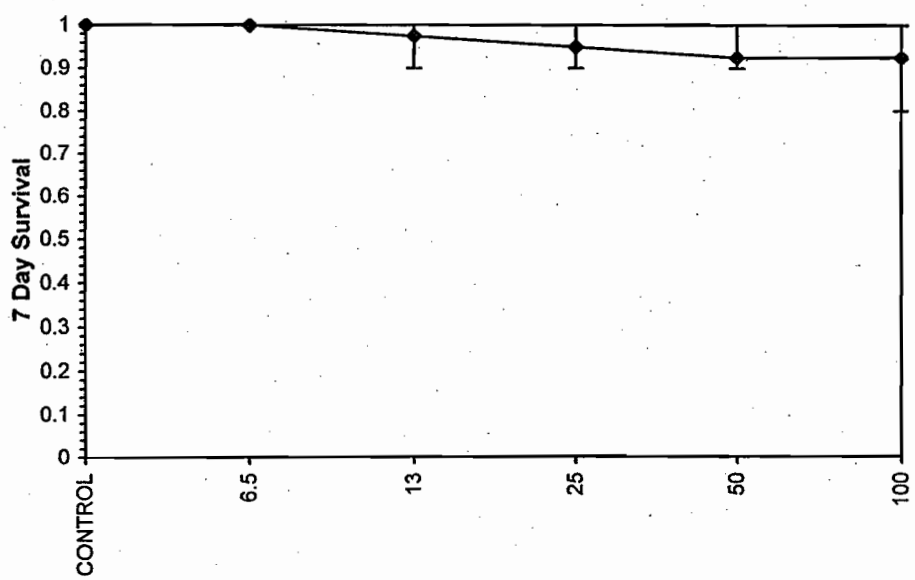
Conc-%	1	2	3	4
CONTROL	1.0000	1.0000	1.0000	1.0000
6.5	1.0000	1.0000	1.0000	1.0000
13	1.0000	1.0000	0.9000	1.0000
25	1.0000	0.9000	0.9000	1.0000
50	1.0000	0.9000	0.9000	0.9000
100	1.0000	0.9000	0.8000	1.0000

			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
CONTROL	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	4		
6.5	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	4	18.00	10.00
13	0.9750	0.9750	1.3713	1.2490	1.4120	5.942	4	16.00	10.00
25	0.9500	0.9500	1.3305	1.2490	1.4120	7.072	4	14.00	10.00
50	0.9250	0.9250	1.2898	1.2490	1.4120	6.318	4	12.00	10.00
100	0.9250	0.9250	1.2951	1.1071	1.4120	11.347	4	14.00	10.00

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.94833	0.884	-0.389	0.4959
Equality of variance cannot be confirmed				

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Steel's Many-One Rank Test	100	>100		1

Dose-Response Plot



ToxCalc v5.0.23

Reviewed by: PO

Larval Fish Growth and Survival Test-7 Day Biomass

Start Date:	5/20/2008 13:55	Test ID:	URSR0801UV	Sample ID:	FAIRFAX TERMINAL 001
End Date:	5/27/2008 13:50	Lab ID:	CBI	Sample Type:	UV TREATED
Sample Date:		Protocol:	EPAF 94-EPA Freshwater	Test Species:	PP-Pimephales promelas
Comments:					

Conc-%	1	2	3	4
CONTROL	0.8660	0.7790	0.7130	0.7760
6.5	0.6930	0.7370	0.6140	0.5770
13	0.7100	0.7860	0.6340	0.8520
25	0.6220	0.6580	0.6460	0.6890
50	0.7780	0.6270	0.6560	0.5890
100	0.7310	0.6120	0.5430	0.7910

			Transform: Untransformed						1-Tailed		Isotonic	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD	Mean	N-Mean
CONTROL	0.7835	1.0000	0.7835	0.7130	0.8660	8.023	4				0.7835	1.0000
6.5	0.6553	0.8363	0.6553	0.5770	0.7370	11.122	4	2.272	2.410	0.1360	0.7004	0.8939
13	0.7455	0.9515	0.7455	0.6340	0.8520	12.649	4	0.673	2.410	0.1360	0.7004	0.8939
25	0.6538	0.8344	0.6538	0.6220	0.6890	4.262	4	2.299	2.410	0.1360	0.6618	0.8447
50	0.6625	0.8456	0.6625	0.5890	0.7780	12.338	4	2.144	2.410	0.1360	0.6618	0.8447
100	0.6693	0.8542	0.6693	0.5430	0.7910	16.784	4	2.024	2.410	0.1360	0.6618	0.8447

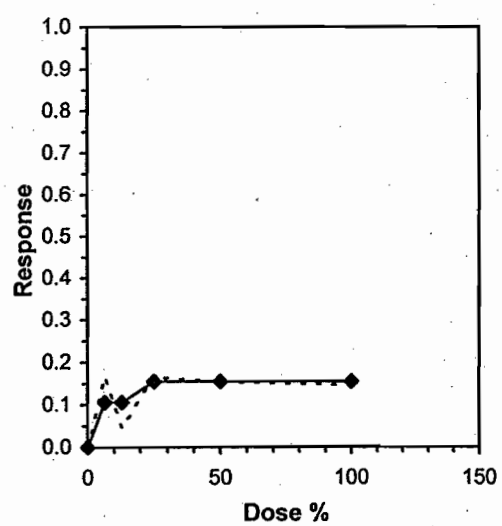
Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.96598	0.884	0.14214	-0.8099
Bartlett's Test indicates equal variances (p = 0.48)	4.5174	15.0863		

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU	MSDu	MSDp	MSB	MSE	F-Prob	df
Dunnett's Test	100	>100		1	0.13603	0.17361	0.01231	0.00637	0.13879	5, 18

Linear Interpolation (200 Resamples)

int	%	SD	95% CL(Exp)		Skew
IC05*	3.063	4.175	0.937	26.499	2.4024
IC10*	6.127				
IC15	23.710				
IC20	>100				
IC25	>100				
IC40	>100				
IC50	>100				

* indicates IC estimate less than the lowest concentration



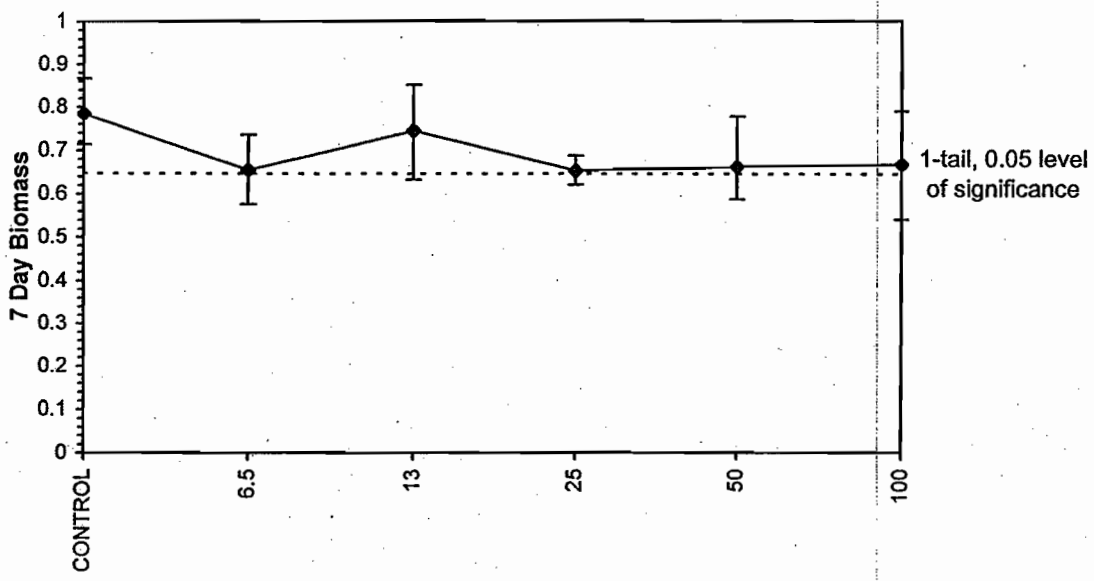
ToxCalc v5.0.23

Reviewed by: PP

Larval Fish Growth and Survival Test-7 Day Biomass

Start Date:	5/20/2008 13:55	Test ID:	URSR0801UV	Sample ID:	FAIRFAX TERMINAL 001
End Date:	5/27/2008 13:50	Lab ID:	CBI	Sample Type:	UV TREATED
Sample Date:		Protocol:	EPAF 94-EPA Freshwater	Test Species:	PP-Pimephales promelas
Comments:					

Dose-Response Plot



ToxCalc v5.0.23

Reviewed by: PO

BASELINE TEST INFO – FATHEAD 7 DAY TEST

Coastal Bioanalysts, Inc
Form ETF0041B
Effective Date: 6/30/07

TEST ORGANISM INFO

Species: *Pimephales promelas*

Source: CBI Stock Cultures: ✓

Other: _____

Hatch Date/Time: 05/19/08 1530
(start)

Hatch Date/Time: 05/20/08 1000
(end)

Acclimation: **Water:** Mod. hard syn. FW ✓

Other: _____

Temp. (°C): 25

Feeding Prior to Test: *Artemia ad libitum* 2X/day

Feeding During Test: *Artemia* 0.15 g/rep 2X/day

Arrival Date: NA
(non-CBI)

TEST DESIGN

Test Chamber: 1000 ml Tri-pour beaker ✓

Other _____

Solution Vol: 500 ml ✓

Other _____

Illumination: 16:8 L:D 10-20 uE/m^2/s

Number of Replicates/Concentration: 4

Initial Number of Fish/Replicate: 10

Randomization Template No. 11, 9, 6, 2

TEST SET UP (Day 0)

Set Up Date: 05/20/08

Set Up By: bja

Time Water Added: 1415

Time Animals Added: 1435

NOTES

Test I.D. URSR0801 -CPP

WATER QUALITY DATA – *Pimephales promelas* 7-day Larval Test COASTAL BIOANALYSTS, INC FORM ETF0042B EFFECTIVE DATE: 6/30/07

Parameter	Treatment	Day 0 Initial	Day 1 Final	Day 1 Initial	Day 2 Final	Day 2 Initial	Day 3 Final	Day 3 Initial	Day 4 Final	Day 4 Initial	Day 5 Final	Day 5 Initial	Day 6 Final	Day 6 Initial	Day 7 Final
TEMP (°C)	C	25	25	25	25	25	25	25	25	25	25	25	25	25	25
	1	25	25	25	25	25	25	25	25	25	25	25	25	25	25
	2	25	25	25	25	25	25	25	25	25	25	25	25	25	25
	3	25	25	25	25	25	25	25	25	25	25	25	25	25	25
	4	25	25	25	25	25	25	25	25	25	25	25	25	25	25
	5	25	25	25	25	25	25	25	25	25	25	25	25	25	25
pH (S.U.)	C	7.79	7.74	7.77	7.50	7.78	7.33	7.78	7.40	7.82	7.58	7.99	7.61	7.91	7.29
	1	7.80	7.70	7.79	7.47	7.78	7.10	7.78	7.40	7.83	7.52	8.03	7.58	7.93	7.07
	2	7.80	7.64	7.76	7.46	7.76	7.03	7.76	7.44	7.83	7.51	8.04	7.54	7.94	6.97
	3	7.76	7.61	7.74	7.44	7.70	6.89	7.73	7.42	7.78	7.49	8.04	7.51	7.95	6.93
	4	7.62	7.60	7.62	7.43	7.57	6.84	7.68	7.39	7.76	7.46	8.02	7.40	7.91	6.90
	5	7.19	7.33	7.15	7.33	7.13	6.87	7.16	7.08	7.53	7.46	7.70	7.31	7.61	6.98
D.O. (mg/l)	C	8.2	8.1	8.2	8.1	8.2	8.1	8.2	7.2	8.2	7.8	8.2	7.6	8.2	7.8
	1	8.2	8.1	8.2	8.1	8.2	8.1	8.2	7.2	8.2	7.7	8.2	7.6	8.2	7.8
	2	8.2	8.1	8.2	8.1	8.2	8.1	8.2	7.2	8.2	8.0	8.2	7.4	8.2	7.8
	3	8.2	8.1	8.2	8.1	8.2	8.1	8.2	7.2	8.2	8.0	8.2	7.4	8.2	7.7
	4	8.2	8.1	8.2	8.0	8.2	8.1	8.2	7.2	8.2	8.0	8.2	7.4	8.2	7.7
	5	8.2	8.0	8.2	8.0	8.2	8.0	8.2	7.2	8.2	8.0	8.2	6.4	8.2	7.7
CONDUCTIVITY (uS/cm)	C	292		296		299		300		279		303		285	
	1	283		288		287		289		285		288		287	
	2	270		273		273		277		275		276		275	
	3	244		250		250		253		252		ST ~~206~~ 237		252	
	4	191		196		198		205		200		206		207	
	5	69		73		73		80		89		92		103	
Replicate:		D	C	A	B	C	A	B	A	C	B	D	C	A	B
Initials:		bja	CB	bja	RB	bja	CB	bja	ES	ST	ST	ST	ES	ST	CB

TEST I.D. URSR080 -CPP

SURVIVA' GROWTH DATA – FATHEAD MINNOW 7 DAY TEST Coa Bioanalysts, Inc Form ETF0043F Effective e: 11/26/07

Treatment[1]		Rep Ltr.	Number of Live Fish							Fish Dry Weight Data (mg)[2]			Notes
			Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Pan #	Tot. Wt.	Tare Wt.	
C	CONTROL	A	10	10	10	10	10	10	10	1	13.10	5.71	① Fuzzy dead fish
		B	10	10	10	10	10	10	10	2	14.94	6.81	
		C	10	10	10	10	10	10	10	3	13.95	6.23	
		D	10	10	10	10	10	10	10	4	13.99	5.98	
1	C: 6.5%	A	10	10	10	10	10	10	9①	5	13.93	6.64	
		B	10	10	10	10	10	10	10	6	12.51	5.47	
		C	10	10	10	10	10	10	10	7	14.87	6.78	
	V: 104	D	10	10	10	10	9①	9	8	8	13.98	7.78	
2	C: 13%	A	10	10	10	10	9①	9	9	9	14.37	6.97	
		B	10	10	10	10	10	10	10	10	17.98	8.63	
		C	10	10	10	10	10	9	9	11	14.43	7.27	
	V: 208	D	10	10	10	10	10	9	9	12	15.51	6.17	
3	C: 25%	A	10	10	10	10	10	10	10	13	13.02	6.13	
		B	10	10	10	10	10	10	8	14	13.30	6.42	
		C	10	10	10	10	9①	9	9	15	13.30	6.07	
	V: 400	D	10	10	10	10	9①	9	8①	16	13.70	7.40	
4	C: 50%	A	10	10	10	10	10	10	10	17	16.35	7.25	
		B	10	10	10	10	10	10	10	18	13.97	6.60	
		C	10	10	9①	8①	8	8	8	19	13.70	7.09	
	V: 800	D	10	10	10	9①	9	9	9 8 bgs	20	13.41	7.89	
5	C: 100%	A	10	10	9①	6①	4①	3	2	21	9.62	7.61	
		B	10	10	9	9	9	9	9	22	14.62	8.29	
		C	10	10	10	10	10	10	10	23	15.57	7.84	
	V: 1600	D	10	10	8①	7①	6①	6	5①	24	11.18	8.13	
Renewal/Count Time:			1530	1415	1535	1515	1305	1325	1445[3]	Tare Wt: Date: 5/24 Calib. Check (10 mg[4]): 9.96 Init: LB			
Initials:			bja	bja	bja	ST	ST	ST	bja	Tot. Wt: Date: 5/30 Calib. Check (10 mg[4]): 9.97 Init: PB			

[1] C = Concentration; V = Volume (ml) sample added to total volume of 1600 ml for preparation of solutions. [2]See printout of statistical analyses for biomass weights. [3]Time final count = test end time. [4]True value ± estimated uncertainty of calib. weight (NIST traceable annual certification) = 10.00 ± 0.05 mg

Test ID URSR0901 -CPP

Larval Fish Growth and Survival Test-7 Day Survival

Start Date:	5/20/2008 14:35	Test ID:	URSR0801PP	Sample ID:	FAIRFAX TERMINAL 001
End Date:	5/27/2008 14:45	Lab ID:	CBI	Sample Type:	WW
Sample Date:		Protocol:	EPAF 94-EPA Freshwater	Test Species:	PP-Pimephales promelas
Comments:					

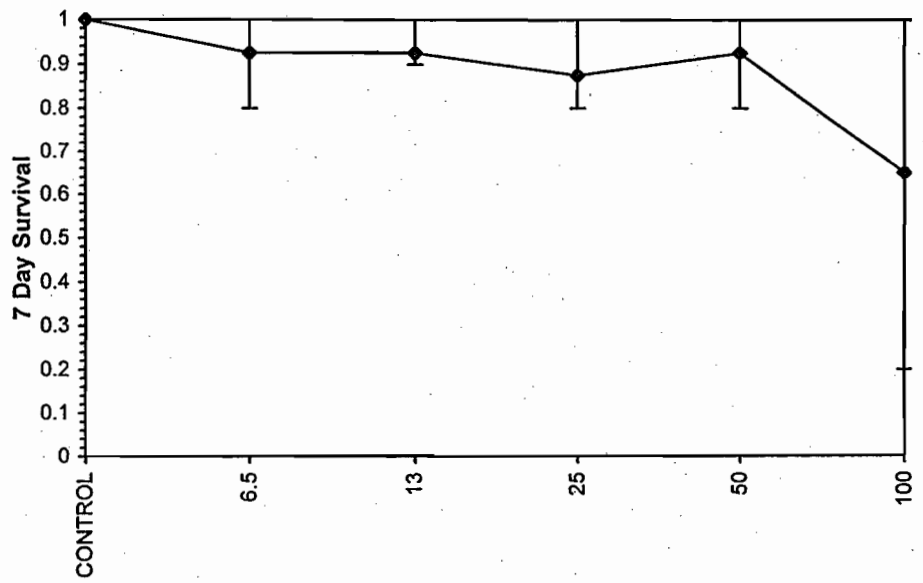
Conc-%	1	2	3	4
CONTROL	1.0000	1.0000	1.0000	1.0000
6.5	0.9000	1.0000	1.0000	0.8000
13	0.9000	1.0000	0.9000	0.9000
25	1.0000	0.8000	0.9000	0.8000
50	1.0000	1.0000	0.8000	0.9000
100	0.2000	0.9000	1.0000	0.5000

			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
CONTROL	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	4		
6.5	0.9250	0.9250	1.2951	1.1071	1.4120	11.347	4	14.00	10.00
13	0.9250	0.9250	1.2898	1.2490	1.4120	6.318	4	12.00	10.00
25	0.8750	0.8750	1.2188	1.1071	1.4120	11.906	4	12.00	10.00
50	0.9250	0.9250	1.2951	1.1071	1.4120	11.347	4	14.00	10.00
100	0.6500	0.6500	0.9775	0.4636	1.4120	44.336	4	12.00	10.00

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.94173	0.884	-0.3194	2.38389
Equality of variance cannot be confirmed				

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Steel's Many-One Rank Test	100	>100		1

Dose-Response Plot



ToxCalc v5.0.23

Reviewed by: PD

Larval Fish Growth and Survival Test-7 Day Biomass

Start Date:	5/20/2008 14:35	Test ID:	URSR0801PP	Sample ID:	FAIRFAX TERMINAL 001
End Date:	5/27/2008 14:45	Lab ID:	CBI	Sample Type:	WW
Sample Date:		Protocol:	EPAF 94-EPA Freshwater	Test Species:	PP-Pimephales promelas
Comments:					

Conc-%	1	2	3	4
CONTROL	0.7390	0.8130	0.7720	0.8010
6.5	0.7290	0.7040	0.8090	0.6200
13	0.7400	0.9350	0.7160	0.9340
25	0.6890	0.6880	0.7230	0.6300
50	0.9100	0.7370	0.6610	0.5520
100	0.2010	0.6330	0.7730	0.3050

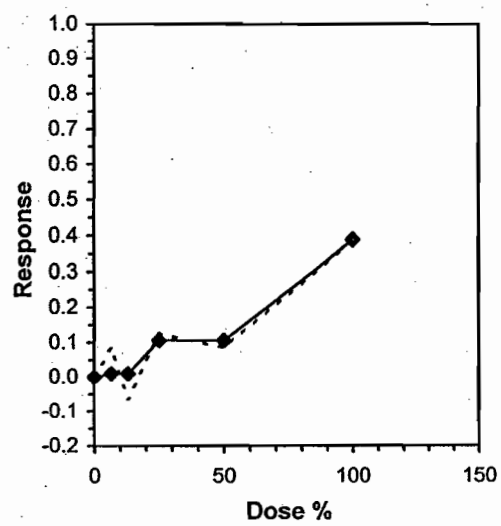
			Transform: Untransformed						1-Tailed		Isotonic	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD	Mean	N-Mean
CONTROL	0.7813	1.0000	0.7813	0.7390	0.8130	4.225	4				0.7813	1.0000
6.5	0.7155	0.9158	0.7155	0.6200	0.8090	10.879	4	0.663	2.410	0.2392	0.7734	0.9899
13	0.8313	1.0640	0.8313	0.7160	0.9350	14.391	4	-0.504	2.410	0.2392	0.7734	0.9899
25	0.6825	0.8736	0.6825	0.6300	0.7230	5.655	4	0.995	2.410	0.2392	0.6988	0.8944
50	0.7150	0.9152	0.7150	0.5520	0.9100	21.056	4	0.668	2.410	0.2392	0.6988	0.8944
*100	0.4780	0.6118	0.4780	0.2010	0.7730	56.357	4	3.056	2.410	0.2392	0.4780	0.6118

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.98333	0.884	0.13992	0.78074
Bartlett's Test indicates equal variances (p = 0.01)	14.6878	15.0863		

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU	MSDu	MSDp	MSB	MSE	F-Prob	df
Dunnett's Test	50	100	70.7107	2	0.23917	0.30614	0.05911	0.0197	0.0384	5, 18

Linear Interpolation (200 Resamples)

oint	%	SD	95% CL(Exp)		Skew
IC05	18.015	11.489	0.000	77.856	2.0434
IC10	24.296				
IC15	57.857				
IC20	66.704				
IC25	75.552				
IC40	>100				
IC50	>100				



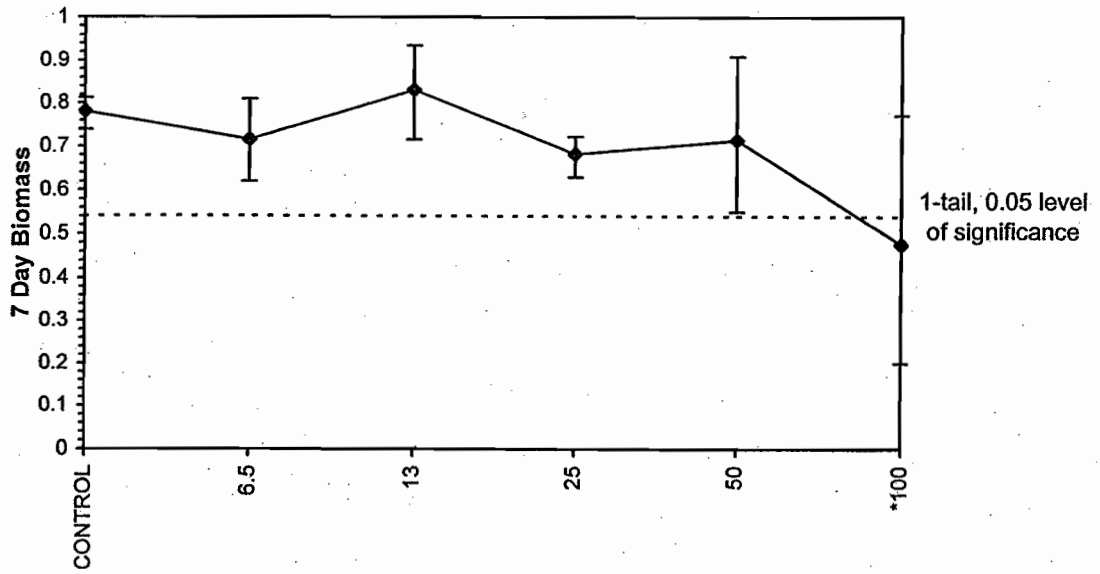
ToxCalc v5.0.23

Reviewed by: PD

Larval Fish Growth and Survival Test-7 Day Biomass

Start Date:	5/20/2008 14:35	Test ID:	URSR0801PP	Sample ID:	FAIRFAX TERMINAL 001
End Date:	5/27/2008 14:45	Lab ID:	CBI	Sample Type:	WW
Sample Date:		Protocol:	EPAF 94-EPA Freshwater	Test Species:	PP-Pimephales promelas
Comments:					

Dose-Response Plot



ToxCalc v5.0.23

Reviewed by: _____

EFFLUENT SAMPLE & DILUTION WATER CHARACTERISTICS
FRESHWATER TESTS

COASTAL BIOANALYSTS, INC
FORM ETF2031B EFFECTIVE DATE: 10/17/02

INITIAL SAMPLE CHARACTERIZATION[1]					
Sample Bottle[2]	A-1	B-1	C-1		NOTES:
Tot. Resid. Chlorine (mg/l)	<QL	<QL	<QL		
Hardness (mg/l $CaCO_3$)	22	16	26		
Alkalinity (mg/l $CaCO_3$)	28	4	20		
NH_3-N (mg/l)	<1.0	<1.0	<1.0		
Color/Appearance[3]	CYSSL	CYSSL	CYSSL		
Obvious Odor?	ND	ND	ND		
Date/Time	5/20 1030	5/21 1030	5/22 1005		
Initials	LB	LB	LB		

SAMPLE PREPARATION MEASUREMENTS (100% concentration)								A-1
Sample Bottle	A-1,2	B-1,2	B-3,4	C-1,2	C 2,3,4	C-4,5,6	C 6,7	B-1
Prep Temperature (°C)	25	25	25	25	25	26	25	25
Conductivity (uS/cm)[4]	75	84	NA	83	NA	NA	NA	81
D.O. (mg/l) After Warming	9.1	9.3	9.2	10.6	9.6	9.2	9.0	9.3
Aeration Time (min)	1.5	1.5	1.5	3.5	4	4	3	1.5
Adjusted D.O.	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2
Final pH (S.U.)	7.19	7.59	7.20	7.42	7.61	7.48	7.52	7.19
. Resid. Chlorine (mg/l)[5]	N.D.	N.D	N.D.	N.D	ND	ND	ND	N.D
Sample Filtered (60 um)?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Date/Time	5/20 1055	5/21 1115	5/22 0940	5/23 1030	5/24 0920	5/25 0920	5/26 0930	5/21 1305
Initials	LB	LB	RB	LB	ES	ST	ES	LB

DILUTION WATER CHARACTERISTICS								A-1
Vat Number	1	1	1	2	2	2	2	1
Temperature (°C)	25	25	25	25	25	25	25	25
Conductivity (uS/cm)	301	294	293	297	296	304	306	294
D.O. (mg/l)	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2
pH (S.U.)	7.84	7.82	7.76	7.83	7.72	7.64	7.73	7.82
Hardness (mg/l $CaCO_3$)	92	92	92	100	100	100	100	92
Alkalinity (mg/l $CaCO_3$)	58	58	58	59	59	59	59	58
Date/Time	5/20 0840	5/21 0840	5/22 0820	5/23 0940	5/24 0920	5/25 0920	5/26 0900	5/21 0840
Initials	LB	LB	RB	LB	ES	ST	ES	LB

[1]Q.L. = Quantification Limit, N.D. = Not Determined/Measured, NA = Not Applicable
[2]Bottle number = 9th or 9th and 10th characters of Laboratory Sample I.D. (e.g. "A", "A-1", "A-2"; see SOP SPLS202)
[3]C-Clear, O-Opaque, T-Turbid, S-Solids (Sl-Slight, M-Moderate, H-Heavy), Y-Yellow, B-Brown, Bl-Black, G-Green
[4]Conductivity measured on first use of sample only
[5]Total residual chlorine measured after sample prep only if present in initial sample characterization

PROJECT I.D. UR5TL0801
(First 8 characters of Laboratory Sample ID)

Coastal Bioanalysts
6400 Enterprise Court, Gloucester, VA 23061
PH: 804-694-8285, FAX: 804-695-1129
www.coastalbio.com

SAMPLE INFORMATION/CHAIN-OF-CUSTODY (FORM ETF2011D Rev. 10/10/07)

Lab Sample ID (Lab Use Only): U R S R 0 8 0 1 - A
A A A A Y Y N N A

FACILITY INFORMATION

CLIENT/FACILITY NAME	URS Corporation	CONTACT & PHONE #	Lindsay Pierce 703-713-6457
NPDES PERMIT NO	VPDES Permit # VA0001872	OUTFALL # OR LOCATION	001
SAMPLE CHLORINATED?	SAMPLE DECHLORINATED?	IF CHLORINE PRESENT UPON ARRIVAL AT LAB, DOES PERMIT SPECIFY DECHLORINATION OF SAMPLES?	

TESTS REQUESTED:
SPECIES OR EPA METH # C. dubia ACUTE ☐ CHRONIC ☑
SPECIES OR EPA METH # P. promelas ACUTE ☐ CHRONIC ☑
OTHER TESTS:

A SPECIFIC DILUTION SERIES MAY BE REQUIRED IN THE PERMIT. A DEFAULT SERIES OF 100, 50, 25, 12.5 AND 6.3%, OR CONCENTRATIONS USED IN PRIOR TESTING, WILL BE USED UNLESS INDICATED OTHERWISE. IF IN DOUBT PLEASE ATTACH A COPY OF APPLICABLE PERMIT PAGES.

GRAB SAMPLE INFORMATION

SAMPLE DATE	SAMPLE TIME	SAMPLE VOLUME

COMPOSITE SAMPLE INFORMATION

COMPOSITE START DATE & TIME	05/18/08 1200	COMPOSITE END DATE & TIME	05/19/08 1100
TIME OR FLOW PROPORTIONAL COMPOSITE INFORMATION	NUMBER SUBSAMPLES 24	VOL (ml) SUBSAMPLES 620	TIME INCREMENT 1 hour
	SET VOLUME SUBSAMPLE	SET VOLUME FLOW	TOTAL VOLUME

FOR VARIABLE VOLUME SUBSAMPLES BASED ON FLOW (COMPOSITING "BY HAND") ATTACH SAMPLE AND FLOW INFORMATION ON SEPARATE SHEET

FIELD MEASUREMENTS

DISCHARGE TEMP (°C)	DISCHARGE pH (S.U.)	SAMPLE TEMP (°C)	SAMPLE TRC (mg/l)	DATE/TIME (e.g. 02/23/00 1835)	INITIALS
18.7°C	6.66	5.8°C	0	05/19/08 1115	LSP

MEASUREMENTS MUST BE TAKEN WITHIN 15 MINUTES OF SAMPLE OR LAST SUBSAMPLE COLLECTION.

COMMENTS:

Lindsay Pierce / URS Corporation — [signature] — 05/19/08
(PRINTED NAME/AFFILIATION SAMPLER/ANALYST) (SIGNATURE) (DATE)

RELINQUISHED BY	DATE	TIME	RECEIVED BY
Lindsay Pierce /	05/19/08	1400	
[signature]	5/20/08	1020	[signature]

SHIPPING METHOD: UPS ____ FEDEX X HAND DELIVERY ____ OTHER ____

CONDITION ON ARRIVAL: ACCEPTABLE ✓ OTHER ____

SAMPLE ARRIVAL TEMP: (°C) 2 ARRIVED ON ICE? YES ✓ NO ____

NOTE: It is the responsibility of the sampler to insure that samples are properly collected, preserved (>0-6° C) and shipped. Sample hold time is 36 h. Additional costs may be incurred by improper preservation, shipping or receipt of samples after 3 p.m. or on weekends and holidays.

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6400 Enterprise Court, Gloucester, VA 23061
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www.coastalbio.com

SAMPLE INFORMATION/CHAIN-OF-CUSTODY (FORM ETF2011D Rev. 10/10/07)

Lab Sample ID (Lab Use Only): U R 5 R 0 8 0 1 - B
A A A A Y Y N N A

FACILITY INFORMATION

CLIENT/FACILITY NAME	WRS Corporation Fairfax Terminal	CONTACT & PHONE #	Lindsay Pierce 703-713-6457
NPDES PERMIT NO	VPDES Permit # VA0001872	OUTFALL # OR LOCATION	001
SAMPLE CHLORINATED?	SAMPLE DECHLORINATED?	IF CHLORINE PRESENT UPON ARRIVAL AT LAB, DOES PERMIT SPECIFY DECHLORINATION OF SAMPLES?	

TESTS REQUESTED:	SPECIES OR EPA METH #			
		C. dubia	ACUTE ☐	CHRONIC ☑
		P. promelas	ACUTE ☐	CHRONIC ☑

OTHER TESTS:

A SPECIFIC DILUTION SERIES MAY BE REQUIRED IN THE PERMIT. A DEFAULT SERIES OF 100, 50, 25, 12.5 AND 6.3%, OR CONCENTRATIONS USED IN PRIOR TESTING, WILL BE USED UNLESS INDICATED OTHERWISE. IF IN DOUBT PLEASE ATTACH A COPY OF APPLICABLE PERMIT PAGES.

GRAB SAMPLE INFORMATION

SAMPLE DATE	SAMPLE TIME	SAMPLE VOLUME

COMPOSITE SAMPLE INFORMATION

COMPOSITE START DATE & TIME	05/19/08 1230	COMPOSITE END DATE & TIME	05/20/08 1130

TIME OR FLOW PROPORTIONAL COMPOSITE INFORMATION	NUMBER SUBSAMPLES 24	VOL (ml) SUBSAMPLES 620	TIME INCREMENT 1 hour
	SET VOLUME SUBSAMPLE	SET VOLUME FLOW	TOTAL VOLUME

FOR VARIABLE VOLUME SUBSAMPLES BASED ON FLOW (COMPOSITING "BY HAND") ATTACH SAMPLE AND FLOW INFORMATION ON SEPARATE SHEET

FIELD MEASUREMENTS

DISCHARGE TEMP (°C)	DISCHARGE pH (S.U.)	SAMPLE TEMP (°C)	SAMPLE TRC (mg/l)	DATE/TIME (e.g. 02/23/00 1835)	INITIALS
16.6°C	6.95	5.4°C	0	05/20/08 1145	LSP

MEASUREMENTS MUST BE TAKEN WITHIN 15 MINUTES OF SAMPLE OR LAST SUBSAMPLE COLLECTION.

COMMENTS:

Lindsay Pierce / WRS Corporation — Lindsay Pierce — 05/20/08
(PRINTED NAME/AFFILIATION SAMPLER/ANALYST) (SIGNATURE) (DATE)

RELINQUISHED BY	DATE	TIME	RECEIVED BY
Lindsay Pierce	05/20/08	1400	
Lindsay Pierce	5/21/08	1025	D. Bm

SHIPPING METHOD: UPS____ FEDEX X HAND DELIVERY____ OTHER____

CONDITION ON ARRIVAL: ACCEPTABLE ✓ OTHER____

SAMPLE ARRIVAL TEMP: (°C) 2 ARRIVED ON ICE? YES ✓ NO____

NOTE: It is the responsibility of the sampler to insure that samples are properly collected, preserved (>0-6° C) and shipped. Sample hold time is 36 h. Additional costs may be incurred by improper preservation, shipping or receipt of samples after 3 p.m. or on weekends and holidays.

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SAMPLE INFORMATION/CHAIN-OF-CUSTODY (FORM ETF2011D Rev. 10/10/07)

Lab Sample ID (Lab Use Only): U R 5 R 0 8 0 1 - C
A A A A Y Y N N A

FACILITY INFORMATION

CLIENT/FACILITY NAME	URS corporation Fairfax Terminal	CONTACT & PHONE #	Lindsay Pierce 703-713-6457
NPDES PERMIT NO	VPDES Permit # VA0001872	OUTFALL # OR LOCATION	001
SAMPLE CHLORINATED?	SAMPLE DECHLORINATED?	IF CHLORINE PRESENT UPON ARRIVAL AT LAB, DOES PERMIT SPECIFY DECHLORINATION OF SAMPLES?	

TESTS REQUESTED:	SPECIES OR EPA METH #			
		C. dubia	ACUTE ☐	CHRONIC ☑
		P. promelas	ACUTE ☐	CHRONIC ☑
OTHER TESTS:				

A SPECIFIC DILUTION SERIES MAY BE REQUIRED IN THE PERMIT. A DEFAULT SERIES OF 100, 50, 25, 12.5 AND 6.3%, OR CONCENTRATIONS USED IN PRIOR TESTING, WILL BE USED UNLESS INDICATED OTHERWISE. IF IN DOUBT PLEASE ATTACH A COPY OF APPLICABLE PERMIT PAGES.

GRAB SAMPLE INFORMATION

SAMPLE DATE	SAMPLE TIME	SAMPLE VOLUME

COMPOSITE SAMPLE INFORMATION

COMPOSITE START DATE & TIME	05-21-08 1100	COMPOSITE END DATE & TIME	05-22-08 1000
TIME OR FLOW PROPORTIONAL COMPOSITE INFORMATION*	NUMBER SUBSAMPLES 24	VOL (ml) SUBSAMPLES 1240	TIME INCREMENT 1 hour
	SET VOLUME SUBSAMPLE	SET VOLUME FLOW	TOTAL VOLUME

*FOR VARIABLE VOLUME SUBSAMPLES BASED ON FLOW (COMPOSITING "BY HAND") ATTACH SAMPLE AND FLOW INFORMATION ON SEPARATE SHEET

FIELD MEASUREMENTS

DISCHARGE TEMP (°C)	DISCHARGE pH (S.U.)	SAMPLE TEMP (°C)	SAMPLE TRC (mg/l)	DATE/TIME (e.g. 02/23/00 1835)	INITIALS
17.4°C	6.89	4.9°C	0	05-22-08 1015	JSP

MEASUREMENTS MUST BE TAKEN WITHIN 15 MINUTES OF SAMPLE OR LAST SUBSAMPLE COLLECTION.

COMMENTS:

Lindsay Pierce/URS corporation [signature] 05/22/08
(PRINTED NAME/AFFILIATION SAMPLER/ANALYST) (SIGNATURE) (DATE)

RELINQUISHED BY	DATE	TIME	RECEIVED BY
Lindsay Pierce/	05-22-08	1600	
[signature]	5/23/08	1100	[signature]

SHIPPING METHOD: UPS____ FEDEX X HAND DELIVERY____ OTHER____

CONDITION ON ARRIVAL: ACCEPTABLE ✓ OTHER____

SAMPLE ARRIVAL TEMP: (°C) 2 ARRIVED ON ICE? YES ✓ NO____

NOTE: It is the responsibility of the sampler to insure that samples are properly collected, preserved (>0-6° C) and shipped. Sample hold time is 36 h. Additional costs may be incurred by improper preservation, shipping or receipt of samples after 3 p.m. or on weekends and holidays.

VPDES Permit Application Addendum

1. **Entity to whom the permit is to be issued:** Joint Basin Corporation (JBC)
   Who will be legally responsible for the wastewater treatment facilities and compliance with the permit? This may or may not be the facility or property owner.

2. **Is this facility located within city or town boundaries?** (Y) N

3. **Provide the tax map parcel number for the land where the discharge is located.** Not Available

4. **For the facility to be covered by this permit, how many acres will be disturbed during the next five years due to new construction activities?** None

5. **What is the design average effluent flow of this facility?** 0.018 MGD (stormwater flow)
   For industrial facilities, provide the max. 30-day average production level, include units:
   Max: 0.570 MGD (stormwater flow)
   In addition to the design flow or production level, should the permit be written with limits for any other discharge flow tiers or production levels? Y (N)
   If "Yes", please identify the other flow tiers (in MGD) or production levels: _____
   Please consider the following questions for both the flow tiers and the production levels (if applicable): Do you plan to expand operations during the next five years? Is your facility's design flow considerably greater than your current flow?

6. **Nature of operations generating wastewater:**
   None

   Ø % of flow from domestic connections/sources
   Number of private residences to be served by the treatment works:

   Ø % of flow from non-domestic connections/sources

7. **Mode of discharge:** ____Continuous ____Intermittent ____Seasonal
   Describe frequency and duration of intermittent or seasonal discharges:
   Not Applicable - No wastewater being discharged

8. **Identify the characteristics of the receiving stream at the point just above the facility's discharge point:**
   __ Permanent stream, never dry
   __ Intermittent stream, usually flowing, sometimes dry
   __ Ephemeral stream, wet-weather flow, often dry
   __ Effluent-dependent stream, usually or always dry without effluent flow
   X Lake or pond at or below the discharge point
   __ Other: _____

9. **Approval Date(s):**
   O & M Manual December 2005 **Sludge/Solids Management Plan** _____

   Have there been any changes in your operations or procedures since the above approval dates? (Y) N
   No changes that significantly impact discharges have ocurred. The JBC is in the process of updating the SWPPP and O&M Manual as of June 2009

PUBLIC NOTICE BILLING INFORMATION

I hereby authorize the Department of Environmental Quality to have the cost of publishing a public notice billed to the Agent/Department shown below. The public notice will be published once a week for two consecutive weeks in accordance with 9 VAC 25-31-290.C.2.

Agent/Department to be billed: Mr. Andy Barnes [redacted]

Owner: Joint Basin Corporation

Applicant's Address: Fairfax Terminal Complex

9601 Colonial Avenue

Fairfax, VA 22031

Agent's Telephone Number: (703) 503-3687

Authorizing Agent: for Andy Barnes

Signature

VPDES Permit No.: VA0001872
Facility Name: Fairfax Terminal Complex

Please return to:

Susan Mackert
VA-DEQ, NRO
13901 Crown Court
Woodbridge, VA 22193-1453
Fax: (703)583-3821

Paperwork Reduction Act Notice

Collection of this information is governed by the paperwork Reduction Act, and has been approved by the Office of Management and Budget (OMB) in accordance with 5 CFR 1320. The OMB approval number is 2040-086, expiring May 31,1992. The public reporting burden for each Application for Permit to Discharge Wastewater is estimated as follows:

Standard Form A
Public reporting burden for this collection of information is estimated to be an average of 15 hours, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

Short Form A
Public reporting burden for this collection of information is estimated to be an average of 1 hour, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

Form 1
Public reporting burden for this collection of information is estimated to be an average of 3 hours, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

Form 2b
Public reporting burden for this collection of information is estimated to be an average of 6 hours, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

Form 2c
Public reporting burden for this collection of information is estimated to be a weighted average for all major and minor facilities of 33 hours, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

Form 2d
Public reporting burden for this collection of information is estimated to vary from a range of 32 hours as an average per response for some minor facilities, to 46 hours as an average per response for some major facilities, with a weighted average for major and minor facilities of 33.2 hours per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

Form 2e
Public reporting burden for this collection of information is estimated to be an average of 14 hours, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

Send comments regarding these burden estimates or any other aspect of this collection, including suggestions for reducing this burden, to the Chief, Information Policy Branch, PM-223, U. S. Environmental Protection Agency, 401 M Street, SW, Washington, DC 20460; and to the Office of Information and Regulatory Affairs, Paperwork Reduction Act Project (2040-0086), Office of Management and Budget, Washington, DC 20503.

Pollution Prevention and Pollution Control

Know Your Options

Pollution Prevention May HelpYour Facility Reduce Its Water Discharges

Today, many facilities are taking the opportunity to look at achieving broader environmental management objectives rather than concentrating solely on meeting pollution control and regulatory standards. These facilities are realizing that pollution prevention is very often economically beneficial and can result in significant environmental benefits.

What is Pollution Prevention?

Liquid, solid and /or gaseous waste materials are generated during the manufacture products. In addition to environmental problems, these waste streams represent a loss of valuable materials and energy from the production process and may require significant investment in pollution control equipment to meet more stringent regulatory requirements. In addition, there are costs associated with waste handling, monitoring, compliance reporting and the long-term liability issues associated with these wastes.

Traditional *pollution control* focuses on end-of-pipe and out-the-back-door viewpoints. *Pollution prevention* emphasizes the elimination or reduction of waste discharges at the source of generation. If wastes are not generated, the wastes do not have to be managed.

Facilities have many reasons to implement pollution prevention techniques. Achieving compliance with regulatory standards, saving money and improving public relations are a few of the reasons why proactive Virginia facilities are investing in pollution prevention alternatives.

For example, a Richmond metal finisher added an ion exchange polishing process to their pretreatment system, which enabled them to eliminate the need to discharge to the local Publicly Owned Treatment Works (POTW). The new system allows total effluent flow to be reused continuously in the plant. By investing in pollution prevention efforts, the facility reduced their water purchase and disposal costs by 80%.

Pollution Prevention Assistance

The Office of Pollution Prevention, a voluntary, non-regulatory technical assistance program within the Virginia Department of Environmental Quality, is available to assist your facility with its pollution prevention efforts. Services of OPP include:

- Access to engineers trained to assist you in evaluating your processes and needs
- Access to up-to-date information on new and innovative pollution prevention techniques
- P2 training and workshops targeted at specific waste-generating activities
- Industry-specific reports and fact sheets researched and written by Office of Pollution Prevention staff for the benefit of Virginia-based facilities
- On-site assistance in the form of APollution Prevention Opportunity Assessments≅

For more information, please contact:

Office of Pollution Prevention
Virginia Department of Environmental Quality
PO Box 1105
Richmond, VA 23218
(804) 698-4235/4545
http://www.deq.virginia.gov/p2

(over)

More Resources for Pollution Prevention Information:

Virginia Department of Environmental Quality's Small Business Assistance Office
http://www.deq.state.va.us/osba/smallbiz.html

Environmental Protection Agency's Pollution Prevention Division
http://www.epa.gov/opptintr/p2home

Waste Reduction Resource Center
http://wrrc.p2pays.org

State and Territorial Air Pollution Prevention Administration, Association of Local Air Pollution Control Officials (STAPPA/ALAPCO)
http://www.4cleanair.org

EPA EnviroSense: Assists in Pollution Prevention implementation
http://es.epa.gov

Department of Energy's Office of Pollution Prevention
http://em.doe.gov/wastemin

Technology Transfer Network Bulletin Board
http://www.epa.gov/ttn