

Table 4: Downstream Surface Water Sampling Results Watkins Transect



Location			CSXT-WATKINS-CTR-B	CSXT-WATKINS-CTR-B	CSXT-WATKINS-CTR-B	CSXT-WATKINS-CTR-B	CSXT-WATKINS-CTR-B	CSXT-WATKINS-CTR-M	CSXT-WATKINS-CTR-M	CSXT-WATKINS-CTR-M	CSXT-WATKINS-CTR-M	CSXT-WATKINS-CTR-M	CSXT-WATKINS-CTR-S	CSXT-WATKINS-CTR-S	CSXT-WATKINS-CTR-S	CSXT-WATKINS-CTR-S
Sample Name			CSXT-WATKINS-CTR-B-050314	CSXT-WATKINS-CTR-B-050414	CSXT-WATKINS-CTR-B-050514	CSXT-WATKINS-CTR-B-050614	CSXT-WATKINS-CTR-B-050714	CSXT-WATKINS-CTR-M-050314	CSXT-WATKINS-CTR-M-050414	CSXT-WATKINS-CTR-M-050514	CSXT-WATKINS-CTR-M-050614	CSXT-WATKINS-CTR-M-050714	CSXT-WATKINS-CTR-S-050314	CSXT-WATKINS-CTR-S-050414	CSXT-WATKINS-CTR-S-050514	CSXT-WATKINS-CTR-S-050614
Sample Date			5/3/2014	5/4/2014	5/5/2014	5/6/2014	5/7/2014	5/3/2014	5/4/2014	5/5/2014	5/6/2014	5/7/2014	5/3/2014	5/4/2014	5/5/2014	5/6/2014
Matrix			WS	WS	WS	WS	WS	WS	WS	WS	WS	WS	WS	WS	WS	WS
Validation Level			Tier II	Tier II	Tier II	Tier II	Tier II	Tier II	Tier II	Tier II	Tier II	Tier II	Tier II	Tier II	Tier II	Tier II
Sample Type			N	N	N	N	N	N	N	N	N	N	N	N	N	N
SDG			240368671	240368711	240368871	240369311	240370211	240368671	240368711	240368871	240369311	240370211	240368671	240368711	240368871	240369311
Analyte	Units	VRP_27B TIER II SW-FRESH														
FIELD																
Conductivity	ms/cm	--	0.094	0.099	0.109	0.118	0.123	0.94	0.098	0.11	0.118	0.11	0.095	0.099	0.11	0.118
Dissolved Oxygen	mg/l	--	8.75	10.88	9.04	8.14	7.99	8.4	10.56	8.8	7.99	8.05	8.53	10.44	9.3	7.82
pH	SU	--	6.45	6.57	5.52	6.25	6.64	5.97	6.57	5.87	6.33	6.55	6.77	6.37	6.55	6.32
Temperature	C	--	16.27	16.35	16.89	16.85	17.38	16.27	16.34	16.89	16.85	17.39	16.3	16.35	16.91	16.87
Gen Chem																
Biological Oxygen Demand	mg/l	--	4.7 UB	2.0 U	4.5 UB	2.0 U	2.0 U	5.8 UB	4.1 UB	2.0 U	2.0 U	2.0 U	2.0	2.0 U	2.0 U	2.0 U
Chemical Oxygen Demand	mg/l	--	21 UB	18 J	11 J	20 UB	14 J	56	15 J	17 J	20 UB	12 J	28 UB	13 J	5.8 J	20 UB
pH	pH units	--	NA	NA	7.69	NA	NA	NA	NA	7.72	NA	NA	NA	NA	7.76	NA
Total Suspended Solids	mg/l	--	72	37	28	NA	NA	64	43	38	NA	NA	64	46	37	NA
Inorganics																
Aluminum	ug/l	87	910	1900 J	1200	NA	NA	570	2000 J	1400	NA	NA	870	1700 J	1100	NA
Cadmium	ug/l	1.1	5.0 U	5.0 U	5.0 U	NA	NA	5.0 U	5.0 U	5.0 U	NA	NA	5.0 U	5.0 U	5.0 U	NA
Calcium	ug/l	--	12000	12000	13000	13000	14000	12000	12000	13000	12000	14000	13000	11000	12000	13000
Copper	ug/l	9	25 U	25 U	25 U	NA	NA	25 U	25 U	25 U	NA	NA	25 U	25 U	25 U	NA
Iron	ug/l	1000	1200	2600	2000	NA	NA	880	2900	2100	NA	NA	1100	2300	1600	NA
Lead	ug/l	14	10 U	10 U	10 U	NA	NA	10 U	10 U	10 U	NA	NA	10 U	10 U	10 U	NA
Magnesium	ug/l	--	2700 J	2800 J	2900 J	2900 J	3200 J	2700 J	2800 J	3100 J	2800 J	3200 J	2700 J	2700 J	2900 J	2900 J
Nickel	ug/l	20	1.7 J	1.6 J	1.4 J	NA	NA	40 U	2.0 J	2.3 J	NA	NA	1.3 J	1.6 J	1.3 J	NA
Sulfur	ug/l	--	NA	NA	3100	NA	NA	NA	NA	3200	NA	NA	NA	NA	3100	NA
Vanadium	ug/l	--	20 U	20 U	20 U	NA	NA	20 U	20 U	20 U	NA	NA	20 U	20 U	20 U	NA
SVOCs																
Acenaphthene	ug/l	990	0.19 U	0.19 U	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
Acenaphthylene	ug/l	--	0.19 U	0.19 U	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
Anthracene	ug/l	40000	0.19 U	0.19 U	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
Benzo(a)anthracene	ug/l	0.18	0.19 U	0.19 U	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
Benzo(a)pyrene	ug/l	0.18	0.19 U	0.19 U	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
Benzo(b)fluoranthene	ug/l	0.18	0.19 U	0.19 U	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
Benzo(g,h,i)perylene	ug/l	--	0.19 U	0.19 U	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
Benzo(k)fluoranthene	ug/l	0.18	0.19 U	0.19 U	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
Chrysene	ug/l	0.018	0.19 U	0.19 U	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
Dibenzo(a,h)anthracene	ug/l	0.18	0.19 U	0.19 U	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
Fluoranthene	ug/l	140	0.19 U	0.19 U	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
Fluorene	ug/l	5300	0.19 U	0.19 U	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
Indeno(1,2,3-cd)pyrene	ug/l	0.18	0.19 U	0.19 U	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
Naphthalene	ug/l	--	0.19 U	0.19 U	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
Phenanthrene	ug/l	--	0.19 U	0.19 U	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
Pyrene	ug/l	4000	0.19 U	0.19 U	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
TPH-DRO																
Diesel (C10-C20)	mg/l	--	0.47 U	0.48 U	0.48 U	0.48 U	0.48 U	0.5 U	0.48 U	0.48 U	0.48 U	0.48 U	0.47 U	0.48 U	0.48 U	0.48 U
Oil Range Organics C20-C34	mg/l	--	0.47 U	0.48 U	0.48 U	0.48 U	0.48 U	0.5 U	0.48 UB	0.48 U	0.48 U	0.48 U	0.47 U	0.48 U	0.48 U	0.48 U
TPH-GRO																
Gasoline C6-C10	mg/l	--	0.1 U	0.1 U	0.1 U	NA	NA	0.1 U	0.1 U	0.1 U	NA	NA	0.1 U	0.1 U	0.1 U	NA
VOCs																
Benzene	ug/l	510	1.0 UB	1.0 U	1.0 UB	1.0 UB	1.0 U	1.0 UB	1.0 U	1.0 U	1.0 U	0.17 J	1.0 UB	1.0 U	1.0 U	1.0 U
Ethylbenzene	ug/l	2100	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	ug/l	6000	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Total Xylenes	ug/l	--	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U

Footnotes:

U - The compound was analyzed for but not detected. The associated value is the compound quantitation limit.

B - The compound has been found in the sample as well as its associated blank; its presence in the sample may be suspect.

J - The compound was positively identified; however, the associated numerical value is an estimated concentration only.

UU - The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.

UB - Compound considered non-detect at the listed value due to associated blank contamination.

ug/L = micrograms per Liter

mg/L = milligrams per Liter

NA - Not analyzed

VRP\_27B TIER II SW-FRESH: Virginia Department of Environmental Quality VRP Tier II Screening for Unrestricted Sites Table 2.7b: Other Surface Water-Fresh

Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review

Table 4: Downstream Surface Water Sampling Results Watkins Transect



Location			CSXT-WATKINS-CTR-S	CSXT-WATKINS-LDB-B	CSXT-WATKINS-LDB-B	CSXT-WATKINS-LDB-B	CSXT-WATKINS-LDB-B	CSXT-WATKINS-LDB-B	CSXT-WATKINS-LDB-B	CSXT-WATKINS-LDB-M	CSXT-WATKINS-LDB-M	CSXT-WATKINS-LDB-M	CSXT-WATKINS-LDB-M	CSXT-WATKINS-LDB-M	CSXT-WATKINS-LDB-S	CSXT-WATKINS-LDB-S
Sample Name			CSXT-WATKINS-CTR-S-050714	CSXT-DUP-01-050314	CSXT-WATKINS-LDB-B-050314	CSXT-WATKINS-LDB-B-050414	CSXT-WATKINS-LDB-B-050514	CSXT-WATKINS-LDB-B-050614	CSXT-WATKINS-LDB-B-050714	CSXT-WATKINS-LDB-M-050314	CSXT-WATKINS-LDB-M-050414	CSXT-WATKINS-LDB-M-050514	CSXT-WATKINS-LDB-M-050614	CSXT-WATKINS-LDB-M-050714	CSXT-WATKINS-LDB-S-050314	CSXT-WATKINS-LDB-S-050414
Sample Date			5/7/2014	5/3/2014	5/3/2014	5/4/2014	5/5/2014	5/6/2014	5/7/2014	5/3/2014	5/4/2014	5/5/2014	5/6/2014	5/7/2014	5/3/2014	5/4/2014
Matrix			WS	WS	WS	WS	WS	WS	WS	WS	WS	WS	WS	WS	WS	WS
Validation Level			Tier II	Tier II	Tier II	Tier II	Tier II	Tier II	Tier II	Tier II	Tier II	Tier II	Tier II	Tier II	Tier II	Tier II
Sample Type			N	FD	N	N	N	N	N	N	N	N	N	N	N	N
SDG			240370211	240368671	240368671	240368711	240368871	240369311	240370211	240368671	240368711	240368871	240369311	240370211	240368671	240368711
Analyte	Units	VRP_27B TIER II SW-FRESH														
FIELD																
Conductivity	ms/cm	--	0.101	NA	0.095	0.097	0.107	0.114	0.119	0.095	0.097	0.107	0.114	0.104	0.095	0.097
Dissolved Oxygen	mg/l	--	8.39	NA	9.16	11.07	9.51	8.44	8.01	9.3	11.07	9.57	8.45	8.09	8.9	10.88
pH	SU	--	6.31	NA	5.31	5.89	4.93	5.32	6.5	5.24	5.94	5.01	5.2	6.18	5.34	6.91
Temperature	C	--	17.4	NA	16.09	15.99	16.64	16.68	17.26	16.07	16	16.65	16.69	17.2	16.04	16.03
Gen Chem																
Biological Oxygen Demand	mg/l	--	2.0 U	2.0 UB	2.0 U	11 UB	6.0 UB	2.0 U	2.0 U	5.1 UB	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Chemical Oxygen Demand	mg/l	--	20 U	20 UB	31	14 J	33	20 UB	20 U	21	21	11 J	20 UB	16 J	21	16 J
pH	pH units	--	NA	NA	NA	NA	7.72	NA	NA	NA	NA	7.67	NA	NA	NA	NA
Total Suspended Solids	mg/l	--	NA	75	86	40	36	NA	NA	76	50	38	NA	NA	68	45
Inorganics																
Aluminum	ug/l	87	NA	770	920	1900 J	1300	NA	NA	840	1900 J	1000	NA	NA	540	1900 J
Cadmium	ug/l	1.1	NA	5.0 U	5.0 U	5.0 U	5.0 U	NA	NA	5.0 U	5.0 U	5.0 U	NA	NA	5.0 U	5.0 U
Calcium	ug/l	--	14000	12000	12000	12000	12000	12000	13000	12000	11000	12000	13000	13000	13000	12000
Copper	ug/l	9	NA	25 U	25 U	25 U	25 U	NA	NA	25 U	25 U	25 U	NA	NA	25 U	25 U
Iron	ug/l	1000	NA	1100	1100	2900	1900	NA	NA	1200	3000	1600	NA	NA	950	2500
Lead	ug/l	14	NA	10 U	10 U	10 U	10 U	NA	NA	10 U	10 U	10 U	NA	NA	10 U	10 U
Magnesium	ug/l	--	3000 J	2600 J	2600 J	2800 J	2900 J	2800 J	3000 J	2700 J	2800 J	2800 J	2900 J	3100 J	2700 J	2800 J
Nickel	ug/l	20	NA	1.4 J	1.4 J	1.5 J	1.6 J	NA	NA	1.6 J	1.8 J	1.4 J	NA	NA	1.3 J	1.3 J
Sulfur	ug/l	--	NA	NA	NA	NA	2900	NA	NA	NA	NA	2900	NA	NA	NA	NA
Vanadium	ug/l	--	NA	20 U	20 U	20 U	20 U	NA	NA	20 U	20 U	20 U	NA	NA	20 U	20 U
SVOCs																
Acenaphthene	ug/l	990	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U
Acenaphthylene	ug/l	--	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U
Anthracene	ug/l	40000	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U
Benzo(a)anthracene	ug/l	0.18	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.053 J
Benzo(a)pyrene	ug/l	0.18	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U
Benzo(b)fluoranthene	ug/l	0.18	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.082 J
Benzo(g,h,i)perylene	ug/l	--	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.067 J
Benzo(k)fluoranthene	ug/l	0.18	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.063 J
Chrysene	ug/l	0.018	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.085 J
Dibenzo(a,h)anthracene	ug/l	0.18	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U
Fluoranthene	ug/l	140	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.11 J
Fluorene	ug/l	5300	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U
Indeno(1,2,3-cd)pyrene	ug/l	0.18	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.054 J
Naphthalene	ug/l	--	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U
Phenanthrene	ug/l	--	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.20 UB
Pyrene	ug/l	4000	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.073 J
TPH-DRO																
Diesel (C10-C20)	mg/l	--	0.48 U	0.49 U	0.47 U	0.48 U	0.48 U	0.48 U	0.48 U	0.47 U	0.48 U	0.48 U	0.48 U	0.48 U	0.5 U	0.48 U
Oil Range Organics C20-C34	mg/l	--	0.48 U	0.49 U	0.47 U	0.48 U	0.051 J	0.48 U	0.48 U	0.47 U	0.48 U	0.48 U	0.48 U	0.48 U	0.5 U	0.48 U
TPH-GRO																
Gasoline C6-C10	mg/l	--	NA	0.1 U	0.1 U	0.1 U	0.1 U	NA	NA	0.1 U	0.1 U	0.1 U	NA	NA	0.1 U	0.1 U
VOCs																
Benzene	ug/l	510	1.0 U	1.0 UB	1.0 UB	1.0 U	1.0 UB	1.0 UB	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	ug/l	2100	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	ug/l	6000	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Total Xylenes	ug/l	--	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U

Footnotes:  
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B - The compound has been found in the sample as well as its associated blank; its presence in the sample may be suspect.  
J - The compound was positively identified; however, the associated numerical value is an estimated concentration only.  
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UB - Compound considered non-detect at the listed value due to associated blank contamination.  
ug/L = micrograms per Liter  
mg/L = milligrams per Liter  
NA - Not analyzed  
VRP\_27B TIER II SW-FRESH: Virginia Department of Environmental Quality VRP Tier II Screening for Unrestricted Sites Table 2.7b: Other Surface Water-Fresh  
Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review

Table 4: Downstream Surface Water Sampling Results Watkins Transect



Location			CSXT-WATKINS-LDB-S	CSXT-WATKINS-LDB-S	CSXT-WATKINS-LDB-S	CSXT-WATKINS-RDB-B	CSXT-WATKINS-RDB-B	CSXT-WATKINS-RDB-B	CSXT-WATKINS-RDB-B	CSXT-WATKINS-RDB-B	CSXT-WATKINS-RDB-M	CSXT-WATKINS-RDB-M	CSXT-WATKINS-RDB-M	CSXT-WATKINS-RDB-M	CSXT-WATKINS-RDB-M	CSXT-WATKINS-RDB-S
Sample Name			CSXT-WATKINS-LDB-S-050514	CSXT-WATKINS-LDB-S-050614	CSXT-WATKINS-LDB-S-050714	CSXT-WATKINS-RDB-B-050314	CSXT-WATKINS-RDB-B-050414	CSXT-WATKINS-RDB-B-050514	CSXT-WATKINS-RDB-B-050614	CSXT-WATKINS-RDB-B-050714	CSXT-WATKINS-RDB-M-050314	CSXT-WATKINS-RDB-M-050414	CSXT-WATKINS-RDB-M-050514	CSXT-WATKINS-RDB-M-050614	CSXT-WATKINS-RDB-M-050714	CSXT-WATKINS-RDB-S-050314
Sample Date			5/5/2014	5/6/2014	5/7/2014	5/3/2014	5/4/2014	5/5/2014	5/6/2014	5/7/2014	5/3/2014	5/4/2014	5/5/2014	5/6/2014	5/7/2014	5/3/2014
Matrix			WS	WS	WS	WS	WS	WS	WS	WS	WS	WS	WS	WS	WS	WS
Validation Level			Tier II	Tier II	Tier II	Tier II	Tier II	Tier II	Tier II	Tier II	Tier II	Tier II	Tier II	Tier II	Tier II	Tier II
Sample Type			N	N	N	N	N	N	N	N	N	N	N	N	N	N
SDG			240368871	240369311	240370211	240368671	240368711	240368871	240369311	240370211	240368671	240368711	240368871	240369311	240370211	240368671
Analyte	Units	VRP_27B TIER II SW-FRESH														
FIELD																
Conductivity	ms/cm	--	0.107	0.114	0.104	0.093	0.098	0.111	0.119	0.12	0.092	0.099	0.109	0.119	0.109	0.092
Dissolved Oxygen	mg/l	--	9.62	8.32	8.22	8.15	9.49	8.98	7.95	7.96	8.16	9.57	8.89	7.89	8	8.3
pH	SU	--	5.66	5.57	6.2	6.26	6	5.62	6.3	6.72	6.66	5.83	5.56	6.51	6.35	6.97
Temperature	C	--	16.66	16.69	17.3	16.38	16.57	17.01	16.95	17.47	16.4	16.57	17.01	16.96	17.48	16.41
Gen Chem																
Biological Oxygen Demand	mg/l	--	2.0 U	2.0 U	2.0 U	2.0 U	5.0 UB	4.6 UB	2.1 UB	2.0 U	2.0 U	6.0 U	2.0 U	2.0 U	2.0 U	2.1 UB
Chemical Oxygen Demand	mg/l	--	9.1 J	20 U	12 J	24 UB	12 J	20 U	20 UB	20 U	27 UB	16 J	16 J	21 UB	20 U	36
pH	pH units	--	7.38	NA	NA	NA	NA	7.75	NA	NA	NA	NA	7.70	NA	NA	NA
Total Suspended Solids	mg/l	--	35	NA	NA	62	56	42	NA	NA	61	43	28	NA	NA	73
Inorganics																
Aluminum	ug/l	87	1100	NA	NA	890	1600 J	1100	NA	NA	810	1900 J	1100	NA	NA	850
Cadmium	ug/l	1.1	5.0 U	NA	NA	5.0 U	5.0 U	5.0 U	NA	NA	5.0 U	5.0 U	5.0 U	NA	NA	5.0 U
Calcium	ug/l	--	12000	13000	14000	12000	11000	13000	13000	14000	12000	11000	13000	13000	14000	12000
Copper	ug/l	9	25 U	NA	NA	25 U	25 U	25 U	NA	NA	25 U	25 U	25 U	NA	NA	25 U
Iron	ug/l	1000	1700	NA	NA	1100	2300	1800	NA	NA	1100	2800	1600	NA	NA	1100
Lead	ug/l	14	10 U	NA	NA	10 U	10 U	10 U	NA	NA	10 U	10 U	10 U	NA	NA	10 U
Magnesium	ug/l	--	2900 J	2900 J	3200 J	2600 J	2700 J	2900 J	3000 J	3200 J	2600 J	2800 J	2900 J	3000 J	3300 J	2600 J
Nickel	ug/l	20	1.4 J	NA	NA	40 U	1.4 J	1.4 J	NA	NA	1.5 J	1.9 J	1.3 J	NA	NA	1.5 J
Sulfur	ug/l	--	2900	NA	NA	NA	NA	2900	NA	NA	NA	NA	2900	NA	NA	NA
Vanadium	ug/l	--	20 U	NA	NA	20 U	20 U	20 U	NA	NA	20 U	20 U	20 U	NA	NA	20 U
SVOCs																
Acenaphthene	ug/l	990	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U	0.19 U	0.19 U
Acenaphthylene	ug/l	--	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U	0.19 U	0.19 U
Anthracene	ug/l	40000	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U	0.19 U	0.19 U
Benzo(a)anthracene	ug/l	0.18	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U	0.19 U	0.19 U
Benzo(a)pyrene	ug/l	0.18	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U	0.19 U	0.19 U
Benzo(b)fluoranthene	ug/l	0.18	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U	0.19 U	0.19 U
Benzo(g,h,i)perylene	ug/l	--	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U	0.19 U	0.19 U
Benzo(k)fluoranthene	ug/l	0.18	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U	0.19 U	0.19 U
Chrysene	ug/l	0.018	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U	0.19 U	0.19 U
Dibenzo(a,h)anthracene	ug/l	0.18	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U	0.19 U	0.19 U
Fluoranthene	ug/l	140	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U	0.19 U	0.19 U
Fluorene	ug/l	5300	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U	0.19 U	0.19 U
Indeno(1,2,3-cd)pyrene	ug/l	0.18	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U	0.19 U	0.19 U
Naphthalene	ug/l	--	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U	0.19 U	0.19 U
Phenanthrene	ug/l	--	0.19 U	0.19 U	0.19 U	0.19 U	0.20 UB	0.19 U	0.19 U	0.19 U	0.19 U	0.19 UB	0.19 U	0.20 U	0.19 U	0.19 U
Pyrene	ug/l	4000	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U	0.19 U	0.19 U
TPH-DRO																
Diesel (C10-C20)	mg/l	--	0.49 U	0.48 U	0.48 U	0.47 U	0.48 U	0.48 U	0.49 U	0.48 U	0.47 U	0.48 U	0.48 U	0.48 U	0.48 U	0.47 U
Oil Range Organics C20-C34	mg/l	--	0.49 U	0.48 U	0.48 U	0.47 U	0.48 U	0.48 U	0.49 U	0.48 U	0.47 U	0.48 U	0.48 U	0.48 U	0.48 U	0.47 U
TPH-GRO																
Gasoline C6-C10	mg/l	--	0.1 U	NA	NA	0.1 U	0.1 U	0.1 U	NA	NA	0.1 U	0.1 U	0.1 U	NA	NA	0.1 U
VOCs																
Benzene	ug/l	510	1.0 U	1.0 U	1.0 U	1.0 UB	1.0 U	1.0 U	1.0 UB	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.15 J	1.0 UB
Ethylbenzene	ug/l	2100	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	ug/l	6000	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Total Xylenes	ug/l	--	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U

Footnotes:  
U - The compound was analyzed for but not detected. The associated value is the compound quantitation limit.  
B - The compound has been found in the sample as well as its associated blank; its presence in the sample may be suspect.  
J - The compound was positively identified; however, the associated numerical value is an estimated concentration only.  
UU - The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.  
UB - Compound considered non-detect at the listed value due to associated blank contamination.  
ug/L = micrograms per Liter  
mg/L = milligrams per Liter  
NA - Not analyzed  
VRP\_27B TIER II SW-FRESH: Virginia Department of Environmental Quality VRP Tier II Screening for Unrestricted Sites Table 2.7b: Other Surface Water-Fresh  
Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review

Table 4: Downstream Surface Water Sampling Results Watkins Transect



Location			CSXT-WATKINS-RDB-S	CSXT-WATKINS-RDB-S	CSXT-WATKINS-RDB-S	CSXT-WATKINS-RDB-S
Sample Name			CSXT-WATKINS-RDB-S-050414	CSXT-WATKINS-RDB-S-050514	CSXT-WATKINS-RDB-S-050614	CSXT-WATKINS-RDB-S-050714
Sample Date			5/4/2014	5/5/2014	5/6/2014	5/7/2014
Matrix			WS	WS	WS	WS
Validation Level			Tier II	Tier II	Tier II	Tier II
Sample Type			N	N	N	N
SDG			240368711	240368871	240369311	240370211
Analyte	Units	VRP_27B TIER II SW-FRESH				
FIELD						
Conductivity	ms/cm	--	0.098	0.11	0.119	0.111
Dissolved Oxygen	mg/l	--	9.65	8.76	7.57	8.07
pH	SU	--	6.01	5.68	6.48	6.28
Temperature	C	--	16.58	17.02	19.96	17.48
Gen Chem						
Biological Oxygen Demand	mg/l	--	2.0 U	2.0 U	2.0 U	2.0 U
Chemical Oxygen Demand	mg/l	--	15 J	20 U	20 U	13 J
pH	pH units	--	NA	7.70	NA	NA
Total Suspended Solids	mg/l	--	46	39	NA	NA
Inorganics						
Aluminum	ug/l	87	1800 J	1100	NA	NA
Cadmium	ug/l	1.1	5.0 U	5.0 U	NA	NA
Calcium	ug/l	--	11000	13000	13000	14000
Copper	ug/l	9	25 U	25 U	NA	NA
Iron	ug/l	1000	2600	1800	NA	NA
Lead	ug/l	14	10 U	10 U	NA	NA
Magnesium	ug/l	--	2700 J	2900 J	3000 J	3200 J
Nickel	ug/l	20	1.9 J	1.7 J	NA	NA
Sulfur	ug/l	--	NA	3000	NA	NA
Vanadium	ug/l	--	20 U	20 U	NA	NA
SVOCs						
Acenaphthene	ug/l	990	0.20 U	0.19 U	0.19 U	0.19 U
Acenaphthylene	ug/l	--	0.20 U	0.19 U	0.19 U	0.19 U
Anthracene	ug/l	40000	0.20 U	0.19 U	0.19 U	0.19 U
Benzo(a)anthracene	ug/l	0.18	0.20 U	0.19 U	0.19 U	0.19 U
Benzo(a)pyrene	ug/l	0.18	0.20 U	0.19 U	0.19 U	0.19 U
Benzo(b)fluoranthene	ug/l	0.18	0.20 U	0.19 U	0.19 U	0.19 U
Benzo(g,h,i)perylene	ug/l	--	0.20 U	0.19 U	0.19 U	0.19 U
Benzo(k)fluoranthene	ug/l	0.18	0.20 U	0.19 U	0.19 U	0.19 U
Chrysene	ug/l	0.018	0.20 U	0.19 U	0.19 U	0.19 U
Dibenzo(a,h)anthracene	ug/l	0.18	0.20 U	0.19 U	0.19 U	0.19 U
Fluoranthene	ug/l	140	0.20 U	0.19 U	0.19 U	0.19 U
Fluorene	ug/l	5300	0.20 U	0.19 U	0.19 U	0.19 U
Indeno(1,2,3-cd)pyrene	ug/l	0.18	0.20 U	0.19 U	0.19 U	0.19 U
Naphthalene	ug/l	--	0.20 U	0.19 U	0.19 U	0.19 U
Phenanthrene	ug/l	--	0.20 U	0.19 U	0.19 U	0.19 U
Pyrene	ug/l	4000	0.20 U	0.19 U	0.19 U	0.19 U
TPH-DRO						
Diesel (C10-C20)	mg/l	--	0.48 U	0.47 U	0.49 U	0.48 U
Oil Range Organics C20-C34	mg/l	--	0.48 U	0.47 U	0.49 U	0.48 U
TPH-GRO						
Gasoline C6-C10	mg/l	--	0.1 U	0.1 U	NA	NA
VOCs						
Benzene	ug/l	510	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	ug/l	2100	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	ug/l	6000	1.0 U	1.0 U	1.0 U	1.0 U
Total Xylenes	ug/l	--	3.0 U	3.0 U	3.0 U	3.0 U

Footnotes:

U - The compound was analyzed for but not detected. The associated value is the compound quantitation limit.

B - The compound has been found in the sample as well as its associated blank; its presence in the sample may be suspect.

J - The compound was positively identified; however, the associated numerical value is an estimated concentration only.

UU - The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.

UB - Compound considered non-detect at the listed value due to associated blank contamination.

ug/L = micrograms per Liter

mg/L = milligrams per Liter

NA - Not analyzed

VRP\_27B TIER II SW-FRESH: Virginia Department of Environmental Quality VRP Tier II Screening for Unrestricted Sites Table 2.7b: Other Surface Water-Fresh

Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review