

## MEMO

---

To: Michael Wilson and Terri Fraser, Northern Pulp Nova Scotia      From: Joe Tetreault, Jason Dietrich and Brian Fraser

Ref: **Focus Report - Terms of Reference – 9.1 Complete baseline studies of fish and shellfish tissue.**      Date: 27 September 2019

---

This memorandum is provided to address Focus Report – Terms of Reference component 9.1 Human Health which states:

*Complete baseline studies for fish and shellfish tissue (via chemical analysis) of representative key marine species important for commercial, recreational and Aboriginal fisheries in the vicinity of the proposed effluent pipeline and diffuser location.*

To date, one round of field collections have been completed and included collection of tissues originating from the marine environment in the vicinity of the NPNS project. Fish were collected with the assistance of local First Nations based on availability. Analysis of the sampled tissues was undertaken by CALA accredited BV laboratories following accepted protocols for measuring parameters of interest in biota tissues. The results of these analysis are provided herein with laboratory certificates of analysis attached. Species collected for analysis in early summer (June 10 – July 5th) included; American Lobster (muscle and hepatopancreas), Rock Crab (muscle) and quahogs (non-shell tissues). These species' tissues were analyzed for the following:

- total phenols;
- total metals contents;
- low level mercury;
- methyl mercury;
- PAHs; and,
- lipids.

**Reference: Focus Report - Terms of Reference – 9.1 Complete baseline studies of fish and shellfish tissue**

---

- Dioxins and Furans

Results for these groups of chemicals is provided in the attached table. Arsenic in the majority of samples analyzed exceeded the Canadian Food Inspection Agency (CFIA) edible guideline. However, Health Canada has acknowledged that the form of arsenic rather than the absolute concentration is the main contributor to health risks associate with the consumption of food containing arsenic. Organic forms of arsenic that comprise the majority of the arsenic concentrations in fish and shellfish are recognized to pose a low threat to human health. A review of arsenic guidelines for water and fish in the Oregon noted that organoarsenic is not readily metabolized to the toxic inorganic forms of arsenic and is excreted rapidly by mammals. As a result despite the exceedance of the guideline the elevated levels of arsenic currently reported are not likely of concern.

It should be noted that up to two additional tissue collection surveys are planned for 2019 with the intention of targeting: scallop, blue mussel, oyster, and locally relevant fin-fish (e.g., Atlantic Striped Bass, Atlantic Mackerel and Atlantic Herring).

**Attachments**

**Table 1** : Background Chemical Analysis of Lobster (muscle and hepatopancreas), Rock Crab, and Quahog in the Vicinity of the Proposed Discharge (as of 27 September 2019)

Laboratory Certificates of Analysis

Table 1: Background Chemical Analysis of Lobster (muscle and hepatopancreas), Rock Crab, and Quahog in the Vicinity of the Proposed Discharge (as of 27 September 2019)

Parameter Category	UNITS	Edible Guideline	Lobster Muscle Tissue				Lobster Hepatopancreas Tissue				Rock Crab Muscle Tissue				Quahog			
			N	Minimum	Median	Maximum	N	Minimum	Median	Maximum	N	Minimum	Median	Maximum	N	Minimum	Median	Maximum
<b>General</b>																		
Moisture	%	-	5	74	75	76	-	-	-	-	2	77	77.5	78	-	-	-	-
Fat (gravimetric)	%	-	5	0.6	0.8	0.9	5	20	27	34	5	0.4	0.5	0.6	5	0.8	1	1.1
<b>Metals</b>																		
Total Aluminum (Al)	mg/kg	-	5	0.47	0.54	0.98	5	0.46	0.97	1.83	4	1.79	3.64	4.49	5	6.96	7.57	9.4
Total Antimony (Sb)	mg/kg	-	5	0.0021	0.0023	0.0027	5	0.0054	0.0111	0.0163	4	0.0025	0.0027	0.0029	5	0.0022	0.0025	0.0033
Total Arsenic (As)	mg/kg	3.5	5	7.58	9.84	10.9	5	7.75	12.4	14.6	4	3.53	5.645	7.57	5	2.5	3.07	3.57
Total Barium (Ba)	mg/kg	-	5	0.024	0.03	0.106	5	0.065	0.092	0.118	4	0.386	0.481	1.06	5	2.22	3.45	4.09
Total Beryllium (Be)	mg/kg	-	5	<0.0010	<0.0010	<0.0010	3	<0.0010	0.002	0.0023	4	<0.0010	<0.0010	<0.0010	5	0.0013	0.0017	0.0018
Total Bismuth (Bi)	mg/kg	-	5	0.0071	0.0099	0.0131	5	0.0029	0.0057	0.0076	4	0.0066	0.0085	0.0101	5	<0.0010	<0.0010	0.0016
Total Boron (B)	mg/kg	-	5	0.55	0.66	0.81	5	0.63	0.8	0.84	4	1.76	2.195	2.62	5	1.93	2.08	2.42
Total Cadmium (Cd)	mg/kg	-	5	0.0082	0.0165	0.0225	5	10	17.3	19	4	0.0207	0.03645	0.0382	5	0.142	0.157	0.211
Total Calcium (Ca)	mg/kg	-	5	196	260	559	5	238	316	385	4	1250	2665	3680	5	1130	1780	8090
Total Chromium (Cr)	mg/kg	-	0	<0.010	<0.010	<0.010	5	0.027	0.042	0.106	3	<0.010	0.013	0.02	5	0.054	0.08	0.143
Total Cobalt (Co)	mg/kg	-	5	0.0063	0.0084	0.0092	5	0.11	0.202	0.294	4	0.0108	0.011	0.0115	5	0.0828	0.0914	0.122
Total Copper (Cu)	mg/kg	-	5	3.77	4.15	4.57	5	8.19	30.8	57.4	4	4.92	5.175	5.31	5	1.89	2.46	3.13
Total Iron (Fe)	mg/kg	-	5	1.43	1.68	2.53	5	51.4	57.5	63.5	4	5.61	9.32	15	5	26.5	31.8	35.9
Total Lead (Pb)	mg/kg	-	5	0.0021	0.0039	0.0243	5	0.0145	0.0202	0.0256	4	0.0079	0.00945	0.0142	5	0.0796	0.0955	0.163
Total Lithium (Li)	mg/kg	-	1	<0.10	<0.10	<0.10												
Total Magnesium (Mg)	mg/kg	-	5	304	324	346	5	191	209	214	4	533	576.5	640	5	652	671	759
Total Manganese (Mn)	mg/kg	-	5	0.874	0.909	1.15	5	4.14	4.95	5.28	4	1.49	2.83	6.24	5	8.35	14.9	19.9
Total Mercury (Hg)	mg/kg	0.5	5	0.064	0.0806	0.0886	5	0.0368	0.0586	0.0685	4	0.036	0.0483	0.0548	5	0.0098	0.011	0.0121
Total Molybdenum (Mo)	mg/kg	-	5	0.0068	0.008	0.0106	5	0.47	0.545	0.801	4	0.0109	0.0123	0.0132	5	0.108	0.114	0.195
Total Nickel (Ni)	mg/kg	-	5	<0.010	0.010	0.014	5	0.295	0.966	1.31	4	0.016	0.022	0.027	5	0.278	0.336	0.406
Total Phosphorus (P)	mg/kg	-	5	3350	3510	3670	5	2770	2930	3290	4	1610	2060	2610	5	1430	1620	1710
Total Potassium (K)	mg/kg	-	5	4230	4520	4770	5	2760	3090	3590	4	3580	3650	4000	5	2170	2270	2450
Total Selenium (Se)	mg/kg	-	5	0.791	0.935	1.02	5	1.64	2.34	3.4	4	1.79	2.315	3.11	5	0.339	0.366	0.384
Total Silver (Ag)	mg/kg	-	5	0.159	0.185	0.226	5	0.61	1.45	2.21	4	0.132	0.144	0.19	5	0.0174	0.0233	0.026
Total Sodium (Na)	mg/kg	-	5	1740	1890	1980	5	2010	2100	2220	4	3460	3765	4020	5	4230	4540	5130
Total Strontium (Sr)	mg/kg	-	5	2.21	2.78	4.39	5	3.65	4.45	5.21	4	14.7	34.95	48.9	5	9.16	13	33
Total Thallium (Tl)	mg/kg	-	5	0.00043	0.00052	0.0006	5	0.0042	0.00482	0.00522	4	<0.00040	<0.00040	<0.00040	5	0.00051	0.0006	0.00064
Total Tin (Sn)	mg/kg	-	5	0.02	0.022	0.028	5	0.03	0.043	0.061	4	<0.020	<0.021	0.027	5	0.026	0.033	0.041
Total Titanium (Ti)	mg/kg	-	5	0.139	0.176	0.206	5	0.185	0.228	0.241	4	0.105	0.1385	0.214	5	0.129	0.154	0.173
Total Uranium (U)	mg/kg	-	5	0.0004	0.00064	0.00139	5	0.00467	0.013	0.0265	4	0.00048	0.000885	0.00123	5	0.0256	0.0274	0.0364
Total Vanadium (V)	mg/kg	-	5	<0.020	<0.020	<0.020	5	0.523	0.546	0.914	4	<0.020	<0.0265	0.035	5	0.106	0.117	0.134
Total Zinc (Zn)	mg/kg	-	5	20.2	20.9	23.1	5	28.8	42.5	51.5	4	42.8	48.9	52	5	11	11.3	12.4
<b>Mercury</b>																		
Mercury (Hg)	mg/kg	0.5	5	0.0348	0.0476	0.0505	5	0.0175	0.0303	0.035	4	0.0198	0.0278	0.0306	5	0.0057	0.0062	0.0076
Methyl Mercury	mg/kg	1	5	0.0493	0.0719	0.0836	5	0.0133	0.025	0.0294	4	0.0352	0.0457	0.0549	5	0.00265	0.00401	0.00407
<b>Polyaromatic Hydrocarbons</b>																		
1-Methylnaphthalene	mg/kg	-	5	<0.050	<0.050	<0.050	-	-	-	-	2	<0.050	<0.050	<0.050	-	-	-	-
2-Methylnaphthalene	mg/kg	-	5	<0.050	<0.050	<0.050	-	-	-	-	2	<0.050	<0.050	<0.050	-	-	-	-
Acenaphthene	mg/kg	-	5	<0.050	<0.050	<0.050	-	-	-	-	2	<0.050	<0.050	<0.050	-	-	-	-
Acenaphthylene	mg/kg	-	5	<0.050	<0.050	<0.050	-	-	-	-	2	<0.050	<0.050	<0.050	-	-	-	-
Anthracene	mg/kg	-	5	<0.050	<0.050	<0.050	-	-	-	-	2	<0.050	<0.050	<0.050	-	-	-	-
Benzo(a)anthracene	mg/kg	-	5	<0.050	<0.050	<0.050	-	-	-	-	2	<0.050	<0.050	<0.050	-	-	-	-
Benzo(a)pyrene	mg/kg	-	5	<0.050	<0.050	<0.050	-	-	-	-	2	<0.050	<0.050	<0.050	-	-	-	-
Benzo(b)fluoranthene	mg/kg	-	5	<0.050	<0.050	<0.050	-	-	-	-	2	<0.050	<0.050	<0.050	-	-	-	-
Benzo(b,j)fluoranthene	mg/kg	-	5	<0.10	<0.10	<0.10	-	-	-	-	2	<0.10	<0.10	<0.10	-	-	-	-
Benzo(g,h,i)perylene	mg/kg	-	5	<0.050	<0.050	<0.050	-	-	-	-	2	<0.050	<0.050	<0.050	-	-	-	-
Benzo(j)fluoranthene	mg/kg	-	5	<0.050	<0.050	<0.050	-	-	-	-	2	<0.050	<0.050	<0.050	-	-	-	-
Benzo(k)fluoranthene	mg/kg	-	5	<0.050	<0.050	<0.050	-	-	-	-	2	<0.050	<0.050	<0.050	-	-	-	-
Chrysene	mg/kg	-	5	<0.050	<0.050	<0.050	-	-	-	-	2	<0.050	<0.050	<0.050	-	-	-	-
Dibenz(a,h)anthracene	mg/kg	-	5	<0.050	<0.050	<0.050	-	-	-	-	2	<0.050	<0.050	<0.050	-	-	-	-
Fluoranthene	mg/kg	-	5	<0.050	<0.050	<0.050	-	-	-	-	2	<0.050	<0.050	<0.050	-	-	-	-
Fluorene	mg/kg	-	5	<0.050	<0.050	<0.050	-	-	-	-	2	<0.050	<0.050	<0.050	-	-	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	-	5	<0.050	<0.050	<0.050	-	-	-	-	2	<0.050	<0.050	<0.050	-	-	-	-
Naphthalene	mg/kg	-	5	<0.050	<0.050	<0.050	-	-	-	-	2	<0.050	<0.050	<0.050	-	-	-	-
Perylene	mg/kg	-	5	<0.050	<0.050	<0.050	-	-	-	-	2	<0.050	<0.050	<0.050	-	-	-	-

Table 1: Background Chemical Analysis of Lobster (muscle and hepatopancreas), Rock Crab, and Quahog in the Vicinity of the Proposed Discharge (as of 27 September 2019)

Parameter Category	UNITS	Edible Guideline	Lobster Muscle Tissue				Lobster Hepatopancreas Tissue				Rock Crab Muscle Tissue				Quahog			
			N	Minimum	Median	Maximum	N	Minimum	Median	Maximum	N	Minimum	Median	Maximum	N	Minimum	Median	Maximum
Phenanthrene	mg/kg	-	5	<0.050	<0.050	<0.050	-	-	-	-	2	<0.050	<0.050	<0.050	-	-	-	-
Pyrene	mg/kg	-	5	<0.050	<0.050	<0.050	-	-	-	-	2	<0.050	<0.050	<0.050	-	-	-	-
<b>Phenolics</b>																		
2-Chlorophenol	ug/g	-	5	<0.02	<0.02	<0.02	-	-	-	-	2	<0.02	<0.02	<0.02	-	-	-	-
2,3,4,6-Tetrachlorophenol	ug/g	-	5	<0.02	<0.02	<0.02	-	-	-	-	2	<0.02	<0.02	<0.02	-	-	-	-
2,3,5-Trichlorophenol	ug/g	-	5	<0.02	<0.02	<0.02	-	-	-	-	2	<0.02	<0.02	<0.02	-	-	-	-
2,4-Dichlorophenol	ug/g	-	5	<0.02	<0.02	<0.02	-	-	-	-	2	<0.02	<0.02	<0.02	-	-	-	-
2,4-Dimethylphenol	ug/g	-	5	<0.02	<0.02	<0.02	-	-	-	-	2	<0.02	<0.02	<0.02	-	-	-	-
2,4,6-Trichlorophenol	ug/g	-	5	<0.02	<0.02	<0.02	-	-	-	-	2	<0.02	<0.02	<0.02	-	-	-	-
2,6-Dichlorophenol	ug/g	-	5	<0.02	<0.02	<0.02	-	-	-	-	2	<0.02	<0.02	<0.02	-	-	-	-
4-Chloro-3-Methylphenol	ug/g	-	5	<0.02	<0.02	<0.02	-	-	-	-	2	<0.02	<0.02	<0.02	-	-	-	-
m/p-Cresol	ug/g	-	5	<0.02	<0.02	<0.02	-	-	-	-	2	<0.02	<0.02	<0.02	-	-	-	-
o-Cresol	ug/g	-	5	<0.02	<0.02	<0.02	-	-	-	-	2	<0.02	<0.02	<0.02	-	-	-	-
Pentachlorophenol	ug/g	-	5	<0.02	<0.02	<0.02	-	-	-	-	2	<0.02	<0.02	<0.02	-	-	-	-
Phenol	ug/g	-	5	<0.02	<0.02	<0.02	-	-	-	-	2	<0.02	<0.02	<0.02	-	-	-	-
2,3,4,5-Tetrachlorophenol	ug/g	-	5	<0.02	<0.02	<0.02	-	-	-	-	2	<0.02	<0.02	<0.02	-	-	-	-
2,3,5,6-Tetrachlorophenol	ug/g	-	5	<0.02	<0.02	<0.02	-	-	-	-	2	<0.02	<0.02	<0.02	-	-	-	-
2,3,4-Trichlorophenol	ug/g	-	5	<0.02	<0.02	<0.02	-	-	-	-	2	<0.02	<0.02	<0.02	-	-	-	-
2,4,5-Trichlorophenol	ug/g	-	5	<0.02	<0.02	<0.02	-	-	-	-	2	<0.02	<0.02	<0.02	-	-	-	-
2,3,6-Trichlorophenol	ug/g	-	5	<0.02	<0.02	<0.02	-	-	-	-	2	<0.02	<0.02	<0.02	-	-	-	-
3,4,5-Trichlorophenol	ug/g	-	5	<0.02	<0.02	<0.02	-	-	-	-	2	<0.02	<0.02	<0.02	-	-	-	-
2,3-Dichlorophenol	ug/g	-	5	<0.02	<0.02	<0.02	-	-	-	-	2	<0.02	<0.02	<0.02	-	-	-	-
2,5-Dichlorophenol	ug/g	-	5	<0.02	<0.02	<0.02	-	-	-	-	2	<0.02	<0.02	<0.02	-	-	-	-
3,4-Dichlorophenol	ug/g	-	5	<0.02	<0.02	<0.02	-	-	-	-	2	<0.02	<0.02	<0.02	-	-	-	-
3,5-Dichlorophenol	ug/g	-	5	<0.02	<0.02	<0.02	-	-	-	-	2	<0.02	<0.02	<0.02	-	-	-	-
3 & 4-Chlorophenol	ug/g	-	5	<0.02	<0.02	<0.02	-	-	-	-	2	<0.02	<0.02	<0.02	-	-	-	-
<b>Dioxins &amp; Furans</b>																		
2,3,7,8-Tetra CDD *	pg/g	20	5	<0.117	<0.13	<0.137	5	0.152	0.171	0.234	5	<0.126	<0.148	<0.156	5	<0.111	<0.151	<0.198
1,2,3,7,8-Penta CDD *	pg/g	-	5	<0.115	<0.127	<0.131	5	0.468	0.517	0.504; <0.593	5	<0.124	<0.133	<0.159	5	<0.108	<0.15	<0.186
1,2,3,4,7,8-Hexa CDD *	pg/g	-	5	<0.105	<0.112	<0.117	5	<0.116	0.188	0.188; <0.228	5	<0.104	<0.126	<0.148	5	<0.106	<0.121	<0.13
1,2,3,6,7,8-Hexa CDD *	pg/g	-	5	<0.108	<0.115	<0.121	5	0.459	<0.569	0.633; <0.662	5	<0.107	<0.13	<0.153	5	<0.109	<0.125	<0.133
1,2,3,7,8,9-Hexa CDD *	pg/g	-	5	<0.111	<0.119	<0.124	5	<0.143	<0.19	0.257; <0.272	5	<0.11	<0.134	<0.158	5	<0.113	<0.129	<0.138
1,2,3,4,6,7,8-Hepta CDD *	pg/g	-	5	<0.135	<0.154	0.277	5	0.652	0.863	1.32	5	<0.142	<0.219	<0.539	5	<0.186	<0.246	<0.266
Octa CDD *	pg/g	-	5	0.353	<0.396	0.915	5	<0.883	<1.37	2.19	5	<0.165	<0.216	0.931; <1.88	5	0.503	0.976	1.02; <1.73
Total Tetra CDD *	pg/g	-	5	<0.117	<0.13	<0.137	5	1.36	1.62	3.33	5	<0.126	<0.148	<0.156	5	<0.111	<0.151	<0.198
Total Penta CDD *	pg/g	-	5	<0.115	<0.127	<0.131	5	0.504	0.834	1.56	5	<0.124	<0.133	<0.159	5	<0.108	<0.15	<0.186
Total Hexa CDD *	pg/g	-	5	<0.243	0.381	0.523	5	2.94	3.5	4.63	5	<0.108	<0.132	<0.155	5	<0.111	<0.126	<0.135
Total Hepta CDD *	pg/g	-	5	<0.161	0.216	0.604	5	0.863	2.29	2.81	5	<0.142	<0.219	0.833	5	<0.186	<0.246	<0.266
2,3,7,8-Tetra CDF **	pg/g	-	5	<0.112	<0.125	<0.143	5	4.07	4.6	5.53	5	<0.126	<0.149	<0.159	5	<0.138	<0.161	<0.167
1,2,3,7,8-Penta CDF **	pg/g	-	5	<0.127	<0.134	<0.156	5	0.366	0.491	0.509; <0.616	5	<0.119	<0.15	<0.187	5	<0.133	<0.159	<0.178
2,3,4,7,8-Penta CDF **	pg/g	-	5	<0.119	<0.126	<0.146	5	0.966	1.12	1.56	5	<0.112	<0.14	<0.175	5	<0.124	<0.149	<0.167
1,2,3,4,7,8-Hexa CDF **	pg/g	-	5	<0.109	<0.113	<0.116	5	<0.121	<0.14	<0.185	5	<0.126	<0.143	<0.157	5	<0.12	<0.141	<0.154
1,2,3,6,7,8-Hexa CDF **	pg/g	-	5	<0.113	<0.116	<0.119	5	<0.124	<0.144	<0.19	5	<0.13	<0.147	<0.162	5	<0.123	<0.145	<0.158
2,3,4,6,7,8-Hexa CDF **	pg/g	-	5	<0.104	<0.107	<0.11	5	0.27	0.31	0.31; <0.368	5	<0.12	<0.135	<0.149	5	<0.114	<0.134	<0.146
1,2,3,7,8,9-Hexa CDF **	pg/g	-	5	<0.112	<0.116	<0.119	5	<0.124	<0.144	0.165; <0.19	5	<0.13	<0.147	<0.162	5	<0.123	<0.145	<0.158
1,2,3,4,6,7,8-Hepta CDF **	pg/g	-	5	<0.125	<0.128	<0.142	5	<0.173	0.197	0.354	5	<0.121	<0.151	<0.203	5	<0.111	<0.158	<0.254
1,2,3,4,7,8,9-Hepta CDF **	pg/g	-	5	<0.124	<0.127	<0.141	5	<0.128	<0.149	<0.18	5	<0.12	<0.15	<0.202	5	<0.11	<0.157	<0.252
Octa CDF **	pg/g	-	5	<0.168	0.201	0.663	5	<0.193	1.06	1.82	5	<0.129	<0.24	1.58	5	<0.187	<0.222	<0.259
Total Tetra CDF **	pg/g	-	5	<0.112	<0.125	<0.143	5	12.7	16.2	19.3	5	<0.126	<0.149	<0.159	5	<0.138	<0.161	<0.184
Total Penta CDF **	pg/g	-	5	<0.123	<0.151	0.369	5	6.25	8.71	10.5	5	<0.115	<0.145	<0.181	5	<0.137	<0.172	<0.677
Total Hexa CDF **	pg/g	-	5	0.231	0.314	0.416	5	0.966	1.14	1.28	5	<0.126	<0.143	<0.157	5	<0.12	<0.141	<0.154
Total Hepta CDF **	pg/g	-	5	<0.124	<0.136	0.589	5	<0.172	1.06	1.93	5	<0.12	<0.202	1.23	5	<0.111	<0.16	<0.378

Notes:

\* CDD = Chloro Dibenzo-p-Dioxin

\*\* CDF = Chloro Dibenzo-p-Furan

For the calculation of the median a value equal to the Detection limit was used.



Your Project #: 19-2587  
 Site Location: NPNS  
 Your C.O.C. #: 102089

**Attention: Joe Tetreault**

EcoMetrix Incorporated  
 6800 Campobello Rd  
 Mississauga, ON  
 CANADA L5N 2L8

**Report Date: 2019/09/23**  
 Report #: R5892882  
 Version: 2 - Final

**CERTIFICATE OF ANALYSIS**

**BV LABS JOB #: B9N2252**

**Received: 2019/08/21, 14:52**

Sample Matrix: Tissue  
 # Samples Received: 20

Analyses	Quantity	Date	Date	Laboratory Method	Reference
		Extracted	Analyzed		
Benzo(b/j)fluoranthene Sum (tissue) (1)	7	N/A	2019/09/12	N/A	Auto Calc.
Acid Extractables by GC/MS (4)	7	2019/09/04	2019/09/07	CAM SOP-00332	EPA 8270D m
2378TCDF Confirmation (M8290A/M1613)	5	2019/08/31	2019/09/21	BRL SOP-00406	EPA M8290A / M1613
Dioxins/Furans in Tissue (1613B) (5)	20	2019/08/30	2019/09/15	BRL SOP-00410	EPA 1613B m
Mercury in Tissue by CVAf - Wet Wt (2)	19	N/A	2019/09/11		
Elements by CRC ICPMS - Tissue Wet Wt (2)	19	2019/09/03	2019/09/06		
Percent Lipid Content (6)	20	2019/09/01	2019/09/01	BRL SOP-00223	EPA 8290A, EPA 1668B
Moisture (1)	7	N/A	2019/09/03	ATL SOP 00001	OMOE Handbook 1983 m
PAH in Tissue by GC/MS (SIM) (1, 7)	7	2019/09/10	2019/09/11	ATL SOP 00104	EPA 8270E R6 m
Methyl Mercury in Tissue(sub fr Bedford) (3)	16	N/A	N/A		

**Remarks:**

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by BV Labs, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

\* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) This test was performed by BV Labs Bedford

(2) This test was performed by Campo to Burnaby - Offsite



Your Project #: 19-2587  
Site Location: NPNS  
Your C.O.C. #: 102089

**Attention: Joe Tetreault**

EcoMetrix Incorporated  
6800 Campobello Rd  
Mississauga, ON  
CANADA L5N 2L8

**Report Date: 2019/09/23**  
Report #: R5892882  
Version: 2 - Final

**CERTIFICATE OF ANALYSIS**

**BV LABS JOB #: B9N2252**

**Received: 2019/08/21, 14:52**

- (3) This test was performed by Sub Bedford to Flett Research
- (4) Analysis was conducted according to Bureau Veritas Laboratories method CAM SOP-00322 and modified where applicable based on the sample matrix. This test is not Standards Council of Canada accredited for this matrix.
- (5) Analysis was conducted according to Bureau Veritas Laboratories' method BRL SOP-00410 and modified where applicable based on the sample matrix. This test is not Standards Council of Canada accredited for this matrix.
- (6) Sample(s) analyzed using methodologies that have not been subjected to Bureau Veritas Laboratories' standard validation process for the submitted matrix and is not an Accredited method. Analysis performed with client consent, however results should be viewed with discretion
- (7) Results are reported on an as received basis unless otherwise indicated.

**Encryption Key**

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Kyle Reinhart, Project Manager  
Email: Kyle.Reinhart@bvlabs.com  
Phone# (905)817-5802

=====  
BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



BUREAU  
VERITAS

BV Labs Job #: B9N2252  
Report Date: 2019/09/23

EcoMetrix Incorporated  
Client Project #: 19-2587  
Site Location: NPNS  
Sampler Initials: JT

### RESULTS OF ANALYSES OF TISSUE

BV Labs ID		KOP281				KOP281			
Sampling Date		2019/06/13				2019/06/13			
COC Number		102089				102089			
	<b>UNITS</b>	<b>L1-M</b>	<b>RDL</b>	<b>MDL</b>	<b>QC Batch</b>	<b>L1-M Lab-Dup</b>	<b>RDL</b>	<b>MDL</b>	<b>QC Batch</b>
<b>Inorganics</b>									
Moisture	%	76	1.0	0.20	6311749				
<b>Metals</b>									
Total Aluminum (Al)	mg/kg	0.98	0.20	0.20	6327290	1.03	0.20	0.20	6327290
Total Antimony (Sb)	mg/kg	0.0023	0.0010	0.0010	6327290	0.0025	0.0010	0.0010	6327290
Total Arsenic (As)	mg/kg	10.9	0.0040	0.0040	6327290	10.6	0.0040	0.0040	6327290
Total Barium (Ba)	mg/kg	0.106	0.010	0.0039	6327290	0.060 (1)	0.010	0.0039	6327290
Total Beryllium (Be)	mg/kg	<0.0010	0.0010	0.0010	6327290	<0.0010	0.0010	0.0010	6327290
Total Bismuth (Bi)	mg/kg	0.0095	0.0010	0.0010	6327290	0.0094	0.0010	0.0010	6327290
Total Boron (B)	mg/kg	0.66	0.20	0.20	6327290	0.67	0.20	0.20	6327290
Total Cadmium (Cd)	mg/kg	0.0225	0.0010	0.0010	6327290	0.0228	0.0010	0.0010	6327290
Total Calcium (Ca)	mg/kg	559	2.0	2.0	6327290	800	2.0	2.0	6327290
Total Chromium (Cr)	mg/kg	<0.010	0.010	0.0048	6327290	<0.010	0.010	0.0048	6327290
Total Cobalt (Co)	mg/kg	0.0088	0.0013	0.0013	6327290	0.0082	0.0013	0.0013	6327290
Total Copper (Cu)	mg/kg	3.77	0.010	0.010	6327290	3.80	0.010	0.010	6327290
Total Iron (Fe)	mg/kg	2.53	0.25	0.25	6327290	2.80	0.25	0.25	6327290
Total Lead (Pb)	mg/kg	0.0039	0.0010	0.0010	6327290	0.0041	0.0010	0.0010	6327290
Total Lithium (Li)	mg/kg	<0.10	0.10	0.10	6327290	<0.10	0.10	0.10	6327290
Total Magnesium (Mg)	mg/kg	324	0.40	0.40	6327290	319	0.40	0.40	6327290
Total Manganese (Mn)	mg/kg	1.15	0.010	0.010	6327290	1.19	0.010	0.010	6327290
Total Mercury (Hg)	mg/kg	0.0720	0.0020	0.0020	6327290	0.0710	0.0020	0.0020	6327290
Total Molybdenum (Mo)	mg/kg	0.0076	0.0040	0.0040	6327290	0.0086	0.0040	0.0040	6327290
Total Nickel (Ni)	mg/kg	0.014	0.010	0.010	6327290	0.014	0.010	0.010	6327290
Total Phosphorus (P)	mg/kg	3350	2.0	2.0	6327290	3390	2.0	2.0	6327290
Total Potassium (K)	mg/kg	4230	2.0	2.0	6327290	4340	2.0	2.0	6327290
Total Selenium (Se)	mg/kg	1.02	0.010	0.010	6327290	1.01	0.010	0.010	6327290
Total Silver (Ag)	mg/kg	0.185	0.0010	0.0010	6327290	0.185	0.0010	0.0010	6327290
Total Sodium (Na)	mg/kg	1890	2.0	2.0	6327290	1860	2.0	2.0	6327290
Total Strontium (Sr)	mg/kg	4.39	0.010	0.0041	6327290	5.18	0.010	0.0041	6327290
Total Thallium (Tl)	mg/kg	0.00043	0.00040	0.00040	6327290	0.00046	0.00040	0.00040	6327290
Total Tin (Sn)	mg/kg	0.020	0.020	0.020	6327290	0.026	0.020	0.020	6327290
Total Titanium (Ti)	mg/kg	0.176	0.020	0.020	6327290	0.179	0.020	0.020	6327290
Total Uranium (U)	mg/kg	0.00139	0.00040	0.00040	6327290	0.00114	0.00040	0.00040	6327290
Total Vanadium (V)	mg/kg	<0.020	0.020	0.0075	6327290	<0.020	0.020	0.0075	6327290
RDL = Reportable Detection Limit									
QC Batch = Quality Control Batch									
Lab-Dup = Laboratory Initiated Duplicate									
(1) Duplicate RPD above control limit - Non-homogenous sample - Reanalysis yields similar results.									



**RESULTS OF ANALYSES OF TISSUE**

BV Labs ID		KOP281				KOP281			
Sampling Date		2019/06/13				2019/06/13			
COC Number		102089				102089			
	<b>UNITS</b>	<b>L1-M</b>	<b>RDL</b>	<b>MDL</b>	<b>QC Batch</b>	<b>L1-M Lab-Dup</b>	<b>RDL</b>	<b>MDL</b>	<b>QC Batch</b>
Total Zinc (Zn)	mg/kg	20.2	0.040	0.040	6327290	19.9	0.040	0.040	6327290
Mercury (Hg)	mg/kg	0.0415 (1)	0.0010	0.0010	6327291	0.0393	0.0010	0.0010	6327291
<b>Miscellaneous Parameters</b>									
Fat (gravimetric)	%	0.70	N/A	N/A	6311285				
<b>Subcontracted Analysis</b>									
Subcontract Parameter	N/A	ATTACHED	N/A	N/A	6330866				
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate N/A = Not Applicable (1) Matrix spike exceeds acceptance limits due to probable matrix interference.									





BUREAU  
VERITAS

BV Labs Job #: B9N2252  
Report Date: 2019/09/23

EcoMetrix Incorporated  
Client Project #: 19-2587  
Site Location: NPNS  
Sampler Initials: JT

### RESULTS OF ANALYSES OF TISSUE

BV Labs ID		KOP282	KOP283	KOP284			
Sampling Date		2019/06/13	2019/06/13	2019/06/13			
COC Number		102089	102089	102089			
	UNITS	L2-M	L3-M	L4-M	RDL	MDL	QC Batch
<b>Inorganics</b>							
Moisture	%	76	74	74	1.0	0.20	6311749
<b>Metals</b>							
Total Aluminum (Al)	mg/kg	0.59	0.47	0.54	0.20	0.20	6327290
Total Antimony (Sb)	mg/kg	0.0022	0.0026	0.0021	0.0010	0.0010	6327290
Total Arsenic (As)	mg/kg	10.5	9.08	7.58	0.0040	0.0040	6327290
Total Barium (Ba)	mg/kg	0.024	0.030	0.030	0.010	0.0039	6327290
Total Beryllium (Be)	mg/kg	<0.0010	<0.0010	<0.0010	0.0010	0.0010	6327290
Total Bismuth (Bi)	mg/kg	0.0099	0.0131	0.0071	0.0010	0.0010	6327290
Total Boron (B)	mg/kg	0.67	0.55	0.81	0.20	0.20	6327290
Total Cadmium (Cd)	mg/kg	0.0188	0.0165	0.0082	0.0010	0.0010	6327290
Total Calcium (Ca)	mg/kg	260	270	229	2.0	2.0	6327290
Total Chromium (Cr)	mg/kg	<0.010	<0.010	<0.010	0.010	0.0048	6327290
Total Cobalt (Co)	mg/kg	0.0084	0.0092	0.0063	0.0013	0.0013	6327290
Total Copper (Cu)	mg/kg	4.32	4.57	4.15	0.010	0.010	6327290
Total Iron (Fe)	mg/kg	1.68	1.49	1.83	0.25	0.25	6327290
Total Lead (Pb)	mg/kg	0.0243	0.0030	0.0089	0.0010	0.0010	6327290
Total Magnesium (Mg)	mg/kg	316	346	344	0.40	0.40	6327290
Total Manganese (Mn)	mg/kg	0.874	0.902	0.994	0.010	0.010	6327290
Total Mercury (Hg)	mg/kg	0.0873	0.0886	0.0640	0.0020	0.0020	6327290
Total Molybdenum (Mo)	mg/kg	0.0106	0.0080	0.0102	0.0040	0.0040	6327290
Total Nickel (Ni)	mg/kg	0.010	0.014	<0.010	0.010	0.010	6327290
Total Phosphorus (P)	mg/kg	3510	3620	3670	2.0	2.0	6327290
Total Potassium (K)	mg/kg	4520	4770	4640	2.0	2.0	6327290
Total Selenium (Se)	mg/kg	0.935	0.858	0.791	0.010	0.010	6327290
Total Silver (Ag)	mg/kg	0.169	0.187	0.226	0.0010	0.0010	6327290
Total Sodium (Na)	mg/kg	1940	1810	1980	2.0	2.0	6327290
Total Strontium (Sr)	mg/kg	2.78	3.02	2.64	0.010	0.0041	6327290
Total Thallium (Tl)	mg/kg	0.00055	0.00050	0.00060	0.00040	0.00040	6327290
Total Tin (Sn)	mg/kg	0.028	0.022	0.022	0.020	0.020	6327290
Total Titanium (Ti)	mg/kg	0.155	0.206	0.194	0.020	0.020	6327290
Total Uranium (U)	mg/kg	0.00115	0.00064	0.00050	0.00040	0.00040	6327290
Total Vanadium (V)	mg/kg	<0.020	<0.020	<0.020	0.020	0.0075	6327290
Total Zinc (Zn)	mg/kg	21.8	20.9	23.1	0.040	0.040	6327290
Mercury (Hg)	mg/kg	0.0494	0.0505	0.0348	0.0010	0.0010	6327291
RDL = Reportable Detection Limit							
QC Batch = Quality Control Batch							



BUREAU  
VERITAS

BV Labs Job #: B9N2252  
Report Date: 2019/09/23

EcoMetrix Incorporated  
Client Project #: 19-2587  
Site Location: NPNS  
Sampler Initials: JT

### RESULTS OF ANALYSES OF TISSUE

BV Labs ID		KOP282	KOP283	KOP284			
Sampling Date		2019/06/13	2019/06/13	2019/06/13			
COC Number		102089	102089	102089			
	<b>UNITS</b>	<b>L2-M</b>	<b>L3-M</b>	<b>L4-M</b>	<b>RDL</b>	<b>MDL</b>	<b>QC Batch</b>
<b>Miscellaneous Parameters</b>							
Fat (gravimetric)	%	0.80	0.60	0.80	N/A	N/A	6311285
<b>Subcontracted Analysis</b>							
Subcontract Parameter	N/A	ATTACHED	ATTACHED	ATTACHED	N/A	N/A	6330866
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable							



BUREAU  
VERITAS

BV Labs Job #: B9N2252  
Report Date: 2019/09/23

EcoMetrix Incorporated  
Client Project #: 19-2587  
Site Location: NPNS  
Sampler Initials: JT

### RESULTS OF ANALYSES OF TISSUE

BV Labs ID		KOP284				KOP285			
Sampling Date		2019/06/13				2019/06/13			
COC Number		102089				102089			
	<b>UNITS</b>	<b>L4-M Lab-Dup</b>	<b>RDL</b>	<b>MDL</b>	<b>QC Batch</b>	<b>L5-M</b>	<b>RDL</b>	<b>MDL</b>	<b>QC Batch</b>
<b>Inorganics</b>									
Moisture	%	73	1.0	0.20	6311749	75	1.0	0.20	6311749
<b>Metals</b>									
Total Aluminum (Al)	mg/kg					0.52	0.20	0.20	6327290
Total Antimony (Sb)	mg/kg					0.0027	0.0010	0.0010	6327290
Total Arsenic (As)	mg/kg					9.84	0.0040	0.0040	6327290
Total Barium (Ba)	mg/kg					0.025	0.010	0.0039	6327290
Total Beryllium (Be)	mg/kg					<0.0010	0.0010	0.0010	6327290
Total Bismuth (Bi)	mg/kg					0.0112	0.0010	0.0010	6327290
Total Boron (B)	mg/kg					0.66	0.20	0.20	6327290
Total Cadmium (Cd)	mg/kg					0.0089	0.0010	0.0010	6327290
Total Calcium (Ca)	mg/kg					196	2.0	2.0	6327290
Total Chromium (Cr)	mg/kg					<0.010	0.010	0.0048	6327290
Total Cobalt (Co)	mg/kg					0.0067	0.0013	0.0013	6327290
Total Copper (Cu)	mg/kg					3.77	0.010	0.010	6327290
Total Iron (Fe)	mg/kg					1.43	0.25	0.25	6327290
Total Lead (Pb)	mg/kg					0.0021	0.0010	0.0010	6327290
Total Magnesium (Mg)	mg/kg					304	0.40	0.40	6327290
Total Manganese (Mn)	mg/kg					0.909	0.010	0.010	6327290
Total Mercury (Hg)	mg/kg					0.0806	0.0020	0.0020	6327290
Total Molybdenum (Mo)	mg/kg					0.0068	0.0040	0.0040	6327290
Total Nickel (Ni)	mg/kg					<0.010	0.010	0.010	6327290
Total Phosphorus (P)	mg/kg					3460	2.0	2.0	6327290
Total Potassium (K)	mg/kg					4380	2.0	2.0	6327290
Total Selenium (Se)	mg/kg					1.02	0.010	0.010	6327290
Total Silver (Ag)	mg/kg					0.159	0.0010	0.0010	6327290
Total Sodium (Na)	mg/kg					1740	2.0	2.0	6327290
Total Strontium (Sr)	mg/kg					2.21	0.010	0.0041	6327290
Total Thallium (Tl)	mg/kg					0.00052	0.00040	0.00040	6327290
Total Tin (Sn)	mg/kg					0.022	0.020	0.020	6327290
Total Titanium (Ti)	mg/kg					0.139	0.020	0.020	6327290
Total Uranium (U)	mg/kg					0.00040	0.00040	0.00040	6327290
Total Vanadium (V)	mg/kg					<0.020	0.020	0.0075	6327290
Total Zinc (Zn)	mg/kg					20.6	0.040	0.040	6327290
Mercury (Hg)	mg/kg					0.0476	0.0010	0.0010	6327291
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate									



BUREAU  
VERITAS

BV Labs Job #: B9N2252  
Report Date: 2019/09/23

EcoMetrix Incorporated  
Client Project #: 19-2587  
Site Location: NPNS  
Sampler Initials: JT

### RESULTS OF ANALYSES OF TISSUE

BV Labs ID		KOP284				KOP285			
Sampling Date		2019/06/13				2019/06/13			
COC Number		102089				102089			
	<b>UNITS</b>	<b>L4-M Lab-Dup</b>	<b>RDL</b>	<b>MDL</b>	<b>QC Batch</b>	<b>L5-M</b>	<b>RDL</b>	<b>MDL</b>	<b>QC Batch</b>
<b>Miscellaneous Parameters</b>									
Fat (gravimetric)	%					0.90	N/A	N/A	6311285
<b>Subcontracted Analysis</b>									
Subcontract Parameter	N/A					ATTACHED	N/A	N/A	6330866
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate N/A = Not Applicable									



BUREAU  
VERITAS

BV Labs Job #: B9N2252  
Report Date: 2019/09/23

EcoMetrix Incorporated  
Client Project #: 19-2587  
Site Location: NPNS  
Sampler Initials: JT

### RESULTS OF ANALYSES OF TISSUE

BV Labs ID		KOP286				KOP287	KOP288			
Sampling Date		2019/06/13				2019/06/13	2019/06/13			
COC Number		102089				102089	102089			
	<b>UNITS</b>	<b>L1-H</b>	<b>RDL</b>	<b>MDL</b>	<b>QC Batch</b>	<b>L2-H</b>	<b>L3-H</b>	<b>RDL</b>	<b>MDL</b>	<b>QC Batch</b>

<b>Metals</b>										
Total Aluminum (Al)	mg/kg	0.97	0.20	0.20	6327290	1.04	0.74	0.20	0.20	6327290
Total Antimony (Sb)	mg/kg	0.0163	0.0010	0.0010	6327290	0.0121	0.0111	0.0010	0.0010	6327290
Total Arsenic (As)	mg/kg	14.6	0.0040	0.0040	6327290	12.1	13.6	0.0040	0.0040	6327290
Total Barium (Ba)	mg/kg	0.107	0.010	0.0039	6327290	0.092	0.078	0.010	0.0039	6327290
Total Beryllium (Be)	mg/kg	<0.0010	0.0010	0.0010	6327290	0.0020	0.0014	0.0010	0.0010	6327290
Total Bismuth (Bi)	mg/kg	0.0076	0.0010	0.0010	6327290	0.0064	0.0049	0.0010	0.0010	6327290
Total Boron (B)	mg/kg	0.84	0.20	0.20	6327290	0.83	0.76	0.20	0.20	6327290
Total Cadmium (Cd)	mg/kg	18.4	0.0010	0.0010	6327290	17.3	16.7	0.0010	0.0010	6327290
Total Calcium (Ca)	mg/kg	359	2.0	2.0	6327290	316	268	2.0	2.0	6327290
Total Chromium (Cr)	mg/kg	0.106	0.010	0.0048	6327290	0.061	0.042	0.010	0.0048	6327290
Total Cobalt (Co)	mg/kg	0.294	0.0013	0.0013	6327290	0.279	0.202	0.0013	0.0013	6327290
Total Copper (Cu)	mg/kg	42.8	0.010	0.010	6327290	57.4	14.2	0.010	0.010	6327290
Total Iron (Fe)	mg/kg	58.5	0.25	0.25	6327290	63.5	53.3	0.25	0.25	6327290
Total Lead (Pb)	mg/kg	0.0256	0.0010	0.0010	6327290	0.0202	0.0145	0.0010	0.0010	6327290
Total Magnesium (Mg)	mg/kg	213	0.40	0.40	6327290	214	209	0.40	0.40	6327290
Total Manganese (Mn)	mg/kg	5.28	0.010	0.010	6327290	5.04	4.52	0.010	0.010	6327290
Total Mercury (Hg)	mg/kg	0.0685	0.0020	0.0020	6327290	0.0663	0.0586	0.0020	0.0020	6327290
Total Molybdenum (Mo)	mg/kg	0.801	0.0040	0.0040	6327290	0.570	0.545	0.0040	0.0040	6327290
Total Nickel (Ni)	mg/kg	1.31	0.010	0.010	6327290	1.08	0.815	0.010	0.010	6327290
Total Phosphorus (P)	mg/kg	3290	2.0	2.0	6327290	3180	2890	2.0	2.0	6327290
Total Potassium (K)	mg/kg	3590	2.0	2.0	6327290	3440	2760	2.0	2.0	6327290
Total Selenium (Se)	mg/kg	3.40	0.010	0.010	6327290	2.43	2.34	0.010	0.010	6327290
Total Silver (Ag)	mg/kg	2.08	0.0010	0.0010	6327290	2.21	0.775	0.0010	0.0010	6327290
Total Sodium (Na)	mg/kg	2220	2.0	2.0	6327290	2100	2200	2.0	2.0	6327290
Total Strontium (Sr)	mg/kg	5.21	0.010	0.0041	6327290	4.17	4.45	0.010	0.0041	6327290
Total Thallium (Tl)	mg/kg	0.00522	0.00040	0.00040	6327290	0.00427	0.00482	0.00040	0.00040	6327290
Total Tin (Sn)	mg/kg	0.046	0.020	0.020	6327290	0.061	0.036	0.020	0.020	6327290
Total Titanium (Ti)	mg/kg	0.233	0.020	0.020	6327290	0.241	0.185	0.020	0.020	6327290
Total Uranium (U)	mg/kg	0.0265	0.00040	0.00040	6327290	0.0168	0.0130	0.00040	0.00040	6327290
Total Vanadium (V)	mg/kg	0.865	0.020	0.0075	6327290	0.914	0.546	0.020	0.0075	6327290
Total Zinc (Zn)	mg/kg	44.0	0.040	0.040	6327290	42.5	28.8	0.040	0.040	6327290
Mercury (Hg)	mg/kg	0.0350	0.0010	0.0010	6327291	0.0340	0.0287	0.0010	0.0010	6327291

RDL = Reportable Detection Limit  
QC Batch = Quality Control Batch



BUREAU  
VERITAS

BV Labs Job #: B9N2252  
Report Date: 2019/09/23

EcoMetrix Incorporated  
Client Project #: 19-2587  
Site Location: NPNS  
Sampler Initials: JT

### RESULTS OF ANALYSES OF TISSUE

BV Labs ID		KOP286				KOP287	KOP288			
Sampling Date		2019/06/13				2019/06/13	2019/06/13			
COC Number		102089				102089	102089			
	<b>UNITS</b>	<b>L1-H</b>	<b>RDL</b>	<b>MDL</b>	<b>QC Batch</b>	<b>L2-H</b>	<b>L3-H</b>	<b>RDL</b>	<b>MDL</b>	<b>QC Batch</b>
<b>Miscellaneous Parameters</b>										
Fat (gravimetric)	%	20	N/A	N/A	6311285	23	30	N/A	N/A	6311285
<b>Subcontracted Analysis</b>										
Subcontract Parameter	N/A					ATTACHED	ATTACHED	N/A	N/A	6330866
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable										



BUREAU  
VERITAS

BV Labs Job #: B9N2252  
Report Date: 2019/09/23

EcoMetrix Incorporated  
Client Project #: 19-2587  
Site Location: NPNS  
Sampler Initials: JT

### RESULTS OF ANALYSES OF TISSUE

BV Labs ID		KOP289				KOP290			
Sampling Date		2019/06/13				2019/06/13			
COC Number		102089				102089			
	UNITS	L4-H	RDL	MDL	QC Batch	L5-H	RDL	MDL	QC Batch
<b>Metals</b>									
Total Aluminum (Al)	mg/kg	0.46	0.20	0.20	6327290	1.83	0.20	0.20	6327290
Total Antimony (Sb)	mg/kg	0.0054	0.0010	0.0010	6327290	0.0090	0.0010	0.0010	6327290
Total Arsenic (As)	mg/kg	7.75	0.0040	0.0040	6327290	12.4	0.0040	0.0040	6327290
Total Barium (Ba)	mg/kg	0.065	0.010	0.0039	6327290	0.118	0.010	0.0039	6327290
Total Beryllium (Be)	mg/kg	<0.0010	0.0010	0.0010	6327290	0.0023	0.0010	0.0010	6327290
Total Bismuth (Bi)	mg/kg	0.0029	0.0010	0.0010	6327290	0.0057	0.0010	0.0010	6327290
Total Boron (B)	mg/kg	0.80	0.20	0.20	6327290	0.63	0.20	0.20	6327290
Total Cadmium (Cd)	mg/kg	19.0	0.0010	0.0010	6327290	10.0	0.0010	0.0010	6327290
Total Calcium (Ca)	mg/kg	238	2.0	2.0	6327290	385	2.0	2.0	6327290
Total Chromium (Cr)	mg/kg	0.027	0.010	0.0048	6327290	0.040	0.010	0.0048	6327290
Total Cobalt (Co)	mg/kg	0.110	0.0013	0.0013	6327290	0.198	0.0013	0.0013	6327290
Total Copper (Cu)	mg/kg	8.19	0.010	0.010	6327290	30.8	0.010	0.010	6327290
Total Iron (Fe)	mg/kg	51.4	0.25	0.25	6327290	57.5	0.25	0.25	6327290
Total Lead (Pb)	mg/kg	0.0245	0.0010	0.0010	6327290	0.0166	0.0010	0.0010	6327290
Total Magnesium (Mg)	mg/kg	191	0.40	0.40	6327290	201	0.40	0.40	6327290
Total Manganese (Mn)	mg/kg	4.14	0.010	0.010	6327290	4.95	0.010	0.010	6327290
Total Mercury (Hg)	mg/kg	0.0368	0.0020	0.0020	6327290	0.0582	0.0020	0.0020	6327290
Total Molybdenum (Mo)	mg/kg	0.474	0.0040	0.0040	6327290	0.470	0.0040	0.0040	6327290
Total Nickel (Ni)	mg/kg	0.295	0.010	0.010	6327290	0.966	0.010	0.010	6327290
Total Phosphorus (P)	mg/kg	2770	2.0	2.0	6327290	2930	2.0	2.0	6327290
Total Potassium (K)	mg/kg	2960	2.0	2.0	6327290	3090	2.0	2.0	6327290
Total Selenium (Se)	mg/kg	1.64	0.010	0.010	6327290	2.27	0.010	0.010	6327290
Total Silver (Ag)	mg/kg	0.610	0.0010	0.0010	6327290	1.45	0.0010	0.0010	6327290
Total Sodium (Na)	mg/kg	2050	2.0	2.0	6327290	2010	2.0	2.0	6327290
Total Strontium (Sr)	mg/kg	3.65	0.010	0.0041	6327290	5.03	0.010	0.0041	6327290
Total Thallium (Tl)	mg/kg	0.00507	0.00040	0.00040	6327290	0.00420	0.00040	0.00040	6327290
Total Tin (Sn)	mg/kg	0.030	0.020	0.020	6327290	0.043	0.020	0.020	6327290
Total Titanium (Ti)	mg/kg	0.228	0.020	0.020	6327290	0.215	0.020	0.020	6327290
Total Uranium (U)	mg/kg	0.00467	0.00040	0.00040	6327290	0.0116	0.00040	0.00040	6327290
Total Vanadium (V)	mg/kg	0.523	0.020	0.0075	6327290	0.539	0.020	0.0075	6327290
Total Zinc (Zn)	mg/kg	51.5	0.040	0.040	6327290	39.4	0.040	0.040	6327290
Mercury (Hg)	mg/kg	0.0175	0.0010	0.0010	6327291	0.0303	0.0010	0.0010	6327291
RDL = Reportable Detection Limit									
QC Batch = Quality Control Batch									



BUREAU  
VERITAS

BV Labs Job #: B9N2252  
Report Date: 2019/09/23

EcoMetrix Incorporated  
Client Project #: 19-2587  
Site Location: NPNS  
Sampler Initials: JT

### RESULTS OF ANALYSES OF TISSUE

BV Labs ID		KOP289				KOP290			
Sampling Date		2019/06/13				2019/06/13			
COC Number		102089				102089			
	<b>UNITS</b>	<b>L4-H</b>	<b>RDL</b>	<b>MDL</b>	<b>QC Batch</b>	<b>L5-H</b>	<b>RDL</b>	<b>MDL</b>	<b>QC Batch</b>
<b>Miscellaneous Parameters</b>									
Fat (gravimetric)	%	34	N/A	N/A	6311285	27	N/A	N/A	6311285
<b>Subcontracted Analysis</b>									
Subcontract Parameter	N/A					ATTACHED	N/A	N/A	6330866
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable									





BUREAU  
VERITAS

BV Labs Job #: B9N2252  
Report Date: 2019/09/23

EcoMetrix Incorporated  
Client Project #: 19-2587  
Site Location: NPNS  
Sampler Initials: JT

**RESULTS OF ANALYSES OF TISSUE**

BV Labs ID		KOP291	KOP292				KOP293			
Sampling Date		2019/06/13	2019/06/13				2019/06/13			
COC Number		102089	102089				102089			
	UNITS	C1	C2	RDL	MDL	QC Batch	C3	RDL	MDL	QC Batch
<b>Inorganics</b>										
Moisture	%	77	78	1.0	0.20	6311749				
<b>Metals</b>										
Total Aluminum (Al)	mg/kg	4.18	3.10	0.20	0.20	6327290	1.79	0.20	0.20	6327290
Total Antimony (Sb)	mg/kg	0.0025	0.0027	0.0010	0.0010	6327290	0.0027	0.0010	0.0010	6327290
Total Arsenic (As)	mg/kg	4.95	6.34	0.0040	0.0040	6327290	7.57	0.0040	0.0040	6327290
Total Barium (Ba)	mg/kg	0.544	0.418	0.010	0.0039	6327290	0.386	0.010	0.0039	6327290
Total Beryllium (Be)	mg/kg	<0.0010	<0.0010	0.0010	0.0010	6327290	<0.0010	0.0010	0.0010	6327290
Total Bismuth (Bi)	mg/kg	0.0092	0.0066	0.0010	0.0010	6327290	0.0078	0.0010	0.0010	6327290
Total Boron (B)	mg/kg	2.62	2.35	0.20	0.20	6327290	1.76	0.20	0.20	6327290
Total Cadmium (Cd)	mg/kg	0.0207	0.0382	0.0010	0.0010	6327290	0.0368	0.0010	0.0010	6327290
Total Calcium (Ca)	mg/kg	3680	1250	2.0	2.0	6327290	1790	2.0	2.0	6327290
Total Chromium (Cr)	mg/kg	0.013	<0.010	0.010	0.0048	6327290	0.010	0.010	0.0048	6327290
Total Cobalt (Co)	mg/kg	0.0109	0.0111	0.0013	0.0013	6327290	0.0108	0.0013	0.0013	6327290
Total Copper (Cu)	mg/kg	4.92	5.11	0.010	0.010	6327290	5.24	0.010	0.010	6327290
Total Iron (Fe)	mg/kg	10.5	8.14	0.25	0.25	6327290	5.61	0.25	0.25	6327290
Total Lead (Pb)	mg/kg	0.0104	0.0079	0.0010	0.0010	6327290	0.0085	0.0010	0.0010	6327290
Total Magnesium (Mg)	mg/kg	607	546	0.40	0.40	6327290	533	0.40	0.40	6327290
Total Manganese (Mn)	mg/kg	3.31	2.35	0.010	0.010	6327290	1.49	0.010	0.010	6327290
Total Mercury (Hg)	mg/kg	0.0476	0.0490	0.0020	0.0020	6327290	0.0360	0.0020	0.0020	6327290
Total Molybdenum (Mo)	mg/kg	0.0109	0.0132	0.0040	0.0040	6327290	0.0120	0.0040	0.0040	6327290
Total Nickel (Ni)	mg/kg	0.027	0.022	0.010	0.010	6327290	0.016	0.010	0.010	6327290
Total Phosphorus (P)	mg/kg	1970	1610	2.0	2.0	6327290	2150	2.0	2.0	6327290
Total Potassium (K)	mg/kg	3580	3650	2.0	2.0	6327290	3650	2.0	2.0	6327290
Total Selenium (Se)	mg/kg	2.56	1.79	0.010	0.010	6327290	2.07	0.010	0.010	6327290
Total Silver (Ag)	mg/kg	0.146	0.142	0.0010	0.0010	6327290	0.190	0.0010	0.0010	6327290
Total Sodium (Na)	mg/kg	3460	3900	2.0	2.0	6327290	4020	2.0	2.0	6327290
Total Strontium (Sr)	mg/kg	45.4	14.7	0.010	0.0041	6327290	24.5	0.010	0.0041	6327290
Total Thallium (Tl)	mg/kg	<0.00040	<0.00040	0.00040	0.00040	6327290	<0.00040	0.00040	0.00040	6327290
Total Tin (Sn)	mg/kg	<0.020	<0.020	0.020	0.020	6327290	0.022	0.020	0.020	6327290
Total Titanium (Ti)	mg/kg	0.162	0.115	0.020	0.020	6327290	0.105	0.020	0.020	6327290
Total Uranium (U)	mg/kg	0.00105	0.00072	0.00040	0.00040	6327290	0.00048	0.00040	0.00040	6327290
Total Vanadium (V)	mg/kg	0.028	0.025	0.020	0.0075	6327290	<0.020	0.020	0.0075	6327290
Total Zinc (Zn)	mg/kg	47.6	50.2	0.040	0.040	6327290	42.8	0.040	0.040	6327290
Mercury (Hg)	mg/kg	0.0281	0.0275	0.0010	0.0010	6327291	0.0198	0.0010	0.0010	6327291
RDL = Reportable Detection Limit QC Batch = Quality Control Batch										



BUREAU  
VERITAS

BV Labs Job #: B9N2252  
Report Date: 2019/09/23

EcoMetrix Incorporated  
Client Project #: 19-2587  
Site Location: NPNS  
Sampler Initials: JT

### RESULTS OF ANALYSES OF TISSUE

BV Labs ID		KOP291	KOP292				KOP293			
Sampling Date		2019/06/13	2019/06/13				2019/06/13			
COC Number		102089	102089				102089			
	<b>UNITS</b>	<b>C1</b>	<b>C2</b>	<b>RDL</b>	<b>MDL</b>	<b>QC Batch</b>	<b>C3</b>	<b>RDL</b>	<b>MDL</b>	<b>QC Batch</b>

<b>Miscellaneous Parameters</b>										
Fat (gravimetric)	%	0.50	0.40	N/A	N/A	6311285	0.60	N/A	N/A	6311285
<b>Subcontracted Analysis</b>										
Subcontract Parameter	N/A	ATTACHED	ATTACHED	N/A	N/A	6330866	ATTACHED	N/A	N/A	6330866

RDL = Reportable Detection Limit  
 QC Batch = Quality Control Batch  
 N/A = Not Applicable



BUREAU  
VERITAS

BV Labs Job #: B9N2252  
Report Date: 2019/09/23

EcoMetrix Incorporated  
Client Project #: 19-2587  
Site Location: NPNS  
Sampler Initials: JT

### RESULTS OF ANALYSES OF TISSUE

BV Labs ID		KOP294			KOP295			
Sampling Date		2019/06/13			2019/06/13			
COC Number		102089			102089			
	UNITS	C4	MDL	QC Batch	C5	RDL	MDL	QC Batch
<b>Metals</b>								
Total Aluminum (Al)	mg/kg				4.49	0.20	0.20	6327290
Total Antimony (Sb)	mg/kg				0.0029	0.0010	0.0010	6327290
Total Arsenic (As)	mg/kg				3.53	0.0040	0.0040	6327290
Total Barium (Ba)	mg/kg				1.06	0.010	0.0039	6327290
Total Beryllium (Be)	mg/kg				<0.0010	0.0010	0.0010	6327290
Total Bismuth (Bi)	mg/kg				0.0101	0.0010	0.0010	6327290
Total Boron (B)	mg/kg				2.04	0.20	0.20	6327290
Total Cadmium (Cd)	mg/kg				0.0361	0.0010	0.0010	6327290
Total Calcium (Ca)	mg/kg				3540	2.0	2.0	6327290
Total Chromium (Cr)	mg/kg				0.020	0.010	0.0048	6327290
Total Cobalt (Co)	mg/kg				0.0115	0.0013	0.0013	6327290
Total Copper (Cu)	mg/kg				5.31	0.010	0.010	6327290
Total Iron (Fe)	mg/kg				15.0	0.25	0.25	6327290
Total Lead (Pb)	mg/kg				0.0142	0.0010	0.0010	6327290
Total Magnesium (Mg)	mg/kg				640	0.40	0.40	6327290
Total Manganese (Mn)	mg/kg				6.24	0.010	0.010	6327290
Total Mercury (Hg)	mg/kg				0.0548	0.0020	0.0020	6327290
Total Molybdenum (Mo)	mg/kg				0.0126	0.0040	0.0040	6327290
Total Nickel (Ni)	mg/kg				0.022	0.010	0.010	6327290
Total Phosphorus (P)	mg/kg				2610	2.0	2.0	6327290
Total Potassium (K)	mg/kg				4000	2.0	2.0	6327290
Total Selenium (Se)	mg/kg				3.11	0.010	0.010	6327290
Total Silver (Ag)	mg/kg				0.132	0.0010	0.0010	6327290
Total Sodium (Na)	mg/kg				3630	2.0	2.0	6327290
Total Strontium (Sr)	mg/kg				48.9	0.010	0.0041	6327290
Total Thallium (Tl)	mg/kg				<0.00040	0.00040	0.00040	6327290
Total Tin (Sn)	mg/kg				0.027	0.020	0.020	6327290
Total Titanium (Ti)	mg/kg				0.214	0.020	0.020	6327290
Total Uranium (U)	mg/kg				0.00123	0.00040	0.00040	6327290
Total Vanadium (V)	mg/kg				0.035	0.020	0.0075	6327290
Total Zinc (Zn)	mg/kg				52.0	0.040	0.040	6327290
Mercury (Hg)	mg/kg				0.0306	0.0010	0.0010	6327291
RDL = Reportable Detection Limit QC Batch = Quality Control Batch								



BUREAU  
VERITAS

BV Labs Job #: B9N2252  
Report Date: 2019/09/23

EcoMetrix Incorporated  
Client Project #: 19-2587  
Site Location: NPNS  
Sampler Initials: JT

### RESULTS OF ANALYSES OF TISSUE

BV Labs ID		KOP294			KOP295			
Sampling Date		2019/06/13			2019/06/13			
COC Number		102089			102089			
	<b>UNITS</b>	<b>C4</b>	<b>MDL</b>	<b>QC Batch</b>	<b>C5</b>	<b>RDL</b>	<b>MDL</b>	<b>QC Batch</b>
<b>Miscellaneous Parameters</b>								
Fat (gravimetric)	%	0.60	N/A	6311285	0.50	N/A	N/A	6311285
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable								



BUREAU  
VERITAS

BV Labs Job #: B9N2252  
Report Date: 2019/09/23

EcoMetrix Incorporated  
Client Project #: 19-2587  
Site Location: NPNS  
Sampler Initials: JT

### RESULTS OF ANALYSES OF TISSUE

BV Labs ID		KOP296	KOP297	KOP298	KOP299	KOP300			
Sampling Date		2019/07/04	2019/07/04	2019/07/04	2019/07/04	2019/07/04			
COC Number		102089	102089	102089	102089	102089			
	<b>UNITS</b>	<b>Q1</b>	<b>Q2</b>	<b>Q3</b>	<b>Q4</b>	<b>Q5</b>	<b>RDL</b>	<b>MDL</b>	<b>QC Batch</b>

<b>Metals</b>									
Total Aluminum (Al)	mg/kg	6.96	7.82	9.40	7.57	7.29	0.20	0.20	6327290
Total Antimony (Sb)	mg/kg	0.0025	0.0024	0.0026	0.0033	0.0022	0.0010	0.0010	6327290
Total Arsenic (As)	mg/kg	2.66	3.07	2.50	3.57	3.11	0.0040	0.0040	6327290
Total Barium (Ba)	mg/kg	2.22	3.45	3.74	3.15	4.09	0.010	0.0039	6327290
Total Beryllium (Be)	mg/kg	0.0018	0.0017	0.0013	0.0018	0.0016	0.0010	0.0010	6327290
Total Bismuth (Bi)	mg/kg	<0.0010	<0.0010	0.0011	0.0016	<0.0010	0.0010	0.0010	6327290
Total Boron (B)	mg/kg	2.10	2.05	1.93	2.42	2.08	0.20	0.20	6327290
Total Cadmium (Cd)	mg/kg	0.157	0.151	0.142	0.211	0.187	0.0010	0.0010	6327290
Total Calcium (Ca)	mg/kg	1780	1130	8090	1360	2620	2.0	2.0	6327290
Total Chromium (Cr)	mg/kg	0.103	0.067	0.080	0.143	0.054	0.010	0.0048	6327290
Total Cobalt (Co)	mg/kg	0.106	0.0914	0.0828	0.122	0.0848	0.0013	0.0013	6327290
Total Copper (Cu)	mg/kg	2.34	2.46	1.89	3.13	2.55	0.010	0.010	6327290
Total Iron (Fe)	mg/kg	26.5	30.2	32.4	31.8	35.9	0.25	0.25	6327290
Total Lead (Pb)	mg/kg	0.0796	0.0955	0.0866	0.163	0.122	0.0010	0.0010	6327290
Total Magnesium (Mg)	mg/kg	654	652	690	759	671	0.40	0.40	6327290
Total Manganese (Mn)	mg/kg	8.35	14.9	10.1	15.9	19.9	0.010	0.010	6327290
Total Mercury (Hg)	mg/kg	0.0098	0.0103	0.0110	0.0121	0.0111	0.0020	0.0020	6327290
Total Molybdenum (Mo)	mg/kg	0.141	0.108	0.114	0.195	0.113	0.0040	0.0040	6327290
Total Nickel (Ni)	mg/kg	0.392	0.336	0.278	0.406	0.306	0.010	0.010	6327290
Total Phosphorus (P)	mg/kg	1430	1670	1620	1520	1710	2.0	2.0	6327290
Total Potassium (K)	mg/kg	2170	2300	2270	2250	2450	2.0	2.0	6327290
Total Selenium (Se)	mg/kg	0.344	0.339	0.384	0.378	0.366	0.010	0.010	6327290
Total Silver (Ag)	mg/kg	0.0233	0.0228	0.0174	0.0246	0.0260	0.0010	0.0010	6327290
Total Sodium (Na)	mg/kg	4550	4400	4230	5130	4540	2.0	2.0	6327290
Total Strontium (Sr)	mg/kg	13.0	9.16	33.0	11.3	15.1	0.010	0.0041	6327290
Total Thallium (Tl)	mg/kg	0.00051	0.00059	0.00061	0.00060	0.00064	0.00040	0.00040	6327290
Total Tin (Sn)	mg/kg	0.031	0.033	0.039	0.041	0.026	0.020	0.020	6327290
Total Titanium (Ti)	mg/kg	0.129	0.154	0.173	0.147	0.162	0.020	0.020	6327290
Total Uranium (U)	mg/kg	0.0268	0.0274	0.0256	0.0364	0.0287	0.00040	0.00040	6327290
Total Vanadium (V)	mg/kg	0.112	0.106	0.117	0.134	0.118	0.020	0.0075	6327290
Total Zinc (Zn)	mg/kg	11.0	11.4	11.2	12.4	11.3	0.040	0.040	6327290
Mercury (Hg)	mg/kg	0.0057	0.0062	0.0061	0.0076	0.0068	0.0010	0.0010	6327291

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch



BUREAU  
VERITAS

BV Labs Job #: B9N2252  
Report Date: 2019/09/23

EcoMetrix Incorporated  
Client Project #: 19-2587  
Site Location: NPNS  
Sampler Initials: JT

### RESULTS OF ANALYSES OF TISSUE

BV Labs ID		KOP296	KOP297	KOP298	KOP299	KOP300			
Sampling Date		2019/07/04	2019/07/04	2019/07/04	2019/07/04	2019/07/04			
COC Number		102089	102089	102089	102089	102089			
	<b>UNITS</b>	<b>Q1</b>	<b>Q2</b>	<b>Q3</b>	<b>Q4</b>	<b>Q5</b>	<b>RDL</b>	<b>MDL</b>	<b>QC Batch</b>
<b>Miscellaneous Parameters</b>									
Fat (gravimetric)	%	0.90	1.1	1.0	0.80	1.0	N/A	N/A	6311285
<b>Subcontracted Analysis</b>									
Subcontract Parameter	N/A	ATTACHED	ATTACHED	ATTACHED	ATTACHED	ATTACHED	N/A	N/A	6330866
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable									



BUREAU  
VERITAS

BV Labs Job #: B9N2252  
Report Date: 2019/09/23

EcoMetrix Incorporated  
Client Project #: 19-2587  
Site Location: NPNS  
Sampler Initials: JT

**SEMI-VOLATILE ORGANICS BY GC-MS (TISSUE)**

BV Labs ID		KOP281	KOP282				KOP282			
Sampling Date		2019/06/13	2019/06/13				2019/06/13			
COC Number		102089	102089				102089			
	UNITS	L1-M	L2-M	RDL	MDL	QC Batch	L2-M Lab-Dup	RDL	MDL	QC Batch
<b>Polyaromatic Hydrocarbons</b>										
1-Methylnaphthalene	mg/kg	<0.050	<0.050	0.050	N/A	6323527	<0.050	0.050	N/A	6323527
2-Methylnaphthalene	mg/kg	<0.050	<0.050	0.050	N/A	6323527	<0.050	0.050	N/A	6323527
Acenaphthene	mg/kg	<0.050	<0.050	0.050	N/A	6323527	<0.050	0.050	N/A	6323527
Acenaphthylene	mg/kg	<0.050	<0.050	0.050	N/A	6323527	<0.050	0.050	N/A	6323527
Anthracene	mg/kg	<0.050	<0.050	0.050	N/A	6323527	<0.050	0.050	N/A	6323527
Benzo(a)anthracene	mg/kg	<0.050	<0.050	0.050	N/A	6323527	<0.050	0.050	N/A	6323527
Benzo(a)pyrene	mg/kg	<0.050	<0.050	0.050	N/A	6323527	<0.050	0.050	N/A	6323527
Benzo(b)fluoranthene	mg/kg	<0.050	<0.050	0.050	N/A	6323527	<0.050	0.050	N/A	6323527
Benzo(b/j)fluoranthene	mg/kg	<0.10	<0.10	0.10	N/A	6294426				
Benzo(g,h,i)perylene	mg/kg	<0.050	<0.050	0.050	N/A	6323527	<0.050	0.050	N/A	6323527
Benzo(j)fluoranthene	mg/kg	<0.050	<0.050	0.050	N/A	6323527	<0.050	0.050	N/A	6323527
Benzo(k)fluoranthene	mg/kg	<0.050	<0.050	0.050	N/A	6323527	<0.050	0.050	N/A	6323527
Chrysene	mg/kg	<0.050	<0.050	0.050	N/A	6323527	<0.050	0.050	N/A	6323527
Dibenz(a,h)anthracene	mg/kg	<0.050	<0.050	0.050	N/A	6323527	<0.050	0.050	N/A	6323527
Fluoranthene	mg/kg	<0.050	<0.050	0.050	N/A	6323527	<0.050	0.050	N/A	6323527
Fluorene	mg/kg	<0.050	<0.050	0.050	N/A	6323527	<0.050	0.050	N/A	6323527
Indeno(1,2,3-cd)pyrene	mg/kg	<0.050	<0.050	0.050	N/A	6323527	<0.050	0.050	N/A	6323527
Naphthalene	mg/kg	<0.050	<0.050	0.050	N/A	6323527	<0.050	0.050	N/A	6323527
Perylene	mg/kg	<0.050	<0.050	0.050	N/A	6323527	<0.050	0.050	N/A	6323527
Phenanthrene	mg/kg	<0.050	<0.050	0.050	N/A	6323527	<0.050	0.050	N/A	6323527
Pyrene	mg/kg	<0.050	<0.050	0.050	N/A	6323527	<0.050	0.050	N/A	6323527
<b>Phenolics</b>										
2-Chlorophenol	ug/g	<0.02	<0.02	0.02	N/A	6329263				
2,3,4,6-Tetrachlorophenol	ug/g	<0.02	<0.02	0.02	N/A	6329263				
2,3,5-Trichlorophenol	ug/g	<0.02	<0.02	0.02	N/A	6329263				
2,4-Dichlorophenol	ug/g	<0.02	<0.02	0.02	N/A	6329263				
2,4-Dimethylphenol	ug/g	<0.02	<0.02	0.02	N/A	6329263				
2,4,6-Trichlorophenol	ug/g	<0.02	<0.02	0.02	N/A	6329263				
2,6-Dichlorophenol	ug/g	<0.02	<0.02	0.02	N/A	6329263				
4-Chloro-3-Methylphenol	ug/g	<0.02	<0.02	0.02	N/A	6329263				
m/p-Cresol	ug/g	<0.02	<0.02	0.02	N/A	6329263				
o-Cresol	ug/g	<0.02	<0.02	0.02	N/A	6329263				
Pentachlorophenol	ug/g	<0.02	<0.02	0.02	N/A	6329263				
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate N/A = Not Applicable										



BUREAU  
VERITAS

BV Labs Job #: B9N2252  
Report Date: 2019/09/23

EcoMetrix Incorporated  
Client Project #: 19-2587  
Site Location: NPNS  
Sampler Initials: JT

### SEMI-VOLATILE ORGANICS BY GC-MS (TISSUE)

BV Labs ID		KOP281	KOP282				KOP282			
Sampling Date		2019/06/13	2019/06/13				2019/06/13			
COC Number		102089	102089				102089			
	UNITS	L1-M	L2-M	RDL	MDL	QC Batch	L2-M Lab-Dup	RDL	MDL	QC Batch
Phenol	ug/g	<0.02	<0.02	0.02	N/A	6329263				
2,3,4,5-Tetrachlorophenol	ug/g	<0.02	<0.02	0.02	N/A	6329263				
2,3,5,6-Tetrachlorophenol	ug/g	<0.02	<0.02	0.02	N/A	6329263				
2,3,4-Trichlorophenol	ug/g	<0.02	<0.02	0.02	N/A	6329263				
2,4,5-Trichlorophenol	ug/g	<0.02	<0.02	0.02	N/A	6329263				
2,3,6-Trichlorophenol	ug/g	<0.02	<0.02	0.02	N/A	6329263				
3,4,5-Trichlorophenol	ug/g	<0.02	<0.02	0.02	N/A	6329263				
2,3-Dichlorophenol	ug/g	<0.02	<0.02	0.02	N/A	6329263				
2,5-Dichlorophenol	ug/g	<0.02	<0.02	0.02	N/A	6329263				
3,4-Dichlorophenol	ug/g	<0.02	<0.02	0.02	N/A	6329263				
3,5-Dichlorophenol	ug/g	<0.02	<0.02	0.02	N/A	6329263				
3 & 4-Chlorophenol	ug/g	<0.02	<0.02	0.02	N/A	6329263				
<b>Surrogate Recovery (%)</b>										
2,4,6-Tribromophenol	%	59	77			6329263				
2-Fluorophenol	%	17	20			6329263				
D5-Phenol	%	17	15			6329263				
D10-Anthracene	%	91	90			6323527	89			6323527
D14-Terphenyl	%	93	92			6323527	89			6323527
D8-Acenaphthylene	%	91	90			6323527	87			6323527
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate N/A = Not Applicable										





BUREAU  
VERITAS

BV Labs Job #: B9N2252  
Report Date: 2019/09/23

EcoMetrix Incorporated  
Client Project #: 19-2587  
Site Location: NPNS  
Sampler Initials: JT

### SEMI-VOLATILE ORGANICS BY GC-MS (TISSUE)

BV Labs ID		KOP283	KOP284	KOP285				KOP285			
Sampling Date		2019/06/13	2019/06/13	2019/06/13				2019/06/13			
COC Number		102089	102089	102089				102089			
	UNITS	L3-M	L4-M	L5-M	RDL	MDL	QC Batch	L5-M Lab-Dup	RDL	MDL	QC Batch
<b>Polyaromatic Hydrocarbons</b>											
1-Methylnaphthalene	mg/kg	<0.050	<0.050	<0.050	0.050	N/A	6323527				
2-Methylnaphthalene	mg/kg	<0.050	<0.050	<0.050	0.050	N/A	6323527				
Acenaphthene	mg/kg	<0.050	<0.050	<0.050	0.050	N/A	6323527				
Acenaphthylene	mg/kg	<0.050	<0.050	<0.050	0.050	N/A	6323527				
Anthracene	mg/kg	<0.050	<0.050	<0.050	0.050	N/A	6323527				
Benzo(a)anthracene	mg/kg	<0.050	<0.050	<0.050	0.050	N/A	6323527				
Benzo(a)pyrene	mg/kg	<0.050	<0.050	<0.050	0.050	N/A	6323527				
Benzo(b)fluoranthene	mg/kg	<0.050	<0.050	<0.050	0.050	N/A	6323527				
Benzo(b/j)fluoranthene	mg/kg	<0.10	<0.10	<0.10	0.10	N/A	6294426				
Benzo(g,h,i)perylene	mg/kg	<0.050	<0.050	<0.050	0.050	N/A	6323527				
Benzo(j)fluoranthene	mg/kg	<0.050	<0.050	<0.050	0.050	N/A	6323527				
Benzo(k)fluoranthene	mg/kg	<0.050	<0.050	<0.050	0.050	N/A	6323527				
Chrysene	mg/kg	<0.050	<0.050	<0.050	0.050	N/A	6323527				
Dibenz(a,h)anthracene	mg/kg	<0.050	<0.050	<0.050	0.050	N/A	6323527				
Fluoranthene	mg/kg	<0.050	<0.050	<0.050	0.050	N/A	6323527				
Fluorene	mg/kg	<0.050	<0.050	<0.050	0.050	N/A	6323527				
Indeno(1,2,3-cd)pyrene	mg/kg	<0.050	<0.050	<0.050	0.050	N/A	6323527				
Naphthalene	mg/kg	<0.050	<0.050	<0.050	0.050	N/A	6323527				
Perylene	mg/kg	<0.050	<0.050	<0.050	0.050	N/A	6323527				
Phenanthrene	mg/kg	<0.050	<0.050	<0.050	0.050	N/A	6323527				
Pyrene	mg/kg	<0.050	<0.050	<0.050	0.050	N/A	6323527				
<b>Phenolics</b>											
2-Chlorophenol	ug/g	<0.02	<0.02	<0.02	0.02	N/A	6329263	<0.02	0.02	N/A	6329263
2,3,4,6-Tetrachlorophenol	ug/g	<0.02	<0.02	<0.02	0.02	N/A	6329263	<0.02	0.02	N/A	6329263
2,3,5-Trichlorophenol	ug/g	<0.02	<0.02	<0.02	0.02	N/A	6329263	<0.02	0.02	N/A	6329263
2,4-Dichlorophenol	ug/g	<0.02	<0.02	<0.02	0.02	N/A	6329263	<0.02	0.02	N/A	6329263
2,4-Dimethylphenol	ug/g	<0.02	<0.02	<0.02	0.02	N/A	6329263	<0.02	0.02	N/A	6329263
2,4,6-Trichlorophenol	ug/g	<0.02	<0.02	<0.02	0.02	N/A	6329263	<0.02	0.02	N/A	6329263
2,6-Dichlorophenol	ug/g	<0.02	<0.02	<0.02	0.02	N/A	6329263	<0.02	0.02	N/A	6329263
4-Chloro-3-Methylphenol	ug/g	<0.02	<0.02	<0.02	0.02	N/A	6329263	<0.02	0.02	N/A	6329263
m/p-Cresol	ug/g	<0.02	<0.02	<0.02	0.02	N/A	6329263	<0.02	0.02	N/A	6329263
o-Cresol	ug/g	<0.02	<0.02	<0.02	0.02	N/A	6329263	<0.02	0.02	N/A	6329263
Pentachlorophenol	ug/g	<0.02	<0.02	<0.02	0.02	N/A	6329263	<0.02	0.02	N/A	6329263
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate N/A = Not Applicable											



BUREAU  
VERITAS

BV Labs Job #: B9N2252  
Report Date: 2019/09/23

EcoMetrix Incorporated  
Client Project #: 19-2587  
Site Location: NPNS  
Sampler Initials: JT

**SEMI-VOLATILE ORGANICS BY GC-MS (TISSUE)**

BV Labs ID		KOP283	KOP284	KOP285				KOP285			
Sampling Date		2019/06/13	2019/06/13	2019/06/13				2019/06/13			
COC Number		102089	102089	102089				102089			
	UNITS	L3-M	L4-M	L5-M	RDL	MDL	QC Batch	L5-M Lab-Dup	RDL	MDL	QC Batch
Phenol	ug/g	<0.02	<0.02	<0.02	0.02	N/A	6329263	<0.02	0.02	N/A	6329263
2,3,4,5-Tetrachlorophenol	ug/g	<0.02	<0.02	<0.02	0.02	N/A	6329263	<0.02	0.02	N/A	6329263
2,3,5,6-Tetrachlorophenol	ug/g	<0.02	<0.02	<0.02	0.02	N/A	6329263	<0.02	0.02	N/A	6329263
2,3,4-Trichlorophenol	ug/g	<0.02	<0.02	<0.02	0.02	N/A	6329263	<0.02	0.02	N/A	6329263
2,4,5-Trichlorophenol	ug/g	<0.02	<0.02	<0.02	0.02	N/A	6329263	<0.02	0.02	N/A	6329263
2,3,6-Trichlorophenol	ug/g	<0.02	<0.02	<0.02	0.02	N/A	6329263	<0.02	0.02	N/A	6329263
3,4,5-Trichlorophenol	ug/g	<0.02	<0.02	<0.02	0.02	N/A	6329263	<0.02	0.02	N/A	6329263
2,3-Dichlorophenol	ug/g	<0.02	<0.02	<0.02	0.02	N/A	6329263	<0.02	0.02	N/A	6329263
2,5-Dichlorophenol	ug/g	<0.02	<0.02	<0.02	0.02	N/A	6329263	<0.02	0.02	N/A	6329263
3,4-Dichlorophenol	ug/g	<0.02	<0.02	<0.02	0.02	N/A	6329263	<0.02	0.02	N/A	6329263
3,5-Dichlorophenol	ug/g	<0.02	<0.02	<0.02	0.02	N/A	6329263	<0.02	0.02	N/A	6329263
3 & 4-Chlorophenol	ug/g	<0.02	<0.02	<0.02	0.02	N/A	6329263	<0.02	0.02	N/A	6329263
<b>Surrogate Recovery (%)</b>											
2,4,6-Tribromophenol	%	62	64	79			6329263	74			6329263
2-Fluorophenol	%	18	18	25			6329263	21			6329263
D5-Phenol	%	15	18	16			6329263	14			6329263
D10-Anthracene	%	86	93	100			6323527				
D14-Terphenyl	%	98	94	102			6323527				
D8-Acenaphthylene	%	82	91	90			6323527				
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate N/A = Not Applicable											



BUREAU  
VERITAS

BV Labs Job #: B9N2252  
Report Date: 2019/09/23

EcoMetrix Incorporated  
Client Project #: 19-2587  
Site Location: NPNS  
Sampler Initials: JT

### SEMI-VOLATILE ORGANICS BY GC-MS (TISSUE)

BV Labs ID		KOP291	KOP292			
Sampling Date		2019/06/13	2019/06/13			
COC Number		102089	102089			
	UNITS	C1	C2	RDL	MDL	QC Batch
<b>Polyaromatic Hydrocarbons</b>						
1-Methylnaphthalene	mg/kg	<0.050	<0.050	0.050	N/A	6323527
2-Methylnaphthalene	mg/kg	<0.050	<0.050	0.050	N/A	6323527
Acenaphthene	mg/kg	<0.050	<0.050	0.050	N/A	6323527
Acenaphthylene	mg/kg	<0.050	<0.050	0.050	N/A	6323527
Anthracene	mg/kg	<0.050	<0.050	0.050	N/A	6323527
Benzo(a)anthracene	mg/kg	<0.050	<0.050	0.050	N/A	6323527
Benzo(a)pyrene	mg/kg	<0.050	<0.050	0.050	N/A	6323527
Benzo(b)fluoranthene	mg/kg	<0.050	<0.050	0.050	N/A	6323527
Benzo(b/j)fluoranthene	mg/kg	<0.10	<0.10	0.10	N/A	6294426
Benzo(g,h,i)perylene	mg/kg	<0.050	<0.050	0.050	N/A	6323527
Benzo(j)fluoranthene	mg/kg	<0.050	<0.050	0.050	N/A	6323527
Benzo(k)fluoranthene	mg/kg	<0.050	<0.050	0.050	N/A	6323527
Chrysene	mg/kg	<0.050	<0.050	0.050	N/A	6323527
Dibenz(a,h)anthracene	mg/kg	<0.050	<0.050	0.050	N/A	6323527
Fluoranthene	mg/kg	<0.050	<0.050	0.050	N/A	6323527
Fluorene	mg/kg	<0.050	<0.050	0.050	N/A	6323527
Indeno(1,2,3-cd)pyrene	mg/kg	<0.050	<0.050	0.050	N/A	6323527
Naphthalene	mg/kg	<0.050	<0.050	0.050	N/A	6323527
Perylene	mg/kg	<0.050	<0.050	0.050	N/A	6323527
Phenanthrene	mg/kg	<0.050	<0.050	0.050	N/A	6323527
Pyrene	mg/kg	<0.050	<0.050	0.050	N/A	6323527
<b>Phenolics</b>						
2-Chlorophenol	ug/g	<0.02	<0.02	0.02	N/A	6329263
2,3,4,6-Tetrachlorophenol	ug/g	<0.02	<0.02	0.02	N/A	6329263
2,3,5-Trichlorophenol	ug/g	<0.02	<0.02	0.02	N/A	6329263
2,4-Dichlorophenol	ug/g	<0.02	<0.02	0.02	N/A	6329263
2,4-Dimethylphenol	ug/g	<0.02	<0.02	0.02	N/A	6329263
2,4,6-Trichlorophenol	ug/g	<0.02	<0.02	0.02	N/A	6329263
2,6-Dichlorophenol	ug/g	<0.02	<0.02	0.02	N/A	6329263
4-Chloro-3-Methylphenol	ug/g	<0.02	<0.02	0.02	N/A	6329263
m/p-Cresol	ug/g	<0.02	<0.02	0.02	N/A	6329263
o-Cresol	ug/g	<0.02	<0.02	0.02	N/A	6329263
Pentachlorophenol	ug/g	<0.02	<0.02	0.02	N/A	6329263
Phenol	ug/g	<0.02	<0.02	0.02	N/A	6329263
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable						



BUREAU  
VERITAS

BV Labs Job #: B9N2252  
Report Date: 2019/09/23

EcoMetrix Incorporated  
Client Project #: 19-2587  
Site Location: NPNS  
Sampler Initials: JT

### SEMI-VOLATILE ORGANICS BY GC-MS (TISSUE)

BV Labs ID		KOP291	KOP292			
Sampling Date		2019/06/13	2019/06/13			
COC Number		102089	102089			
	UNITS	C1	C2	RDL	MDL	QC Batch
2,3,4,5-Tetrachlorophenol	ug/g	<0.02	<0.02	0.02	N/A	6329263
2,3,5,6-Tetrachlorophenol	ug/g	<0.02	<0.02	0.02	N/A	6329263
2,3,4-Trichlorophenol	ug/g	<0.02	<0.02	0.02	N/A	6329263
2,4,5-Trichlorophenol	ug/g	<0.02	<0.02	0.02	N/A	6329263
2,3,6-Trichlorophenol	ug/g	<0.02	<0.02	0.02	N/A	6329263
3,4,5-Trichlorophenol	ug/g	<0.02	<0.02	0.02	N/A	6329263
2,3-Dichlorophenol	ug/g	<0.02	<0.02	0.02	N/A	6329263
2,5-Dichlorophenol	ug/g	<0.02	<0.02	0.02	N/A	6329263
3,4-Dichlorophenol	ug/g	<0.02	<0.02	0.02	N/A	6329263
3,5-Dichlorophenol	ug/g	<0.02	<0.02	0.02	N/A	6329263
3 & 4-Chlorophenol	ug/g	<0.02	<0.02	0.02	N/A	6329263
<b>Surrogate Recovery (%)</b>						
2,4,6-Tribromophenol	%	32	40			6329263
2-Fluorophenol	%	14	13			6329263
D5-Phenol	%	6.3 (1)	6.1 (1)			6329263
D10-Anthracene	%	94	88			6323527
D14-Terphenyl	%	96	84			6323527
D8-Acenaphthylene	%	91	84			6323527
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable (1) Surrogate recovery was below the lower control limit due to matrix interference. This may represent a lower bias in some results.						



BUREAU  
VERITAS

BV Labs Job #: B9N2252  
Report Date: 2019/09/23

EcoMetrix Incorporated  
Client Project #: 19-2587  
Site Location: NPNS  
Sampler Initials: JT

### DIOXINS AND FURANS BY HRMS (TISSUE)

BV Labs ID		KOP281							
Sampling Date		2019/06/13							
COC Number		102089				TOXIC EQUIVALENCY		# of	
	UNITS	L1-M	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
<b>Dioxins &amp; Furans</b>									
2,3,7,8-Tetra CDD *	pg/g	<0.133	0.133	0.996	N/A	1.00	0.133		6331982
1,2,3,7,8-Penta CDD *	pg/g	<0.127	0.127	4.98	N/A	1.00	0.127		6331982
1,2,3,4,7,8-Hexa CDD *	pg/g	<0.112	0.112	4.98	N/A	0.100	0.0112		6331982
1,2,3,6,7,8-Hexa CDD *	pg/g	<0.115	0.115	4.98	N/A	0.100	0.0115		6331982
1,2,3,7,8,9-Hexa CDD *	pg/g	<0.119	0.119	4.98	N/A	0.100	0.0119		6331982
1,2,3,4,6,7,8-Hepta CDD *	pg/g	<0.135	0.135	4.98	N/A	0.0100	0.00135		6331982
Octa CDD *	pg/g	0.381	0.181	9.96	N/A	0.000300	0.000114		6331982
Total Tetra CDD *	pg/g	<0.133	0.133	0.996	N/A			0	6331982
Total Penta CDD *	pg/g	<0.127	0.127	4.98	N/A			0	6331982
Total Hexa CDD *	pg/g	0.393	0.117	4.98	N/A			1	6331982
Total Hepta CDD *	pg/g	0.221	0.135	4.98	N/A			1	6331982
2,3,7,8-Tetra CDF **	pg/g	<0.143	0.143	0.996	N/A	0.100	0.0143		6331982
1,2,3,7,8-Penta CDF **	pg/g	<0.139	0.139	4.98	N/A	0.0300	0.00417		6331982
2,3,4,7,8-Penta CDF **	pg/g	<0.130	0.130	4.98	N/A	0.300	0.0390		6331982
1,2,3,4,7,8-Hexa CDF **	pg/g	<0.113	0.113	4.98	N/A	0.100	0.0113		6331982
1,2,3,6,7,8-Hexa CDF **	pg/g	<0.116	0.116	4.98	N/A	0.100	0.0116		6331982
2,3,4,6,7,8-Hexa CDF **	pg/g	<0.107	0.107	4.98	N/A	0.100	0.0107		6331982
1,2,3,7,8,9-Hexa CDF **	pg/g	<0.116	0.116	4.98	N/A	0.100	0.0116		6331982
1,2,3,4,6,7,8-Hepta CDF **	pg/g	<0.125	0.125	4.98	N/A	0.0100	0.00125		6331982
1,2,3,4,7,8,9-Hepta CDF **	pg/g	<0.124	0.124	4.98	N/A	0.0100	0.00124		6331982
Octa CDF **	pg/g	<0.168	0.168	9.96	N/A	0.000300	0.0000504		6331982
Total Tetra CDF **	pg/g	<0.143	0.143	0.996	N/A			0	6331982
Total Penta CDF **	pg/g	0.369	0.134	4.98	N/A			1	6331982
Total Hexa CDF **	pg/g	0.360	0.113	4.98	N/A			1	6331982
Total Hepta CDF **	pg/g	<0.124	0.124	4.98	N/A			0	6331982
TOTAL TOXIC EQUIVALENCY	pg/g						0.401		

EDL = Estimated Detection Limit  
RDL = Reportable Detection Limit  
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,  
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.  
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds  
QC Batch = Quality Control Batch  
\* CDD = Chloro Dibenzo-p-Dioxin  
N/A = Not Applicable  
\*\* CDF = Chloro Dibenzo-p-Furan



**DIOXINS AND FURANS BY HRMS (TISSUE)**

BV Labs ID		KOP281							
Sampling Date		2019/06/13							
COC Number		102089				<b>TOXIC EQUIVALENCY</b>		# of	
	<b>UNITS</b>	<b>L1-M</b>	<b>EDL</b>	<b>RDL</b>	<b>MDL</b>	<b>TEF (2005 WHO)</b>	<b>TEQ(DL)</b>	<b>Isomers</b>	<b>QC Batch</b>
<b>Surrogate Recovery (%)</b>									
37CL4 2378 Tetra CDD *	%	77							6331982
C13-1234678 HeptaCDD *	%	78							6331982
C13-1234678 HeptaCDF **	%	66							6331982
C13-123478 HexaCDD *	%	76							6331982
C13-123478 HexaCDF **	%	70							6331982
C13-1234789 HeptaCDF **	%	65							6331982
C13-123678 HexaCDD *	%	96							6331982
C13-123678 HexaCDF **	%	73							6331982
C13-12378 PentaCDD *	%	59							6331982
C13-12378 PentaCDF **	%	48							6331982
C13-123789 HexaCDF **	%	72							6331982
C13-234678 HexaCDF **	%	65							6331982
C13-23478 PentaCDF **	%	58							6331982
C13-2378 TetraCDD *	%	64							6331982
C13-2378 TetraCDF **	%	62							6331982
C13-OCDD *	%	63							6331982
EDL = Estimated Detection Limit RDL = Reportable Detection Limit TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient, The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested. WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds QC Batch = Quality Control Batch * CDD = Chloro Dibenzo-p-Dioxin ** CDF = Chloro Dibenzo-p-Furan									



BUREAU  
VERITAS

BV Labs Job #: B9N2252  
Report Date: 2019/09/23

EcoMetrix Incorporated  
Client Project #: 19-2587  
Site Location: NPNS  
Sampler Initials: JT

### DIOXINS AND FURANS BY HRMS (TISSUE)

BV Labs ID		KOP282							
Sampling Date		2019/06/13							
COC Number		102089				TOXIC EQUIVALENCY		# of	
	UNITS	L2-M	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
<b>Dioxins &amp; Furans</b>									
2,3,7,8-Tetra CDD *	pg/g	<0.130	0.130	0.993	N/A	1.00	0.130		6331982
1,2,3,7,8-Penta CDD *	pg/g	<0.131	0.131	4.96	N/A	1.00	0.131		6331982
1,2,3,4,7,8-Hexa CDD *	pg/g	<0.117	0.117	4.96	N/A	0.100	0.0117		6331982
1,2,3,6,7,8-Hexa CDD *	pg/g	<0.121	0.121	4.96	N/A	0.100	0.0121		6331982
1,2,3,7,8,9-Hexa CDD *	pg/g	<0.124	0.124	4.96	N/A	0.100	0.0124		6331982
1,2,3,4,6,7,8-Hepta CDD *	pg/g	<0.143	0.143	4.96	N/A	0.0100	0.00143		6331982
Octa CDD *	pg/g	<0.469 (1)	0.469	9.93	N/A	0.000300	0.000141		6331982
Total Tetra CDD *	pg/g	<0.130	0.130	0.993	N/A			0	6331982
Total Penta CDD *	pg/g	<0.131	0.131	4.96	N/A			0	6331982
Total Hexa CDD *	pg/g	0.274	0.122	4.96	N/A			1	6331982
Total Hepta CDD *	pg/g	0.166	0.143	4.96	N/A			1	6331982
2,3,7,8-Tetra CDF **	pg/g	<0.125	0.125	0.993	N/A	0.100	0.0125		6331982
1,2,3,7,8-Penta CDF **	pg/g	<0.134	0.134	4.96	N/A	0.0300	0.00402		6331982
2,3,4,7,8-Penta CDF **	pg/g	<0.126	0.126	4.96	N/A	0.300	0.0378		6331982
1,2,3,4,7,8-Hexa CDF **	pg/g	<0.116	0.116	4.96	N/A	0.100	0.0116		6331982
1,2,3,6,7,8-Hexa CDF **	pg/g	<0.119	0.119	4.96	N/A	0.100	0.0119		6331982
2,3,4,6,7,8-Hexa CDF **	pg/g	<0.110	0.110	4.96	N/A	0.100	0.0110		6331982
1,2,3,7,8,9-Hexa CDF **	pg/g	<0.119	0.119	4.96	N/A	0.100	0.0119		6331982
1,2,3,4,6,7,8-Hepta CDF **	pg/g	<0.127	0.127	4.96	N/A	0.0100	0.00127		6331982
1,2,3,4,7,8,9-Hepta CDF **	pg/g	<0.126	0.126	4.96	N/A	0.0100	0.00126		6331982
Octa CDF **	pg/g	0.201	0.168	9.93	N/A	0.000300	0.0000603		6331982
Total Tetra CDF **	pg/g	<0.125	0.125	0.993	N/A			0	6331982
Total Penta CDF **	pg/g	<0.130	0.130	4.96	N/A			0	6331982

EDL = Estimated Detection Limit  
RDL = Reportable Detection Limit  
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,  
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.  
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds  
QC Batch = Quality Control Batch  
\* CDD = Chloro Dibenzo-p-Dioxin  
N/A = Not Applicable  
\*\* CDF = Chloro Dibenzo-p-Furan  
(1) RT>2 seconds - PCDD/DF analysis-Peak maxima of monitored ions exceeds 2 seconds  
RT > 3 seconds - PCDD/DF analysis - Peak detected exceeds expected retention time (from internal standard) by greater than 3 seconds.



BUREAU  
VERITAS

BV Labs Job #: B9N2252  
Report Date: 2019/09/23

EcoMetrix Incorporated  
Client Project #: 19-2587  
Site Location: NPNS  
Sampler Initials: JT

### DIOXINS AND FURANS BY HRMS (TISSUE)

BV Labs ID		KOP282							
Sampling Date		2019/06/13							
COC Number		102089				TOXIC EQUIVALENCY		# of	
	UNITS	L2-M	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
Total Hexa CDF **	pg/g	0.231	0.116	4.96	N/A			1	6331982
Total Hepta CDF **	pg/g	0.140	0.127	4.96	N/A			1	6331982
TOTAL TOXIC EQUIVALENCY	pg/g						0.402		
<b>Surrogate Recovery (%)</b>									
37CL4 2378 Tetra CDD *	%	74							6331982
C13-1234678 HeptaCDD *	%	85							6331982
C13-1234678 HeptaCDF **	%	71							6331982
C13-123478 HexaCDD *	%	80							6331982
C13-123478 HexaCDF **	%	74							6331982
C13-1234789 HeptaCDF **	%	69							6331982
C13-123678 HexaCDD *	%	103							6331982
C13-123678 HexaCDF **	%	77							6331982
C13-12378 PentaCDD *	%	58							6331982
C13-12378 PentaCDF **	%	51							6331982
C13-123789 HexaCDF **	%	75							6331982
C13-234678 HexaCDF **	%	73							6331982
C13-23478 PentaCDF **	%	59							6331982
C13-2378 TetraCDD *	%	63							6331982
C13-2378 TetraCDF **	%	61							6331982
C13-OCDD *	%	65							6331982
<p>EDL = Estimated Detection Limit  RDL = Reportable Detection Limit  TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,  The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.  WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds  QC Batch = Quality Control Batch  ** CDF = Chloro Dibenzo-p-Furan  N/A = Not Applicable  * CDD = Chloro Dibenzo-p-Dioxin</p>									





BUREAU  
VERITAS

BV Labs Job #: B9N2252  
Report Date: 2019/09/23

EcoMetrix Incorporated  
Client Project #: 19-2587  
Site Location: NPNS  
Sampler Initials: JT

### DIOXINS AND FURANS BY HRMS (TISSUE)

BV Labs ID		KOP283							
Sampling Date		2019/06/13							
COC Number		102089				TOXIC EQUIVALENCY		# of	
	UNITS	L3-M	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
<b>Dioxins &amp; Furans</b>									
2,3,7,8-Tetra CDD *	pg/g	<0.123	0.123	0.994	N/A	1.00	0.123		6331982
1,2,3,7,8-Penta CDD *	pg/g	<0.115	0.115	4.97	N/A	1.00	0.115		6331982
1,2,3,4,7,8-Hexa CDD *	pg/g	<0.105	0.105	4.97	N/A	0.100	0.0105		6331982
1,2,3,6,7,8-Hexa CDD *	pg/g	<0.108	0.108	4.97	N/A	0.100	0.0108		6331982
1,2,3,7,8,9-Hexa CDD *	pg/g	<0.111	0.111	4.97	N/A	0.100	0.0111		6331982
1,2,3,4,6,7,8-Hepta CDD *	pg/g	<0.154	0.154	4.97	N/A	0.0100	0.00154		6331982
Octa CDD *	pg/g	0.353	0.176	9.94	N/A	0.000300	0.000106		6331982
Total Tetra CDD *	pg/g	<0.123	0.123	0.994	N/A			0	6331982
Total Penta CDD *	pg/g	<0.115	0.115	4.97	N/A			0	6331982
Total Hexa CDD *	pg/g	0.381	0.109	4.97	N/A			1	6331982
Total Hepta CDD *	pg/g	0.216	0.154	4.97	N/A			1	6331982
2,3,7,8-Tetra CDF **	pg/g	<0.134	0.134	0.994	N/A	0.100	0.0134		6331982
1,2,3,7,8-Penta CDF **	pg/g	<0.127	0.127	4.97	N/A	0.0300	0.00381		6331982
2,3,4,7,8-Penta CDF **	pg/g	<0.119	0.119	4.97	N/A	0.300	0.0357		6331982
1,2,3,4,7,8-Hexa CDF **	pg/g	<0.114	0.114	4.97	N/A	0.100	0.0114		6331982
1,2,3,6,7,8-Hexa CDF **	pg/g	<0.117	0.117	4.97	N/A	0.100	0.0117		6331982
2,3,4,6,7,8-Hexa CDF **	pg/g	<0.108	0.108	4.97	N/A	0.100	0.0108		6331982
1,2,3,7,8,9-Hexa CDF **	pg/g	<0.117	0.117	4.97	N/A	0.100	0.0117		6331982
1,2,3,4,6,7,8-Hepta CDF **	pg/g	<0.128	0.128	4.97	N/A	0.0100	0.00128		6331982
1,2,3,4,7,8,9-Hepta CDF **	pg/g	<0.127	0.127	4.97	N/A	0.0100	0.00127		6331982
Octa CDF **	pg/g	<0.202	0.202	9.94	N/A	0.000300	0.0000606		6331982
Total Tetra CDF **	pg/g	<0.134	0.134	0.994	N/A			0	6331982
Total Penta CDF **	pg/g	<0.123	0.123	4.97	N/A			0	6331982
Total Hexa CDF **	pg/g	0.314	0.114	4.97	N/A			1	6331982
Total Hepta CDF **	pg/g	<0.128	0.128	4.97	N/A			0	6331982
TOTAL TOXIC EQUIVALENCY	pg/g						0.373		
<p>EDL = Estimated Detection Limit  RDL = Reportable Detection Limit  TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,  The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.</p> <p>WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds</p> <p>QC Batch = Quality Control Batch</p> <p>* CDD = Chloro Dibenzo-p-Dioxin</p> <p>N/A = Not Applicable</p> <p>** CDF = Chloro Dibenzo-p-Furan</p>									



BUREAU  
VERITAS

BV Labs Job #: B9N2252  
Report Date: 2019/09/23

EcoMetrix Incorporated  
Client Project #: 19-2587  
Site Location: NPNS  
Sampler Initials: JT

### DIOXINS AND FURANS BY HRMS (TISSUE)

BV Labs ID		KOP283							
Sampling Date		2019/06/13							
COC Number		102089				TOXIC EQUIVALENCY		# of	
	UNITS	L3-M	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
<b>Surrogate Recovery (%)</b>									
37CL4 2378 Tetra CDD *	%	90							6331982
C13-1234678 HeptaCDD *	%	86							6331982
C13-1234678 HeptaCDF **	%	70							6331982
C13-123478 HexaCDD *	%	85							6331982
C13-123478 HexaCDF **	%	76							6331982
C13-1234789 HeptaCDF **	%	75							6331982
C13-123678 HexaCDD *	%	104							6331982
C13-123678 HexaCDF **	%	76							6331982
C13-12378 PentaCDD *	%	62							6331982
C13-12378 PentaCDF **	%	55							6331982
C13-123789 HexaCDF **	%	79							6331982
C13-234678 HexaCDF **	%	70							6331982
C13-23478 PentaCDF **	%	61							6331982
C13-2378 TetraCDD *	%	75							6331982
C13-2378 TetraCDF **	%	72							6331982
C13-OCDD *	%	67							6331982
EDL = Estimated Detection Limit RDL = Reportable Detection Limit TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient, The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested. WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds QC Batch = Quality Control Batch * CDD = Chloro Dibenzo-p-Dioxin ** CDF = Chloro Dibenzo-p-Furan									



BUREAU  
VERITAS

BV Labs Job #: B9N2252  
Report Date: 2019/09/23

EcoMetrix Incorporated  
Client Project #: 19-2587  
Site Location: NPNS  
Sampler Initials: JT

### DIOXINS AND FURANS BY HRMS (TISSUE)

BV Labs ID		KOP284							
Sampling Date		2019/06/13							
COC Number		102089				TOXIC EQUIVALENCY		# of	
	UNITS	L4-M	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
<b>Dioxins &amp; Furans</b>									
2,3,7,8-Tetra CDD *	pg/g	<0.137	0.137	0.995	N/A	1.00	0.137		6331982
1,2,3,7,8-Penta CDD *	pg/g	<0.131	0.131	4.97	N/A	1.00	0.131		6331982
1,2,3,4,7,8-Hexa CDD *	pg/g	<0.106	0.106	4.97	N/A	0.100	0.0106		6331982
1,2,3,6,7,8-Hexa CDD *	pg/g	<0.109	0.109	4.97	N/A	0.100	0.0109		6331982
1,2,3,7,8,9-Hexa CDD *	pg/g	<0.113	0.113	4.97	N/A	0.100	0.0113		6331982
1,2,3,4,6,7,8-Hepta CDD *	pg/g	<0.161	0.161	4.97	N/A	0.0100	0.00161		6331982
Octa CDD *	pg/g	<0.396 (1)	0.396	9.95	N/A	0.000300	0.000119		6331982
Total Tetra CDD *	pg/g	<0.137	0.137	0.995	N/A			0	6331982
Total Penta CDD *	pg/g	<0.131	0.131	4.97	N/A			0	6331982
Total Hexa CDD *	pg/g	<0.243 (2)	0.243	4.97	N/A			0	6331982
Total Hepta CDD *	pg/g	<0.161	0.161	4.97	N/A			0	6331982
2,3,7,8-Tetra CDF **	pg/g	<0.112	0.112	0.995	N/A	0.100	0.0112		6331982
1,2,3,7,8-Penta CDF **	pg/g	<0.129	0.129	4.97	N/A	0.0300	0.00387		6331982
2,3,4,7,8-Penta CDF **	pg/g	<0.121	0.121	4.97	N/A	0.300	0.0363		6331982
1,2,3,4,7,8-Hexa CDF **	pg/g	<0.112	0.112	4.97	N/A	0.100	0.0112		6331982
1,2,3,6,7,8-Hexa CDF **	pg/g	<0.115	0.115	4.97	N/A	0.100	0.0115		6331982
2,3,4,6,7,8-Hexa CDF **	pg/g	<0.106	0.106	4.97	N/A	0.100	0.0106		6331982
1,2,3,7,8,9-Hexa CDF **	pg/g	<0.115	0.115	4.97	N/A	0.100	0.0115		6331982
1,2,3,4,6,7,8-Hepta CDF **	pg/g	<0.136	0.136	4.97	N/A	0.0100	0.00136		6331982
1,2,3,4,7,8,9-Hepta CDF **	pg/g	<0.135	0.135	4.97	N/A	0.0100	0.00135		6331982
<p>EDL = Estimated Detection Limit  RDL = Reportable Detection Limit  TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,  The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.  WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds  QC Batch = Quality Control Batch  * CDD = Chloro Dibenzo-p-Dioxin  N/A = Not Applicable  ** CDF = Chloro Dibenzo-p-Furan  (1) EMPC / NDR - Peak detected does not meet ratio criteria and has resulted in an elevated detection limit.  RT&gt;2 seconds - PCDD/DF analysis-Peak maxima of monitored ions exceeds 2 seconds  RT &gt; 3 seconds - PCDD/DF analysis - Peak detected exceeds expected retention time (from internal standard) by greater than 3 seconds.  (2) EMPC / NDR - Peak detected does not meet ratio criteria and has resulted in an elevated detection limit.</p>									



BUREAU  
VERITAS

BV Labs Job #: B9N2252  
Report Date: 2019/09/23

EcoMetrix Incorporated  
Client Project #: 19-2587  
Site Location: NPNS  
Sampler Initials: JT

### DIOXINS AND FURANS BY HRMS (TISSUE)

BV Labs ID		KOP284							
Sampling Date		2019/06/13							
COC Number		102089				TOXIC EQUIVALENCY		# of	
	UNITS	L4-M	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
Octa CDF **	pg/g	<0.169	0.169	9.95	N/A	0.000300	0.0000507		6331982
Total Tetra CDF **	pg/g	<0.112	0.112	0.995	N/A			0	6331982
Total Penta CDF **	pg/g	<0.235 (1)	0.235	4.97	N/A			0	6331982
Total Hexa CDF **	pg/g	0.234	0.112	4.97	N/A			1	6331982
Total Hepta CDF **	pg/g	<0.136	0.136	4.97	N/A			0	6331982
TOTAL TOXIC EQUIVALENCY	pg/g						0.401		
<b>Surrogate Recovery (%)</b>									
37CL4 2378 Tetra CDD *	%	86							6331982
C13-1234678 HeptaCDD *	%	84							6331982
C13-1234678 HeptaCDF **	%	65							6331982
C13-123478 HexaCDD *	%	81							6331982
C13-123478 HexaCDF **	%	72							6331982
C13-1234789 HeptaCDF **	%	68							6331982
C13-123678 HexaCDD *	%	99							6331982
C13-123678 HexaCDF **	%	72							6331982
C13-12378 PentaCDD *	%	62							6331982
C13-12378 PentaCDF **	%	53							6331982
C13-123789 HexaCDF **	%	75							6331982
C13-234678 HexaCDF **	%	67							6331982
C13-23478 PentaCDF **	%	59							6331982
C13-2378 TetraCDD *	%	74							6331982
C13-2378 TetraCDF **	%	70							6331982
C13-OCDD *	%	64							6331982

EDL = Estimated Detection Limit  
RDL = Reportable Detection Limit  
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,  
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.  
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds  
QC Batch = Quality Control Batch  
\*\* CDF = Chloro Dibenzo-p-Furan  
N/A = Not Applicable  
\* CDD = Chloro Dibenzo-p-Dioxin  
(1) RT>2 seconds - PCDD/DF analysis-Peak maxima of monitored ions exceeds 2 seconds



BUREAU VERITAS

BV Labs Job #: B9N2252  
Report Date: 2019/09/23

EcoMetrix Incorporated  
Client Project #: 19-2587  
Site Location: NPNS  
Sampler Initials: JT

**DIOXINS AND FURANS BY HRMS (TISSUE)**

BV Labs ID		KOP285							
Sampling Date		2019/06/13							
COC Number		102089				TOXIC EQUIVALENCY		# of	
	UNITS	L5-M	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
<b>Dioxins &amp; Furans</b>									
2,3,7,8-Tetra CDD *	pg/g	<0.117	0.117	0.992	N/A	1.00	0.117		6331982
1,2,3,7,8-Penta CDD *	pg/g	<0.127	0.127	4.96	N/A	1.00	0.127		6331982
1,2,3,4,7,8-Hexa CDD *	pg/g	<0.115	0.115	4.96	N/A	0.100	0.0115		6331982
1,2,3,6,7,8-Hexa CDD *	pg/g	<0.119	0.119	4.96	N/A	0.100	0.0119		6331982
1,2,3,7,8,9-Hexa CDD *	pg/g	<0.122	0.122	4.96	N/A	0.100	0.0122		6331982
1,2,3,4,6,7,8-Hepta CDD *	pg/g	0.277	0.159	4.96	N/A	0.0100	0.00277		6331982
Octa CDD *	pg/g	0.915	0.189	9.92	N/A	0.000300	0.000275		6331982
Total Tetra CDD *	pg/g	<0.117	0.117	0.992	N/A			0	6331982
Total Penta CDD *	pg/g	<0.127	0.127	4.96	N/A			0	6331982
Total Hexa CDD *	pg/g	0.523	0.120	4.96	N/A			1	6331982
Total Hepta CDD *	pg/g	0.604	0.159	4.96	N/A			2	6331982
2,3,7,8-Tetra CDF **	pg/g	<0.122	0.122	0.992	N/A	0.100	0.0122		6331982
1,2,3,7,8-Penta CDF **	pg/g	<0.156	0.156	4.96	N/A	0.0300	0.00468		6331982
2,3,4,7,8-Penta CDF **	pg/g	<0.146	0.146	4.96	N/A	0.300	0.0438		6331982
1,2,3,4,7,8-Hexa CDF **	pg/g	<0.109	0.109	4.96	N/A	0.100	0.0109		6331982
1,2,3,6,7,8-Hexa CDF **	pg/g	<0.113	0.113	4.96	N/A	0.100	0.0113		6331982
2,3,4,6,7,8-Hexa CDF **	pg/g	<0.104	0.104	4.96	N/A	0.100	0.0104		6331982
1,2,3,7,8,9-Hexa CDF **	pg/g	<0.112	0.112	4.96	N/A	0.100	0.0112		6331982
1,2,3,4,6,7,8-Hepta CDF **	pg/g	<0.142	0.142	4.96	N/A	0.0100	0.00142		6331982
1,2,3,4,7,8,9-Hepta CDF **	pg/g	<0.141	0.141	4.96	N/A	0.0100	0.00141		6331982
Octa CDF **	pg/g	0.663	0.166	9.92	N/A	0.000300	0.000199		6331982
Total Tetra CDF **	pg/g	<0.122	0.122	0.992	N/A			0	6331982
Total Penta CDF **	pg/g	<0.151	0.151	4.96	N/A			0	6331982
Total Hexa CDF **	pg/g	0.416	0.109	4.96	N/A			1	6331982
Total Hepta CDF **	pg/g	0.589	0.141	4.96	N/A			1	6331982
TOTAL TOXIC EQUIVALENCY	pg/g						0.390		

EDL = Estimated Detection Limit  
RDL = Reportable Detection Limit  
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,  
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.  
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds  
QC Batch = Quality Control Batch  
\* CDD = Chloro Dibenzo-p-Dioxin  
N/A = Not Applicable  
\*\* CDF = Chloro Dibenzo-p-Furan



BUREAU  
VERITAS

BV Labs Job #: B9N2252  
Report Date: 2019/09/23

EcoMetrix Incorporated  
Client Project #: 19-2587  
Site Location: NPNS  
Sampler Initials: JT

### DIOXINS AND FURANS BY HRMS (TISSUE)

BV Labs ID		KOP285							
Sampling Date		2019/06/13							
COC Number		102089				TOXIC EQUIVALENCY		# of	
	UNITS	L5-M	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
<b>Surrogate Recovery (%)</b>									
37CL4 2378 Tetra CDD *	%	84							6331982
C13-1234678 HeptaCDD *	%	77							6331982
C13-1234678 HeptaCDF **	%	67							6331982
C13-123478 HexaCDD *	%	78							6331982
C13-123478 HexaCDF **	%	70							6331982
C13-1234789 HeptaCDF **	%	68							6331982
C13-123678 HexaCDD *	%	98							6331982
C13-123678 HexaCDF **	%	74							6331982
C13-12378 PentaCDD *	%	61							6331982
C13-12378 PentaCDF **	%	50							6331982
C13-123789 HexaCDF **	%	74							6331982
C13-234678 HexaCDF **	%	65							6331982
C13-23478 PentaCDF **	%	59							6331982
C13-2378 TetraCDD *	%	73							6331982
C13-2378 TetraCDF **	%	67							6331982
C13-OCDD *	%	61							6331982
EDL = Estimated Detection Limit RDL = Reportable Detection Limit TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient, The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested. WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds QC Batch = Quality Control Batch * CDD = Chloro Dibenzo-p-Dioxin ** CDF = Chloro Dibenzo-p-Furan									



BUREAU  
VERITAS

BV Labs Job #: B9N2252  
Report Date: 2019/09/23

EcoMetrix Incorporated  
Client Project #: 19-2587  
Site Location: NPNS  
Sampler Initials: JT

### DIOXINS AND FURANS BY HRMS (TISSUE)

BV Labs ID		KOP286							
Sampling Date		2019/06/13							
COC Number		102089				TOXIC EQUIVALENCY		# of	
	UNITS	L1-H	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
<b>Dioxins &amp; Furans</b>									
2,3,7,8-Tetra CDD *	pg/g	0.171	0.149	0.999	N/A	1.00	0.171		6331982
1,2,3,7,8-Penta CDD *	pg/g	<0.593 (1)	0.593	5.00	N/A	1.00	0.593		6331982
1,2,3,4,7,8-Hexa CDD *	pg/g	<0.116	0.116	5.00	N/A	0.100	0.0116		6331982
1,2,3,6,7,8-Hexa CDD *	pg/g	0.459	0.119	5.00	N/A	0.100	0.0459		6331982
1,2,3,7,8,9-Hexa CDD *	pg/g	0.257	0.123	5.00	N/A	0.100	0.0257		6331982
1,2,3,4,6,7,8-Hepta CDD *	pg/g	0.652	0.138	5.00	N/A	0.0100	0.00652		6331982
Octa CDD *	pg/g	<1.25 (2)	1.25	9.99	N/A	0.000300	0.000375		6331982
Total Tetra CDD *	pg/g	2.40	0.149	0.999	N/A			4	6331982
Total Penta CDD *	pg/g	0.606	0.142	5.00	N/A			2	6331982
Total Hexa CDD *	pg/g	3.50	0.121	5.00	N/A			5	6331982
Total Hepta CDD *	pg/g	1.52	0.138	5.00	N/A			2	6331982
2,3,7,8-Tetra CDF **	pg/g	4.07	0.137	0.999	N/A	0.100	0.407		6331982
1,2,3,7,8-Penta CDF **	pg/g	0.491	0.130	5.00	N/A	0.0300	0.0147		6331982
2,3,4,7,8-Penta CDF **	pg/g	1.12	0.122	5.00	N/A	0.300	0.336		6331982
1,2,3,4,7,8-Hexa CDF **	pg/g	<0.121	0.121	5.00	N/A	0.100	0.0121		6331982
1,2,3,6,7,8-Hexa CDF **	pg/g	<0.124	0.124	5.00	N/A	0.100	0.0124		6331982
2,3,4,6,7,8-Hexa CDF **	pg/g	0.270	0.115	5.00	N/A	0.100	0.0270		6331982
1,2,3,7,8,9-Hexa CDF **	pg/g	<0.124	0.124	5.00	N/A	0.100	0.0124		6331982
1,2,3,4,6,7,8-Hepta CDF **	pg/g	0.202	0.129	5.00	N/A	0.0100	0.00202		6331982
1,2,3,4,7,8,9-Hepta CDF **	pg/g	<0.128	0.128	5.00	N/A	0.0100	0.00128		6331982
Octa CDF **	pg/g	1.33	0.204	9.99	N/A	0.000300	0.000399		6331982
Total Tetra CDF **	pg/g	16.2	0.137	0.999	N/A			13	6331982
Total Penta CDF **	pg/g	10.5	0.126	5.00	N/A			8	6331982
Total Hexa CDF **	pg/g	1.18	0.121	5.00	N/A			2	6331982
Total Hepta CDF **	pg/g	1.27	0.129	5.00	N/A			2	6331982
EDL = Estimated Detection Limit RDL = Reportable Detection Limit TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient, The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested. WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds QC Batch = Quality Control Batch * CDD = Chloro Dibenzo-p-Dioxin N/A = Not Applicable ** CDF = Chloro Dibenzo-p-Furan (1) EMPC / NDR - Peak detected does not meet ratio criteria and has resulted in an elevated detection limit. (2) RT>2 seconds - PCDD/DF analysis-Peak maxima of monitored ions exceeds 2 seconds									



BUREAU  
VERITAS

BV Labs Job #: B9N2252  
Report Date: 2019/09/23

EcoMetrix Incorporated  
Client Project #: 19-2587  
Site Location: NPNS  
Sampler Initials: JT

### DIOXINS AND FURANS BY HRMS (TISSUE)

BV Labs ID		KOP286							
Sampling Date		2019/06/13							
COC Number		102089				TOXIC EQUIVALENCY		# of	
	UNITS	L1-H	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
<b>TCDF Confirmation</b>									
Confirmation 2,3,7,8-Tetra CDF **	pg/g	4.23	0.065	1.0	0.090	0.100	0.423		6347840
TOTAL TOXIC EQUIVALENCY	pg/g						1.70		
<b>Surrogate Recovery (%)</b>									
Confirmation C13-2378 TetraCDF **	%	67							6347840
37CL4 2378 Tetra CDD *	%	94							6331982
C13-1234678 HeptaCDD *	%	71							6331982
C13-1234678 HeptaCDF **	%	59							6331982
C13-123478 HexaCDD *	%	71							6331982
C13-123478 HexaCDF **	%	65							6331982
C13-1234789 HeptaCDF **	%	58							6331982
C13-123678 HexaCDD *	%	87							6331982
C13-123678 HexaCDF **	%	68							6331982
C13-12378 PentaCDD *	%	57							6331982
C13-12378 PentaCDF **	%	48							6331982
C13-123789 HexaCDF **	%	66							6331982
C13-234678 HexaCDF **	%	59							6331982
C13-23478 PentaCDF **	%	55							6331982
C13-2378 TetraCDD *	%	66							6331982
C13-2378 TetraCDF **	%	62							6331982
C13-OCDD *	%	56							6331982
<p>EDL = Estimated Detection Limit  RDL = Reportable Detection Limit  TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,  The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.  WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds  QC Batch = Quality Control Batch  ** CDF = Chloro Dibenzo-p-Furan  * CDD = Chloro Dibenzo-p-Dioxin</p>									





BUREAU  
VERITAS

BV Labs Job #: B9N2252  
Report Date: 2019/09/23

EcoMetrix Incorporated  
Client Project #: 19-2587  
Site Location: NPNS  
Sampler Initials: JT

### DIOXINS AND FURANS BY HRMS (TISSUE)

BV Labs ID		KOP287							
Sampling Date		2019/06/13							
COC Number		102089				TOXIC EQUIVALENCY		# of	
	UNITS	L2-H	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
<b>Dioxins &amp; Furans</b>									
2,3,7,8-Tetra CDD *	pg/g	0.234	0.151	0.998	N/A	1.00	0.234		6331982
1,2,3,7,8-Penta CDD *	pg/g	0.517	0.181	4.99	N/A	1.00	0.517		6331982
1,2,3,4,7,8-Hexa CDD *	pg/g	0.188	0.146	4.99	N/A	0.100	0.0188		6331982
1,2,3,6,7,8-Hexa CDD *	pg/g	0.633	0.150	4.99	N/A	0.100	0.0633		6331982
1,2,3,7,8,9-Hexa CDD *	pg/g	<0.272 (1)	0.272	4.99	N/A	0.100	0.0272		6331982
1,2,3,4,6,7,8-Hepta CDD *	pg/g	1.32	0.149	4.99	N/A	0.0100	0.0132		6331982
Octa CDD *	pg/g	<2.07 (2)	2.07	9.98	N/A	0.000300	0.000621		6331982
Total Tetra CDD *	pg/g	1.37	0.151	0.998	N/A			3	6331982
Total Penta CDD *	pg/g	0.834	0.181	4.99	N/A			2	6331982
Total Hexa CDD *	pg/g	3.05	0.153	4.99	N/A			4	6331982
Total Hepta CDD *	pg/g	2.62	0.149	4.99	N/A			2	6331982
2,3,7,8-Tetra CDF **	pg/g	4.60	0.144	0.998	N/A	0.100	0.460		6331982
1,2,3,7,8-Penta CDF **	pg/g	0.469	0.149	4.99	N/A	0.0300	0.0141		6331982
2,3,4,7,8-Penta CDF **	pg/g	1.03	0.139	4.99	N/A	0.300	0.309		6331982
1,2,3,4,7,8-Hexa CDF **	pg/g	<0.140	0.140	4.99	N/A	0.100	0.0140		6331982
1,2,3,6,7,8-Hexa CDF **	pg/g	<0.144	0.144	4.99	N/A	0.100	0.0144		6331982
2,3,4,6,7,8-Hexa CDF **	pg/g	<0.273 (1)	0.273	4.99	N/A	0.100	0.0273		6331982
1,2,3,7,8,9-Hexa CDF **	pg/g	<0.144	0.144	4.99	N/A	0.100	0.0144		6331982
1,2,3,4,6,7,8-Hepta CDF **	pg/g	0.354	0.181	4.99	N/A	0.0100	0.00354		6331982
1,2,3,4,7,8,9-Hepta CDF **	pg/g	<0.180	0.180	4.99	N/A	0.0100	0.00180		6331982
Octa CDF **	pg/g	1.82	0.198	9.98	N/A	0.000300	0.000546		6331982
Total Tetra CDF **	pg/g	12.7	0.144	0.998	N/A			13	6331982

EDL = Estimated Detection Limit

RDL = Reportable Detection Limit

TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,

The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.

WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds

QC Batch = Quality Control Batch

\* CDD = Chloro Dibenzo-p-Dioxin

N/A = Not Applicable

\*\* CDF = Chloro Dibenzo-p-Furan

(1) EMPC / NDR - Peak detected does not meet ratio criteria and has resulted in an elevated detection limit.

(2) RT>2 seconds - PCDD/DF analysis-Peak maxima of monitored ions exceeds 2 seconds

RT > 3 seconds - PCDD/DF analysis - Peak detected exceeds expected retention time (from internal standard) by greater than 3 seconds.



BUREAU  
VERITAS

BV Labs Job #: B9N2252  
Report Date: 2019/09/23

EcoMetrix Incorporated  
Client Project #: 19-2587  
Site Location: NPNS  
Sampler Initials: JT

### DIOXINS AND FURANS BY HRMS (TISSUE)

BV Labs ID		KOP287							
Sampling Date		2019/06/13							
COC Number		102089				<b>TOXIC EQUIVALENCY</b>		# of	
	<b>UNITS</b>	<b>L2-H</b>	<b>EDL</b>	<b>RDL</b>	<b>MDL</b>	<b>TEF (2005 WHO)</b>	<b>TEQ(DL)</b>	<b>Isomers</b>	<b>QC Batch</b>
Total Penta CDF **	pg/g	6.25	0.144	4.99	N/A			7	6331982
Total Hexa CDF **	pg/g	1.14	0.140	4.99	N/A			2	6331982
Total Hepta CDF **	pg/g	1.93	0.180	4.99	N/A			2	6331982
<b>TCDF Confirmation</b>									
Confirmation 2,3,7,8-Tetra CDF **	pg/g	4.86	0.058	1.0	0.090	0.100	0.486		6347840
TOTAL TOXIC EQUIVALENCY	pg/g						1.76		
<b>Surrogate Recovery (%)</b>									
Confirmation C13-2378 TetraCDF **	%	73							6347840
37CL4 2378 Tetra CDD *	%	87							6331982
C13-1234678 HeptaCDD *	%	81							6331982
C13-1234678 HeptaCDF **	%	67							6331982
C13-123478 HexaCDD *	%	79							6331982
C13-123478 HexaCDF **	%	73							6331982
C13-1234789 HeptaCDF **	%	69							6331982
C13-123678 HexaCDD *	%	97							6331982
C13-123678 HexaCDF **	%	75							6331982
C13-12378 PentaCDD *	%	64							6331982
C13-12378 PentaCDF **	%	53							6331982
C13-123789 HexaCDF **	%	74							6331982
C13-234678 HexaCDF **	%	67							6331982
C13-23478 PentaCDF **	%	63							6331982
C13-2378 TetraCDD *	%	75							6331982
C13-2378 TetraCDF **	%	67							6331982
C13-OCDD *	%	62							6331982

EDL = Estimated Detection Limit

RDL = Reportable Detection Limit

TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,

The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.

WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds

QC Batch = Quality Control Batch

\*\* CDF = Chloro Dibenzo-p-Furan

N/A = Not Applicable

\* CDD = Chloro Dibenzo-p-Dioxin



BUREAU  
VERITAS

BV Labs Job #: B9N2252  
Report Date: 2019/09/23

EcoMetrix Incorporated  
Client Project #: 19-2587  
Site Location: NPNS  
Sampler Initials: JT

### DIOXINS AND FURANS BY HRMS (TISSUE)

BV Labs ID		KOP288							
Sampling Date		2019/06/13							
COC Number		102089				TOXIC EQUIVALENCY		# of	
	UNITS	L3-H	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
<b>Dioxins &amp; Furans</b>									
2,3,7,8-Tetra CDD *	pg/g	<0.163	0.163	0.993	N/A	1.00	0.163		6331982
1,2,3,7,8-Penta CDD *	pg/g	0.522	0.165	4.96	N/A	1.00	0.522		6331982
1,2,3,4,7,8-Hexa CDD *	pg/g	<0.178	0.178	4.96	N/A	0.100	0.0178		6331982
1,2,3,6,7,8-Hexa CDD *	pg/g	<0.569 (1)	0.569	4.96	N/A	0.100	0.0569		6331982
1,2,3,7,8,9-Hexa CDD *	pg/g	<0.190	0.190	4.96	N/A	0.100	0.0190		6331982
1,2,3,4,6,7,8-Hepta CDD *	pg/g	0.863	0.131	4.96	N/A	0.0100	0.00863		6331982
Octa CDD *	pg/g	<1.37 (2)	1.37	9.93	N/A	0.000300	0.000411		6331982
Total Tetra CDD *	pg/g	1.36	0.163	0.993	N/A			2	6331982
Total Penta CDD *	pg/g	0.917	0.165	4.96	N/A			2	6331982
Total Hexa CDD *	pg/g	2.94	0.186	4.96	N/A			2	6331982
Total Hepta CDD *	pg/g	0.863	0.131	4.96	N/A			1	6331982
2,3,7,8-Tetra CDF **	pg/g	5.21	0.165	0.993	N/A	0.100	0.521		6331982
1,2,3,7,8-Penta CDF **	pg/g	<0.616 (3)	0.616	4.96	N/A	0.0300	0.0185		6331982
2,3,4,7,8-Penta CDF **	pg/g	1.56	0.157	4.96	N/A	0.300	0.468		6331982
1,2,3,4,7,8-Hexa CDF **	pg/g	<0.161	0.161	4.96	N/A	0.100	0.0161		6331982
1,2,3,6,7,8-Hexa CDF **	pg/g	<0.165	0.165	4.96	N/A	0.100	0.0165		6331982
2,3,4,6,7,8-Hexa CDF **	pg/g	<0.339 (1)	0.339	4.96	N/A	0.100	0.0339		6331982
1,2,3,7,8,9-Hexa CDF **	pg/g	<0.165	0.165	4.96	N/A	0.100	0.0165		6331982
1,2,3,4,6,7,8-Hepta CDF **	pg/g	0.185	0.149	4.96	N/A	0.0100	0.00185		6331982
1,2,3,4,7,8,9-Hepta CDF **	pg/g	<0.149	0.149	4.96	N/A	0.0100	0.00149		6331982
Octa CDF **	pg/g	0.782	0.130	9.93	N/A	0.000300	0.000235		6331982
Total Tetra CDF **	pg/g	14.0	0.165	0.993	N/A			9	6331982

EDL = Estimated Detection Limit

RDL = Reportable Detection Limit

TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,

The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.

WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds

QC Batch = Quality Control Batch

\* CDD = Chloro Dibenzo-p-Dioxin

N/A = Not Applicable

\*\* CDF = Chloro Dibenzo-p-Furan

(1) EMPC / NDR - Peak detected does not meet ratio criteria and has resulted in an elevated detection limit.

(2) RT>2 seconds - PCDD/DF analysis-Peak maxima of monitored ions exceeds 2 seconds

(3) RT>2 seconds - PCDD/DF analysis-Peak maxima of monitored ions exceeds 2 seconds

RT > 3 seconds - PCDD/DF analysis - Peak detected exceeds expected retention time (from internal standard) by greater than 3 seconds.



BUREAU  
VERITAS

BV Labs Job #: B9N2252  
Report Date: 2019/09/23

EcoMetrix Incorporated  
Client Project #: 19-2587  
Site Location: NPNS  
Sampler Initials: JT

### DIOXINS AND FURANS BY HRMS (TISSUE)

BV Labs ID		KOP288							
Sampling Date		2019/06/13							
COC Number		102089				<b>TOXIC EQUIVALENCY</b>		# of	
	<b>UNITS</b>	<b>L3-H</b>	<b>EDL</b>	<b>RDL</b>	<b>MDL</b>	<b>TEF (2005 WHO)</b>	<b>TEQ(DL)</b>	<b>Isomers</b>	<b>QC Batch</b>
Total Penta CDF **	pg/g	8.99	0.163	4.96	N/A			5	6331982
Total Hexa CDF **	pg/g	0.966	0.161	4.96	N/A			1	6331982
Total Hepta CDF **	pg/g	0.770	0.149	4.96	N/A			2	6331982
<b>TCDF Confirmation</b>									
Confirmation 2,3,7,8-Tetra CDF **	pg/g	5.84	0.087	0.99	0.090	0.100	0.584		6347840
TOTAL TOXIC EQUIVALENCY	pg/g						1.94		
<b>Surrogate Recovery (%)</b>									
Confirmation C13-2378 TetraCDF **	%	77							6347840
37CL4 2378 Tetra CDD *	%	96							6331982
C13-1234678 HeptaCDD *	%	82							6331982
C13-1234678 HeptaCDF **	%	66							6331982
C13-123478 HexaCDD *	%	80							6331982
C13-123478 HexaCDF **	%	74							6331982
C13-1234789 HeptaCDF **	%	68							6331982
C13-123678 HexaCDD *	%	103							6331982
C13-123678 HexaCDF **	%	80							6331982
C13-12378 PentaCDD *	%	65							6331982
C13-12378 PentaCDF **	%	55							6331982
C13-123789 HexaCDF **	%	74							6331982
C13-234678 HexaCDF **	%	70							6331982
C13-23478 PentaCDF **	%	61							6331982
C13-2378 TetraCDD *	%	77							6331982
C13-2378 TetraCDF **	%	70							6331982
C13-OCDD *	%	62							6331982

EDL = Estimated Detection Limit  
RDL = Reportable Detection Limit  
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,  
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.  
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds  
QC Batch = Quality Control Batch  
\*\* CDF = Chloro Dibenzo-p-Furan  
N/A = Not Applicable  
\* CDD = Chloro Dibenzo-p-Dioxin



BUREAU  
VERITAS

BV Labs Job #: B9N2252  
Report Date: 2019/09/23

EcoMetrix Incorporated  
Client Project #: 19-2587  
Site Location: NPNS  
Sampler Initials: JT

### DIOXINS AND FURANS BY HRMS (TISSUE)

BV Labs ID		KOP289							
Sampling Date		2019/06/13							
COC Number		102089				TOXIC EQUIVALENCY		# of	
	UNITS	L4-H	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
<b>Dioxins &amp; Furans</b>									
2,3,7,8-Tetra CDD *	pg/g	0.152	0.132	0.996	N/A	1.00	0.152		6331982
1,2,3,7,8-Penta CDD *	pg/g	0.468	0.158	4.98	N/A	1.00	0.468		6331982
1,2,3,4,7,8-Hexa CDD *	pg/g	<0.206 (1)	0.206	4.98	N/A	0.100	0.0206		6331982
1,2,3,6,7,8-Hexa CDD *	pg/g	0.516	0.121	4.98	N/A	0.100	0.0516		6331982
1,2,3,7,8,9-Hexa CDD *	pg/g	<0.186 (1)	0.186	4.98	N/A	0.100	0.0186		6331982
1,2,3,4,6,7,8-Hepta CDD *	pg/g	1.22	0.130	4.98	N/A	0.0100	0.0122		6331982
Octa CDD *	pg/g	2.19	0.216	9.96	N/A	0.000300	0.000657		6331982
Total Tetra CDD *	pg/g	3.33	0.132	0.996	N/A			5	6331982
Total Penta CDD *	pg/g	1.56	0.158	4.98	N/A			4	6331982
Total Hexa CDD *	pg/g	4.55	0.122	4.98	N/A			4	6331982
Total Hepta CDD *	pg/g	2.81	0.130	4.98	N/A			2	6331982
2,3,7,8-Tetra CDF **	pg/g	4.24	0.141	0.996	N/A	0.100	0.424		6331982
1,2,3,7,8-Penta CDF **	pg/g	0.366	0.157	4.98	N/A	0.0300	0.0110		6331982
2,3,4,7,8-Penta CDF **	pg/g	0.966	0.147	4.98	N/A	0.300	0.290		6331982
1,2,3,4,7,8-Hexa CDF **	pg/g	<0.123	0.123	4.98	N/A	0.100	0.0123		6331982
1,2,3,6,7,8-Hexa CDF **	pg/g	<0.127	0.127	4.98	N/A	0.100	0.0127		6331982
2,3,4,6,7,8-Hexa CDF **	pg/g	0.310	0.117	4.98	N/A	0.100	0.0310		6331982
1,2,3,7,8,9-Hexa CDF **	pg/g	<0.127	0.127	4.98	N/A	0.100	0.0127		6331982
1,2,3,4,6,7,8-Hepta CDF **	pg/g	0.197	0.132	4.98	N/A	0.0100	0.00197		6331982
1,2,3,4,7,8,9-Hepta CDF **	pg/g	<0.131	0.131	4.98	N/A	0.0100	0.00131		6331982
Octa CDF **	pg/g	1.06	0.181	9.96	N/A	0.000300	0.000318		6331982
Total Tetra CDF **	pg/g	19.3	0.141	0.996	N/A			14	6331982
Total Penta CDF **	pg/g	7.85	0.152	4.98	N/A			5	6331982
Total Hexa CDF **	pg/g	1.28	0.124	4.98	N/A			2	6331982
Total Hepta CDF **	pg/g	1.06	0.131	4.98	N/A			2	6331982
EDL = Estimated Detection Limit RDL = Reportable Detection Limit TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient, The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested. WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds QC Batch = Quality Control Batch * CDD = Chloro Dibenzo-p-Dioxin N/A = Not Applicable ** CDF = Chloro Dibenzo-p-Furan (1) EMPC / NDR - Peak detected does not meet ratio criteria and has resulted in an elevated detection limit.									



BUREAU  
VERITAS

BV Labs Job #: B9N2252  
Report Date: 2019/09/23

EcoMetrix Incorporated  
Client Project #: 19-2587  
Site Location: NPNS  
Sampler Initials: JT

### DIOXINS AND FURANS BY HRMS (TISSUE)

BV Labs ID		KOP289							
Sampling Date		2019/06/13							
COC Number		102089				TOXIC EQUIVALENCY		# of	
	UNITS	L4-H	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
<b>TCDF Confirmation</b>									
Confirmation 2,3,7,8-Tetra CDF **	pg/g	4.37	0.060	1.0	0.090	0.100	0.437		6347840
TOTAL TOXIC EQUIVALENCY	pg/g						1.53		
<b>Surrogate Recovery (%)</b>									
Confirmation C13-2378 TetraCDF **	%	76							6347840
37CL4 2378 Tetra CDD *	%	96							6331982
C13-1234678 HeptaCDD *	%	76							6331982
C13-1234678 HeptaCDF **	%	61							6331982
C13-123478 HexaCDD *	%	76							6331982
C13-123478 HexaCDF **	%	69							6331982
C13-1234789 HeptaCDF **	%	62							6331982
C13-123678 HexaCDD *	%	90							6331982
C13-123678 HexaCDF **	%	68							6331982
C13-12378 PentaCDD *	%	63							6331982
C13-12378 PentaCDF **	%	50							6331982
C13-123789 HexaCDF **	%	70							6331982
C13-234678 HexaCDF **	%	62							6331982
C13-23478 PentaCDF **	%	61							6331982
C13-2378 TetraCDD *	%	74							6331982
C13-2378 TetraCDF **	%	69							6331982
C13-OCDD *	%	56							6331982
<p>EDL = Estimated Detection Limit  RDL = Reportable Detection Limit  TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,  The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.  WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds  QC Batch = Quality Control Batch  ** CDF = Chloro Dibenzo-p-Furan  * CDD = Chloro Dibenzo-p-Dioxin</p>									



BUREAU  
VERITAS

BV Labs Job #: B9N2252  
Report Date: 2019/09/23

EcoMetrix Incorporated  
Client Project #: 19-2587  
Site Location: NPNS  
Sampler Initials: JT

### DIOXINS AND FURANS BY HRMS (TISSUE)

BV Labs ID		KOP290							
Sampling Date		2019/06/13							
COC Number		102089				TOXIC EQUIVALENCY		# of	
	UNITS	L5-H	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
<b>Dioxins &amp; Furans</b>									
2,3,7,8-Tetra CDD *	pg/g	<0.188	0.188	0.994	N/A	1.00	0.188		6331982
1,2,3,7,8-Penta CDD *	pg/g	0.504	0.198	4.97	N/A	1.00	0.504		6331982
1,2,3,4,7,8-Hexa CDD *	pg/g	<0.228 (1)	0.228	4.97	N/A	0.100	0.0228		6331982
1,2,3,6,7,8-Hexa CDD *	pg/g	<0.662 (1)	0.662	4.97	N/A	0.100	0.0662		6331982
1,2,3,7,8,9-Hexa CDD *	pg/g	<0.143	0.143	4.97	N/A	0.100	0.0143		6331982
1,2,3,4,6,7,8-Hepta CDD *	pg/g	0.727	0.185	4.97	N/A	0.0100	0.00727		6331982
Octa CDD *	pg/g	<0.883 (2)	0.883	9.94	N/A	0.000300	0.000265		6331982
Total Tetra CDD *	pg/g	1.62	0.188	0.994	N/A			2	6331982
Total Penta CDD *	pg/g	0.504	0.198	4.97	N/A			1	6331982
Total Hexa CDD *	pg/g	4.63	0.141	4.97	N/A			3	6331982
Total Hepta CDD *	pg/g	2.29	0.185	4.97	N/A			2	6331982
2,3,7,8-Tetra CDF **	pg/g	5.53	0.152	0.994	N/A	0.100	0.553		6331982
1,2,3,7,8-Penta CDF **	pg/g	0.509	0.182	4.97	N/A	0.0300	0.0153		6331982
2,3,4,7,8-Penta CDF **	pg/g	1.38	0.170	4.97	N/A	0.300	0.414		6331982
1,2,3,4,7,8-Hexa CDF **	pg/g	<0.185	0.185	4.97	N/A	0.100	0.0185		6331982
1,2,3,6,7,8-Hexa CDF **	pg/g	<0.190	0.190	4.97	N/A	0.100	0.0190		6331982
2,3,4,6,7,8-Hexa CDF **	pg/g	<0.368 (1)	0.368	4.97	N/A	0.100	0.0368		6331982
1,2,3,7,8,9-Hexa CDF **	pg/g	<0.190	0.190	4.97	N/A	0.100	0.0190		6331982
1,2,3,4,6,7,8-Hepta CDF **	pg/g	<0.173	0.173	4.97	N/A	0.0100	0.00173		6331982
1,2,3,4,7,8,9-Hepta CDF **	pg/g	<0.172	0.172	4.97	N/A	0.0100	0.00172		6331982
Octa CDF **	pg/g	<0.193	0.193	9.94	N/A	0.000300	0.0000579		6331982
Total Tetra CDF **	pg/g	18.8	0.152	0.994	N/A			13	6331982
Total Penta CDF **	pg/g	8.71	0.176	4.97	N/A			5	6331982

EDL = Estimated Detection Limit  
RDL = Reportable Detection Limit  
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,  
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.  
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds  
QC Batch = Quality Control Batch  
\* CDD = Chloro Dibenzo-p-Dioxin  
N/A = Not Applicable  
\*\* CDF = Chloro Dibenzo-p-Furan  
(1) EMPC / NDR - Peak detected does not meet ratio criteria and has resulted in an elevated detection limit.  
(2) RT > 3 seconds - PCDD/DF analysis - Peak detected exceeds expected retention time (from internal standard) by greater than 3 seconds.  
RT>2 seconds - PCDD/DF analysis-Peak maxima of monitored ions exceeds 2 seconds



BUREAU  
VERITAS

BV Labs Job #: B9N2252  
Report Date: 2019/09/23

EcoMetrix Incorporated  
Client Project #: 19-2587  
Site Location: NPNS  
Sampler Initials: JT

### DIOXINS AND FURANS BY HRMS (TISSUE)

BV Labs ID		KOP290							
Sampling Date		2019/06/13							
COC Number		102089				TOXIC EQUIVALENCY		# of	
	UNITS	L5-H	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
Total Hexa CDF **	pg/g	1.13	0.185	4.97	N/A			1	6331982
Total Hepta CDF **	pg/g	<0.172	0.172	4.97	N/A			0	6331982
<b>TCDF Confirmation</b>									
Confirmation 2,3,7,8-Tetra CDF **	pg/g	5.54	0.046	0.99	0.090	0.100	0.554		6347840
TOTAL TOXIC EQUIVALENCY	pg/g						1.88		
<b>Surrogate Recovery (%)</b>									
Confirmation C13-2378 TetraCDF **	%	76							6347840
37CL4 2378 Tetra CDD *	%	97							6331982
C13-1234678 HeptaCDD *	%	78							6331982
C13-1234678 HeptaCDF **	%	65							6331982
C13-123478 HexaCDD *	%	76							6331982
C13-123478 HexaCDF **	%	72							6331982
C13-1234789 HeptaCDF **	%	66							6331982
C13-123678 HexaCDD *	%	97							6331982
C13-123678 HexaCDF **	%	73							6331982
C13-12378 PentaCDD *	%	67							6331982
C13-12378 PentaCDF **	%	56							6331982
C13-123789 HexaCDF **	%	74							6331982
C13-234678 HexaCDF **	%	66							6331982
C13-23478 PentaCDF **	%	63							6331982
C13-2378 TetraCDD *	%	80							6331982
C13-2378 TetraCDF **	%	70							6331982
C13-OCDD *	%	61							6331982

EDL = Estimated Detection Limit  
RDL = Reportable Detection Limit  
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,  
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.  
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds  
QC Batch = Quality Control Batch  
\*\* CDF = Chloro Dibenzo-p-Furan  
N/A = Not Applicable  
\* CDD = Chloro Dibenzo-p-Dioxin





BUREAU  
VERITAS

BV Labs Job #: B9N2252  
Report Date: 2019/09/23

EcoMetrix Incorporated  
Client Project #: 19-2587  
Site Location: NPNS  
Sampler Initials: JT

### DIOXINS AND FURANS BY HRMS (TISSUE)

BV Labs ID		KOP291							
Sampling Date		2019/06/13							
COC Number		102089				TOXIC EQUIVALENCY		# of	
	UNITS	C1	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
<b>Dioxins &amp; Furans</b>									
2,3,7,8-Tetra CDD *	pg/g	<0.153	0.153	0.998	N/A	1.00	0.153		6331982
1,2,3,7,8-Penta CDD *	pg/g	<0.133	0.133	4.99	N/A	1.00	0.133		6331982
1,2,3,4,7,8-Hexa CDD *	pg/g	<0.148	0.148	4.99	N/A	0.100	0.0148		6331982
1,2,3,6,7,8-Hexa CDD *	pg/g	<0.153	0.153	4.99	N/A	0.100	0.0153		6331982
1,2,3,7,8,9-Hexa CDD *	pg/g	<0.158	0.158	4.99	N/A	0.100	0.0158		6331982
1,2,3,4,6,7,8-Hepta CDD *	pg/g	<0.161	0.161	4.99	N/A	0.0100	0.00161		6331982
Octa CDD *	pg/g	<0.201	0.201	9.98	N/A	0.000300	0.0000603		6331982
Total Tetra CDD *	pg/g	<0.153	0.153	0.998	N/A			0	6331982
Total Penta CDD *	pg/g	<0.133	0.133	4.99	N/A			0	6331982
Total Hexa CDD *	pg/g	<0.155	0.155	4.99	N/A			0	6331982
Total Hepta CDD *	pg/g	<0.161	0.161	4.99	N/A			0	6331982
2,3,7,8-Tetra CDF **	pg/g	<0.159	0.159	0.998	N/A	0.100	0.0159		6331982
1,2,3,7,8-Penta CDF **	pg/g	<0.119	0.119	4.99	N/A	0.0300	0.00357		6331982
2,3,4,7,8-Penta CDF **	pg/g	<0.112	0.112	4.99	N/A	0.300	0.0336		6331982
1,2,3,4,7,8-Hexa CDF **	pg/g	<0.157	0.157	4.99	N/A	0.100	0.0157		6331982
1,2,3,6,7,8-Hexa CDF **	pg/g	<0.162	0.162	4.99	N/A	0.100	0.0162		6331982
2,3,4,6,7,8-Hexa CDF **	pg/g	<0.149	0.149	4.99	N/A	0.100	0.0149		6331982
1,2,3,7,8,9-Hexa CDF **	pg/g	<0.162	0.162	4.99	N/A	0.100	0.0162		6331982
1,2,3,4,6,7,8-Hepta CDF **	pg/g	<0.121	0.121	4.99	N/A	0.0100	0.00121		6331982
1,2,3,4,7,8,9-Hepta CDF **	pg/g	<0.120	0.120	4.99	N/A	0.0100	0.00120		6331982
Octa CDF **	pg/g	<0.140	0.140	9.98	N/A	0.000300	0.0000420		6331982
Total Tetra CDF **	pg/g	<0.159	0.159	0.998	N/A			0	6331982
Total Penta CDF **	pg/g	<0.115	0.115	4.99	N/A			0	6331982
Total Hexa CDF **	pg/g	<0.157	0.157	4.99	N/A			0	6331982
Total Hepta CDF **	pg/g	<0.120	0.120	4.99	N/A			0	6331982
TOTAL TOXIC EQUIVALENCY	pg/g						0.452		

EDL = Estimated Detection Limit  
RDL = Reportable Detection Limit  
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,  
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.  
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds  
QC Batch = Quality Control Batch  
\* CDD = Chloro Dibenzo-p-Dioxin  
N/A = Not Applicable  
\*\* CDF = Chloro Dibenzo-p-Furan



BUREAU  
VERITAS

BV Labs Job #: B9N2252  
Report Date: 2019/09/23

EcoMetrix Incorporated  
Client Project #: 19-2587  
Site Location: NPNS  
Sampler Initials: JT

### DIOXINS AND FURANS BY HRMS (TISSUE)

BV Labs ID		KOP291							
Sampling Date		2019/06/13							
COC Number		102089				TOXIC EQUIVALENCY		# of	
	UNITS	C1	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
<b>Surrogate Recovery (%)</b>									
37CL4 2378 Tetra CDD *	%	85							6331982
C13-1234678 HeptaCDD *	%	80							6331982
C13-1234678 HeptaCDF **	%	61							6331982
C13-123478 HexaCDD *	%	80							6331982
C13-123478 HexaCDF **	%	70							6331982
C13-1234789 HeptaCDF **	%	64							6331982
C13-123678 HexaCDD *	%	99							6331982
C13-123678 HexaCDF **	%	70							6331982
C13-12378 PentaCDD *	%	62							6331982
C13-12378 PentaCDF **	%	53							6331982
C13-123789 HexaCDF **	%	72							6331982
C13-234678 HexaCDF **	%	67							6331982
C13-23478 PentaCDF **	%	62							6331982
C13-2378 TetraCDD *	%	70							6331982
C13-2378 TetraCDF **	%	68							6331982
C13-OCDD *	%	65							6331982
EDL = Estimated Detection Limit RDL = Reportable Detection Limit TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient, The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested. WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds QC Batch = Quality Control Batch * CDD = Chloro Dibenzo-p-Dioxin ** CDF = Chloro Dibenzo-p-Furan									



BUREAU VERITAS

BV Labs Job #: B9N2252  
Report Date: 2019/09/23

EcoMetrix Incorporated  
Client Project #: 19-2587  
Site Location: NPNS  
Sampler Initials: JT

### DIOXINS AND FURANS BY HRMS (TISSUE)

BV Labs ID		KOP292							
Sampling Date		2019/06/13							
COC Number		102089				TOXIC EQUIVALENCY		# of	
	UNITS	C2	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
<b>Dioxins &amp; Furans</b>									
2,3,7,8-Tetra CDD *	pg/g	<0.126	0.126	0.998	N/A	1.00	0.126		6331982
1,2,3,7,8-Penta CDD *	pg/g	<0.142	0.142	4.99	N/A	1.00	0.142		6331982
1,2,3,4,7,8-Hexa CDD *	pg/g	<0.126	0.126	4.99	N/A	0.100	0.0126		6331982
1,2,3,6,7,8-Hexa CDD *	pg/g	<0.130	0.130	4.99	N/A	0.100	0.0130		6331982
1,2,3,7,8,9-Hexa CDD *	pg/g	<0.134	0.134	4.99	N/A	0.100	0.0134		6331982
1,2,3,4,6,7,8-Hepta CDD *	pg/g	0.539	0.152	4.99	N/A	0.0100	0.00539		6331982
Octa CDD *	pg/g	<1.88 (1)	1.88	9.98	N/A	0.000300	0.000564		6331982
Total Tetra CDD *	pg/g	<0.126	0.126	0.998	N/A			0	6331982
Total Penta CDD *	pg/g	<0.142	0.142	4.99	N/A			0	6331982
Total Hexa CDD *	pg/g	<0.132	0.132	4.99	N/A			0	6331982
Total Hepta CDD *	pg/g	0.833	0.152	4.99	N/A			2	6331982
2,3,7,8-Tetra CDF **	pg/g	<0.126	0.126	0.998	N/A	0.100	0.0126		6331982
1,2,3,7,8-Penta CDF **	pg/g	<0.187	0.187	4.99	N/A	0.0300	0.00561		6331982
2,3,4,7,8-Penta CDF **	pg/g	<0.175	0.175	4.99	N/A	0.300	0.0525		6331982
1,2,3,4,7,8-Hexa CDF **	pg/g	<0.154	0.154	4.99	N/A	0.100	0.0154		6331982
1,2,3,6,7,8-Hexa CDF **	pg/g	<0.158	0.158	4.99	N/A	0.100	0.0158		6331982
2,3,4,6,7,8-Hexa CDF **	pg/g	<0.146	0.146	4.99	N/A	0.100	0.0146		6331982
1,2,3,7,8,9-Hexa CDF **	pg/g	<0.158	0.158	4.99	N/A	0.100	0.0158		6331982
1,2,3,4,6,7,8-Hepta CDF **	pg/g	<0.147	0.147	4.99	N/A	0.0100	0.00147		6331982
1,2,3,4,7,8,9-Hepta CDF **	pg/g	<0.146	0.146	4.99	N/A	0.0100	0.00146		6331982
Octa CDF **	pg/g	1.58	0.135	9.98	N/A	0.000300	0.000474		6331982
Total Tetra CDF **	pg/g	<0.126	0.126	0.998	N/A			0	6331982
Total Penta CDF **	pg/g	<0.181	0.181	4.99	N/A			0	6331982
Total Hexa CDF **	pg/g	<0.154	0.154	4.99	N/A			0	6331982
Total Hepta CDF **	pg/g	1.23	0.147	4.99	N/A			1	6331982
EDL = Estimated Detection Limit									
RDL = Reportable Detection Limit									
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,									
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.									
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds									
QC Batch = Quality Control Batch									
* CDD = Chloro Dibenzo-p-Dioxin									
N/A = Not Applicable									
** CDF = Chloro Dibenzo-p-Furan									
(1) RT>2 seconds - PCDD/DF analysis-Peak maxima of monitored ions exceeds 2 seconds									



BUREAU  
VERITAS

BV Labs Job #: B9N2252  
Report Date: 2019/09/23

EcoMetrix Incorporated  
Client Project #: 19-2587  
Site Location: NPNS  
Sampler Initials: JT

### DIOXINS AND FURANS BY HRMS (TISSUE)

BV Labs ID		KOP292							
Sampling Date		2019/06/13							
COC Number		102089				TOXIC EQUIVALENCY		# of	
	UNITS	C2	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
TOTAL TOXIC EQUIVALENCY	pg/g						0.449		
<b>Surrogate Recovery (%)</b>									
37CL4 2378 Tetra CDD *	%	87							6331982
C13-1234678 HeptaCDD *	%	86							6331982
C13-1234678 HeptaCDF **	%	67							6331982
C13-123478 HexaCDD *	%	83							6331982
C13-123478 HexaCDF **	%	74							6331982
C13-1234789 HeptaCDF **	%	70							6331982
C13-123678 HexaCDD *	%	103							6331982
C13-123678 HexaCDF **	%	73							6331982
C13-12378 PentaCDD *	%	65							6331982
C13-12378 PentaCDF **	%	52							6331982
C13-123789 HexaCDF **	%	82							6331982
C13-234678 HexaCDF **	%	68							6331982
C13-23478 PentaCDF **	%	61							6331982
C13-2378 TetraCDD *	%	71							6331982
C13-2378 TetraCDF **	%	67							6331982
C13-OCDD *	%	66							6331982
<p>EDL = Estimated Detection Limit  RDL = Reportable Detection Limit  TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,  The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.  WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds  QC Batch = Quality Control Batch  * CDD = Chloro Dibenzo-p-Dioxin  ** CDF = Chloro Dibenzo-p-Furan</p>									



BUREAU  
VERITAS

BV Labs Job #: B9N2252  
Report Date: 2019/09/23

EcoMetrix Incorporated  
Client Project #: 19-2587  
Site Location: NPNS  
Sampler Initials: JT

### DIOXINS AND FURANS BY HRMS (TISSUE)

BV Labs ID		KOP293							
Sampling Date		2019/06/13							
COC Number		102089				TOXIC EQUIVALENCY		# of	
	UNITS	C3	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
<b>Dioxins &amp; Furans</b>									
2,3,7,8-Tetra CDD *	pg/g	<0.148	0.148	0.991	N/A	1.00	0.148		6331982
1,2,3,7,8-Penta CDD *	pg/g	<0.159	0.159	4.96	N/A	1.00	0.159		6331982
1,2,3,4,7,8-Hexa CDD *	pg/g	<0.139	0.139	4.96	N/A	0.100	0.0139		6331982
1,2,3,6,7,8-Hexa CDD *	pg/g	<0.143	0.143	4.96	N/A	0.100	0.0143		6331982
1,2,3,7,8,9-Hexa CDD *	pg/g	<0.148	0.148	4.96	N/A	0.100	0.0148		6331982
1,2,3,4,6,7,8-Hepta CDD *	pg/g	<0.142	0.142	4.96	N/A	0.0100	0.00142		6331982
Octa CDD *	pg/g	<0.165	0.165	9.91	N/A	0.000300	0.0000495		6331982
Total Tetra CDD *	pg/g	<0.148	0.148	0.991	N/A			0	6331982
Total Penta CDD *	pg/g	<0.159	0.159	4.96	N/A			0	6331982
Total Hexa CDD *	pg/g	<0.145	0.145	4.96	N/A			0	6331982
Total Hepta CDD *	pg/g	<0.142	0.142	4.96	N/A			0	6331982
2,3,7,8-Tetra CDF **	pg/g	<0.141	0.141	0.991	N/A	0.100	0.0141		6331982
1,2,3,7,8-Penta CDF **	pg/g	<0.164	0.164	4.96	N/A	0.0300	0.00492		6331982
2,3,4,7,8-Penta CDF **	pg/g	<0.153	0.153	4.96	N/A	0.300	0.0459		6331982
1,2,3,4,7,8-Hexa CDF **	pg/g	<0.126	0.126	4.96	N/A	0.100	0.0126		6331982
1,2,3,6,7,8-Hexa CDF **	pg/g	<0.130	0.130	4.96	N/A	0.100	0.0130		6331982
2,3,4,6,7,8-Hexa CDF **	pg/g	<0.120	0.120	4.96	N/A	0.100	0.0120		6331982
1,2,3,7,8,9-Hexa CDF **	pg/g	<0.130	0.130	4.96	N/A	0.100	0.0130		6331982
1,2,3,4,6,7,8-Hepta CDF **	pg/g	<0.151	0.151	4.96	N/A	0.0100	0.00151		6331982
1,2,3,4,7,8,9-Hepta CDF **	pg/g	<0.150	0.150	4.96	N/A	0.0100	0.00150		6331982
Octa CDF **	pg/g	<0.129	0.129	9.91	N/A	0.000300	0.0000387		6331982
Total Tetra CDF **	pg/g	<0.141	0.141	0.991	N/A			0	6331982
Total Penta CDF **	pg/g	<0.158	0.158	4.96	N/A			0	6331982
Total Hexa CDF **	pg/g	<0.126	0.126	4.96	N/A			0	6331982
Total Hepta CDF **	pg/g	<0.150	0.150	4.96	N/A			0	6331982
TOTAL TOXIC EQUIVALENCY	pg/g						0.470		
<p>EDL = Estimated Detection Limit  RDL = Reportable Detection Limit  TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,  The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.</p> <p>WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds</p> <p>QC Batch = Quality Control Batch</p> <p>* CDD = Chloro Dibenzo-p-Dioxin</p> <p>N/A = Not Applicable</p> <p>** CDF = Chloro Dibenzo-p-Furan</p>									



BUREAU  
VERITAS

BV Labs Job #: B9N2252  
Report Date: 2019/09/23

EcoMetrix Incorporated  
Client Project #: 19-2587  
Site Location: NPNS  
Sampler Initials: JT

### DIOXINS AND FURANS BY HRMS (TISSUE)

BV Labs ID		KOP293							
Sampling Date		2019/06/13							
COC Number		102089				TOXIC EQUIVALENCY		# of	
	UNITS	C3	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
<b>Surrogate Recovery (%)</b>									
37CL4 2378 Tetra CDD *	%	88							6331982
C13-1234678 HeptaCDD *	%	83							6331982
C13-1234678 HeptaCDF **	%	65							6331982
C13-123478 HexaCDD *	%	84							6331982
C13-123478 HexaCDF **	%	73							6331982
C13-1234789 HeptaCDF **	%	69							6331982
C13-123678 HexaCDD *	%	99							6331982
C13-123678 HexaCDF **	%	73							6331982
C13-12378 PentaCDD *	%	64							6331982
C13-12378 PentaCDF **	%	52							6331982
C13-123789 HexaCDF **	%	78							6331982
C13-234678 HexaCDF **	%	71							6331982
C13-23478 PentaCDF **	%	59							6331982
C13-2378 TetraCDD *	%	75							6331982
C13-2378 TetraCDF **	%	70							6331982
C13-OCDD *	%	67							6331982
EDL = Estimated Detection Limit RDL = Reportable Detection Limit TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient, The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested. WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds QC Batch = Quality Control Batch * CDD = Chloro Dibenzo-p-Dioxin ** CDF = Chloro Dibenzo-p-Furan									



BUREAU VERITAS

BV Labs Job #: B9N2252  
Report Date: 2019/09/23

EcoMetrix Incorporated  
Client Project #: 19-2587  
Site Location: NPNS  
Sampler Initials: JT

**DIOXINS AND FURANS BY HRMS (TISSUE)**

BV Labs ID		KOP294							
Sampling Date		2019/06/13							
COC Number		102089				TOXIC EQUIVALENCY		# of	
	UNITS	C4	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
<b>Dioxins &amp; Furans</b>									
2,3,7,8-Tetra CDD *	pg/g	<0.132	0.132	0.997	N/A	1.00	0.132		6331982
1,2,3,7,8-Penta CDD *	pg/g	<0.132	0.132	4.99	N/A	1.00	0.132		6331982
1,2,3,4,7,8-Hexa CDD *	pg/g	<0.116	0.116	4.99	N/A	0.100	0.0116		6331982
1,2,3,6,7,8-Hexa CDD *	pg/g	<0.119	0.119	4.99	N/A	0.100	0.0119		6331982
1,2,3,7,8,9-Hexa CDD *	pg/g	<0.123	0.123	4.99	N/A	0.100	0.0123		6331982
1,2,3,4,6,7,8-Hepta CDD *	pg/g	<0.231	0.231	4.99	N/A	0.0100	0.00231		6331982
Octa CDD *	pg/g	0.931	0.234	9.97	N/A	0.000300	0.000279		6331982
Total Tetra CDD *	pg/g	<0.132	0.132	0.997	N/A			0	6331982
Total Penta CDD *	pg/g	<0.132	0.132	4.99	N/A			0	6331982
Total Hexa CDD *	pg/g	<0.121	0.121	4.99	N/A			0	6331982
Total Hepta CDD *	pg/g	<0.231	0.231	4.99	N/A			0	6331982
2,3,7,8-Tetra CDF **	pg/g	<0.149	0.149	0.997	N/A	0.100	0.0149		6331982
1,2,3,7,8-Penta CDF **	pg/g	<0.143	0.143	4.99	N/A	0.0300	0.00429		6331982
2,3,4,7,8-Penta CDF **	pg/g	<0.133	0.133	4.99	N/A	0.300	0.0399		6331982
1,2,3,4,7,8-Hexa CDF **	pg/g	<0.137	0.137	4.99	N/A	0.100	0.0137		6331982
1,2,3,6,7,8-Hexa CDF **	pg/g	<0.141	0.141	4.99	N/A	0.100	0.0141		6331982
2,3,4,6,7,8-Hexa CDF **	pg/g	<0.130	0.130	4.99	N/A	0.100	0.0130		6331982
1,2,3,7,8,9-Hexa CDF **	pg/g	<0.141	0.141	4.99	N/A	0.100	0.0141		6331982
1,2,3,4,6,7,8-Hepta CDF **	pg/g	<0.180	0.180	4.99	N/A	0.0100	0.00180		6331982
1,2,3,4,7,8,9-Hepta CDF **	pg/g	<0.179	0.179	4.99	N/A	0.0100	0.00179		6331982
Octa CDF **	pg/g	0.402	0.204	9.97	N/A	0.000300	0.000121		6331982
Total Tetra CDF **	pg/g	<0.149	0.149	0.997	N/A			0	6331982
Total Penta CDF **	pg/g	<0.138	0.138	4.99	N/A			0	6331982
Total Hexa CDF **	pg/g	<0.137	0.137	4.99	N/A			0	6331982
Total Hepta CDF **	pg/g	0.442	0.180	4.99	N/A			1	6331982
TOTAL TOXIC EQUIVALENCY	pg/g						0.420		

EDL = Estimated Detection Limit  
RDL = Reportable Detection Limit  
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,  
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.  
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds  
QC Batch = Quality Control Batch  
\* CDD = Chloro Dibenzo-p-Dioxin  
N/A = Not Applicable  
\*\* CDF = Chloro Dibenzo-p-Furan



BUREAU  
VERITAS

BV Labs Job #: B9N2252  
Report Date: 2019/09/23

EcoMetrix Incorporated  
Client Project #: 19-2587  
Site Location: NPNS  
Sampler Initials: JT

### DIOXINS AND FURANS BY HRMS (TISSUE)

BV Labs ID		KOP294							
Sampling Date		2019/06/13							
COC Number		102089				TOXIC EQUIVALENCY		# of	
	UNITS	C4	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
<b>Surrogate Recovery (%)</b>									
37CL4 2378 Tetra CDD *	%	88							6331982
C13-1234678 HeptaCDD *	%	79							6331982
C13-1234678 HeptaCDF **	%	63							6331982
C13-123478 HexaCDD *	%	81							6331982
C13-123478 HexaCDF **	%	71							6331982
C13-1234789 HeptaCDF **	%	65							6331982
C13-123678 HexaCDD *	%	99							6331982
C13-123678 HexaCDF **	%	71							6331982
C13-12378 PentaCDD *	%	62							6331982
C13-12378 PentaCDF **	%	52							6331982
C13-123789 HexaCDF **	%	71							6331982
C13-234678 HexaCDF **	%	65							6331982
C13-23478 PentaCDF **	%	57							6331982
C13-2378 TetraCDD *	%	73							6331982
C13-2378 TetraCDF **	%	68							6331982
C13-OCDD *	%	62							6331982
EDL = Estimated Detection Limit RDL = Reportable Detection Limit TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient, The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested. WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds QC Batch = Quality Control Batch * CDD = Chloro Dibenzo-p-Dioxin ** CDF = Chloro Dibenzo-p-Furan									





BUREAU  
VERITAS

BV Labs Job #: B9N2252  
Report Date: 2019/09/23

EcoMetrix Incorporated  
Client Project #: 19-2587  
Site Location: NPNS  
Sampler Initials: JT

### DIOXINS AND FURANS BY HRMS (TISSUE)

BV Labs ID		KOP295							
Sampling Date		2019/06/13							
COC Number		102089				TOXIC EQUIVALENCY		# of	
	UNITS	C5	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
<b>Dioxins &amp; Furans</b>									
2,3,7,8-Tetra CDD *	pg/g	<0.156	0.156	0.991	N/A	1.00	0.156		6331982
1,2,3,7,8-Penta CDD *	pg/g	<0.124	0.124	4.96	N/A	1.00	0.124		6331982
1,2,3,4,7,8-Hexa CDD *	pg/g	<0.104	0.104	4.96	N/A	0.100	0.0104		6331982
1,2,3,6,7,8-Hexa CDD *	pg/g	<0.107	0.107	4.96	N/A	0.100	0.0107		6331982
1,2,3,7,8,9-Hexa CDD *	pg/g	<0.110	0.110	4.96	N/A	0.100	0.0110		6331982
1,2,3,4,6,7,8-Hepta CDD *	pg/g	<0.219	0.219	4.96	N/A	0.0100	0.00219		6331982
Octa CDD *	pg/g	<0.216	0.216	9.91	N/A	0.000300	0.0000648		6331982
Total Tetra CDD *	pg/g	<0.156	0.156	0.991	N/A			0	6331982
Total Penta CDD *	pg/g	<0.124	0.124	4.96	N/A			0	6331982
Total Hexa CDD *	pg/g	<0.108	0.108	4.96	N/A			0	6331982
Total Hepta CDD *	pg/g	<0.219	0.219	4.96	N/A			0	6331982
2,3,7,8-Tetra CDF **	pg/g	<0.156	0.156	0.991	N/A	0.100	0.0156		6331982
1,2,3,7,8-Penta CDF **	pg/g	<0.150	0.150	4.96	N/A	0.0300	0.00450		6331982
2,3,4,7,8-Penta CDF **	pg/g	<0.140	0.140	4.96	N/A	0.300	0.0420		6331982
1,2,3,4,7,8-Hexa CDF **	pg/g	<0.143	0.143	4.96	N/A	0.100	0.0143		6331982
1,2,3,6,7,8-Hexa CDF **	pg/g	<0.147	0.147	4.96	N/A	0.100	0.0147		6331982
2,3,4,6,7,8-Hexa CDF **	pg/g	<0.135	0.135	4.96	N/A	0.100	0.0135		6331982
1,2,3,7,8,9-Hexa CDF **	pg/g	<0.147	0.147	4.96	N/A	0.100	0.0147		6331982
1,2,3,4,6,7,8-Hepta CDF **	pg/g	<0.203	0.203	4.96	N/A	0.0100	0.00203		6331982
1,2,3,4,7,8,9-Hepta CDF **	pg/g	<0.202	0.202	4.96	N/A	0.0100	0.00202		6331982
Octa CDF **	pg/g	<0.240	0.240	9.91	N/A	0.000300	0.0000720		6331982
Total Tetra CDF **	pg/g	<0.156	0.156	0.991	N/A			0	6331982
Total Penta CDF **	pg/g	<0.145	0.145	4.96	N/A			0	6331982
Total Hexa CDF **	pg/g	<0.143	0.143	4.96	N/A			0	6331982
Total Hepta CDF **	pg/g	<0.202	0.202	4.96	N/A			0	6331982
TOTAL TOXIC EQUIVALENCY	pg/g						0.438		

EDL = Estimated Detection Limit  
RDL = Reportable Detection Limit  
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,  
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.  
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds  
QC Batch = Quality Control Batch  
\* CDD = Chloro Dibenzo-p-Dioxin  
N/A = Not Applicable  
\*\* CDF = Chloro Dibenzo-p-Furan



BUREAU  
VERITAS

BV Labs Job #: B9N2252  
Report Date: 2019/09/23

EcoMetrix Incorporated  
Client Project #: 19-2587  
Site Location: NPNS  
Sampler Initials: JT

### DIOXINS AND FURANS BY HRMS (TISSUE)

BV Labs ID		KOP295							
Sampling Date		2019/06/13							
COC Number		102089				TOXIC EQUIVALENCY		# of	
	UNITS	C5	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
<b>Surrogate Recovery (%)</b>									
37CL4 2378 Tetra CDD *	%	89							6331982
C13-1234678 HeptaCDD *	%	80							6331982
C13-1234678 HeptaCDF **	%	66							6331982
C13-123478 HexaCDD *	%	80							6331982
C13-123478 HexaCDF **	%	71							6331982
C13-1234789 HeptaCDF **	%	70							6331982
C13-123678 HexaCDD *	%	101							6331982
C13-123678 HexaCDF **	%	71							6331982
C13-12378 PentaCDD *	%	62							6331982
C13-12378 PentaCDF **	%	52							6331982
C13-123789 HexaCDF **	%	74							6331982
C13-234678 HexaCDF **	%	67							6331982
C13-23478 PentaCDF **	%	59							6331982
C13-2378 TetraCDD *	%	73							6331982
C13-2378 TetraCDF **	%	69							6331982
C13-OCDD *	%	66							6331982
EDL = Estimated Detection Limit RDL = Reportable Detection Limit TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient, The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested. WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds QC Batch = Quality Control Batch * CDD = Chloro Dibenzo-p-Dioxin ** CDF = Chloro Dibenzo-p-Furan									



BUREAU  
VERITAS

BV Labs Job #: B9N2252  
Report Date: 2019/09/23

EcoMetrix Incorporated  
Client Project #: 19-2587  
Site Location: NPNS  
Sampler Initials: JT

### DIOXINS AND FURANS BY HRMS (TISSUE)

BV Labs ID		KOP296							
Sampling Date		2019/07/04							
COC Number		102089				TOXIC EQUIVALENCY		# of	
	UNITS	Q1	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
<b>Dioxins &amp; Furans</b>									
2,3,7,8-Tetra CDD *	pg/g	<0.152	0.152	0.991	N/A	1.00	0.152		6331982
1,2,3,7,8-Penta CDD *	pg/g	<0.131	0.131	4.96	N/A	1.00	0.131		6331982
1,2,3,4,7,8-Hexa CDD *	pg/g	<0.106	0.106	4.96	N/A	0.100	0.0106		6331982
1,2,3,6,7,8-Hexa CDD *	pg/g	<0.109	0.109	4.96	N/A	0.100	0.0109		6331982
1,2,3,7,8,9-Hexa CDD *	pg/g	<0.113	0.113	4.96	N/A	0.100	0.0113		6331982
1,2,3,4,6,7,8-Hepta CDD *	pg/g	<0.239	0.239	4.96	N/A	0.0100	0.00239		6331982
Octa CDD *	pg/g	0.503	0.149	9.91	N/A	0.000300	0.000151		6331982
Total Tetra CDD *	pg/g	<0.152	0.152	0.991	N/A			0	6331982
Total Penta CDD *	pg/g	<0.131	0.131	4.96	N/A			0	6331982
Total Hexa CDD *	pg/g	<0.111	0.111	4.96	N/A			0	6331982
Total Hepta CDD *	pg/g	<0.239	0.239	4.96	N/A			0	6331982
2,3,7,8-Tetra CDF **	pg/g	<0.138	0.138	0.991	N/A	0.100	0.0138		6331982
1,2,3,7,8-Penta CDF **	pg/g	<0.141	0.141	4.96	N/A	0.0300	0.00423		6331982
2,3,4,7,8-Penta CDF **	pg/g	<0.132	0.132	4.96	N/A	0.300	0.0396		6331982
1,2,3,4,7,8-Hexa CDF **	pg/g	<0.127	0.127	4.96	N/A	0.100	0.0127		6331982
1,2,3,6,7,8-Hexa CDF **	pg/g	<0.131	0.131	4.96	N/A	0.100	0.0131		6331982
2,3,4,6,7,8-Hexa CDF **	pg/g	<0.121	0.121	4.96	N/A	0.100	0.0121		6331982
1,2,3,7,8,9-Hexa CDF **	pg/g	<0.131	0.131	4.96	N/A	0.100	0.0131		6331982
1,2,3,4,6,7,8-Hepta CDF **	pg/g	<0.111	0.111	4.96	N/A	0.0100	0.00111		6331982
1,2,3,4,7,8,9-Hepta CDF **	pg/g	<0.110	0.110	4.96	N/A	0.0100	0.00110		6331982
Octa CDF **	pg/g	<0.187	0.187	9.91	N/A	0.000300	0.0000561		6331982
Total Tetra CDF **	pg/g	<0.138	0.138	0.991	N/A			0	6331982
Total Penta CDF **	pg/g	<0.137	0.137	4.96	N/A			0	6331982
Total Hexa CDF **	pg/g	<0.127	0.127	4.96	N/A			0	6331982
Total Hepta CDF **	pg/g	<0.111	0.111	4.96	N/A			0	6331982
TOTAL TOXIC EQUIVALENCY	pg/g						0.429		
<p>EDL = Estimated Detection Limit  RDL = Reportable Detection Limit  TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,  The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.</p> <p>WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds</p> <p>QC Batch = Quality Control Batch</p> <p>* CDD = Chloro Dibenzo-p-Dioxin</p> <p>N/A = Not Applicable</p> <p>** CDF = Chloro Dibenzo-p-Furan</p>									



BUREAU  
VERITAS

BV Labs Job #: B9N2252  
Report Date: 2019/09/23

EcoMetrix Incorporated  
Client Project #: 19-2587  
Site Location: NPNS  
Sampler Initials: JT

### DIOXINS AND FURANS BY HRMS (TISSUE)

BV Labs ID		KOP296							
Sampling Date		2019/07/04							
COC Number		102089				TOXIC EQUIVALENCY		# of	
	UNITS	Q1	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
<b>Surrogate Recovery (%)</b>									
37CL4 2378 Tetra CDD *	%	88							6331982
C13-1234678 HeptaCDD *	%	84							6331982
C13-1234678 HeptaCDF **	%	66							6331982
C13-123478 HexaCDD *	%	82							6331982
C13-123478 HexaCDF **	%	72							6331982
C13-1234789 HeptaCDF **	%	70							6331982
C13-123678 HexaCDD *	%	103							6331982
C13-123678 HexaCDF **	%	72							6331982
C13-12378 PentaCDD *	%	67							6331982
C13-12378 PentaCDF **	%	55							6331982
C13-123789 HexaCDF **	%	77							6331982
C13-234678 HexaCDF **	%	67							6331982
C13-23478 PentaCDF **	%	63							6331982
C13-2378 TetraCDD *	%	76							6331982
C13-2378 TetraCDF **	%	72							6331982
C13-OCDD *	%	66							6331982
EDL = Estimated Detection Limit RDL = Reportable Detection Limit TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient, The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested. WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds QC Batch = Quality Control Batch * CDD = Chloro Dibenzo-p-Dioxin ** CDF = Chloro Dibenzo-p-Furan									



BUREAU  
VERITAS

BV Labs Job #: B9N2252  
Report Date: 2019/09/23

EcoMetrix Incorporated  
Client Project #: 19-2587  
Site Location: NPNS  
Sampler Initials: JT

### DIOXINS AND FURANS BY HRMS (TISSUE)

BV Labs ID		KOP297							
Sampling Date		2019/07/04							
COC Number		102089				TOXIC EQUIVALENCY		# of	
	UNITS	Q2	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
<b>Dioxins &amp; Furans</b>									
2,3,7,8-Tetra CDD *	pg/g	<0.142	0.142	0.997	N/A	1.00	0.142		6331982
1,2,3,7,8-Penta CDD *	pg/g	<0.186	0.186	4.98	N/A	1.00	0.186		6331982
1,2,3,4,7,8-Hexa CDD *	pg/g	<0.119	0.119	4.98	N/A	0.100	0.0119		6331982
1,2,3,6,7,8-Hexa CDD *	pg/g	<0.122	0.122	4.98	N/A	0.100	0.0122		6331982
1,2,3,7,8,9-Hexa CDD *	pg/g	<0.126	0.126	4.98	N/A	0.100	0.0126		6331982
1,2,3,4,6,7,8-Hepta CDD *	pg/g	<0.246	0.246	4.98	N/A	0.0100	0.00246		6331982
Octa CDD *	pg/g	1.02	0.256	9.97	N/A	0.000300	0.000306		6331982
Total Tetra CDD *	pg/g	<0.142	0.142	0.997	N/A			0	6331982
Total Penta CDD *	pg/g	<0.186	0.186	4.98	N/A			0	6331982
Total Hexa CDD *	pg/g	<0.124	0.124	4.98	N/A			0	6331982
Total Hepta CDD *	pg/g	<0.246	0.246	4.98	N/A			0	6331982
2,3,7,8-Tetra CDF **	pg/g	<0.145	0.145	0.997	N/A	0.100	0.0145		6331982
1,2,3,7,8-Penta CDF **	pg/g	<0.178	0.178	4.98	N/A	0.0300	0.00534		6331982
2,3,4,7,8-Penta CDF **	pg/g	<0.167	0.167	4.98	N/A	0.300	0.0501		6331982
1,2,3,4,7,8-Hexa CDF **	pg/g	<0.120	0.120	4.98	N/A	0.100	0.0120		6331982
1,2,3,6,7,8-Hexa CDF **	pg/g	<0.123	0.123	4.98	N/A	0.100	0.0123		6331982
2,3,4,6,7,8-Hexa CDF **	pg/g	<0.114	0.114	4.98	N/A	0.100	0.0114		6331982
1,2,3,7,8,9-Hexa CDF **	pg/g	<0.123	0.123	4.98	N/A	0.100	0.0123		6331982
1,2,3,4,6,7,8-Hepta CDF **	pg/g	<0.134	0.134	4.98	N/A	0.0100	0.00134		6331982
1,2,3,4,7,8,9-Hepta CDF **	pg/g	<0.133	0.133	4.98	N/A	0.0100	0.00133		6331982
Octa CDF **	pg/g	<0.259	0.259	9.97	N/A	0.000300	0.0000777		6331982
Total Tetra CDF **	pg/g	<0.145	0.145	0.997	N/A			0	6331982
Total Penta CDF **	pg/g	<0.172	0.172	4.98	N/A			0	6331982
Total Hexa CDF **	pg/g	<0.120	0.120	4.98	N/A			0	6331982
Total Hepta CDF **	pg/g	<0.378 (1)	0.378	4.98	N/A			0	6331982
EDL = Estimated Detection Limit RDL = Reportable Detection Limit TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient, The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested. WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds QC Batch = Quality Control Batch * CDD = Chloro Dibenzo-p-Dioxin N/A = Not Applicable ** CDF = Chloro Dibenzo-p-Furan (1) EMPC / NDR - Peak detected does not meet ratio criteria and has resulted in an elevated detection limit.									



BUREAU  
VERITAS

BV Labs Job #: B9N2252  
Report Date: 2019/09/23

EcoMetrix Incorporated  
Client Project #: 19-2587  
Site Location: NPNS  
Sampler Initials: JT

### DIOXINS AND FURANS BY HRMS (TISSUE)

BV Labs ID		KOP297							
Sampling Date		2019/07/04							
COC Number		102089				TOXIC EQUIVALENCY		# of	
	UNITS	Q2	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
TOTAL TOXIC EQUIVALENCY	pg/g						0.488		
<b>Surrogate Recovery (%)</b>									
37CL4 2378 Tetra CDD *	%	93							6331982
C13-1234678 HeptaCDD *	%	82							6331982
C13-1234678 HeptaCDF **	%	67							6331982
C13-123478 HexaCDD *	%	82							6331982
C13-123478 HexaCDF **	%	73							6331982
C13-1234789 HeptaCDF **	%	68							6331982
C13-123678 HexaCDD *	%	105							6331982
C13-123678 HexaCDF **	%	75							6331982
C13-12378 PentaCDD *	%	66							6331982
C13-12378 PentaCDF **	%	56							6331982
C13-123789 HexaCDF **	%	79							6331982
C13-234678 HexaCDF **	%	68							6331982
C13-23478 PentaCDF **	%	65							6331982
C13-2378 TetraCDD *	%	80							6331982
C13-2378 TetraCDF **	%	75							6331982
C13-OCDD *	%	63							6331982

EDL = Estimated Detection Limit  
RDL = Reportable Detection Limit  
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,  
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.  
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds  
QC Batch = Quality Control Batch  
\* CDD = Chloro Dibenzo-p-Dioxin  
\*\* CDF = Chloro Dibenzo-p-Furan



BUREAU  
VERITAS

BV Labs Job #: B9N2252  
Report Date: 2019/09/23

EcoMetrix Incorporated  
Client Project #: 19-2587  
Site Location: NPNS  
Sampler Initials: JT

### DIOXINS AND FURANS BY HRMS (TISSUE)

BV Labs ID		KOP298							
Sampling Date		2019/07/04							
COC Number		102089				TOXIC EQUIVALENCY		# of	
	UNITS	Q3	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
<b>Dioxins &amp; Furans</b>									
2,3,7,8-Tetra CDD *	pg/g	<0.198	0.198	0.996	N/A	1.00	0.198		6331982
1,2,3,7,8-Penta CDD *	pg/g	<0.158	0.158	4.98	N/A	1.00	0.158		6331982
1,2,3,4,7,8-Hexa CDD *	pg/g	<0.127	0.127	4.98	N/A	0.100	0.0127		6331982
1,2,3,6,7,8-Hexa CDD *	pg/g	<0.130	0.130	4.98	N/A	0.100	0.0130		6331982
1,2,3,7,8,9-Hexa CDD *	pg/g	<0.135	0.135	4.98	N/A	0.100	0.0135		6331982
1,2,3,4,6,7,8-Hepta CDD *	pg/g	<0.261	0.261	4.98	N/A	0.0100	0.00261		6331982
Octa CDD *	pg/g	0.877	0.279	9.96	N/A	0.000300	0.000263		6331982
Total Tetra CDD *	pg/g	<0.198	0.198	0.996	N/A			0	6331982
Total Penta CDD *	pg/g	<0.158	0.158	4.98	N/A			0	6331982
Total Hexa CDD *	pg/g	<0.132	0.132	4.98	N/A			0	6331982
Total Hepta CDD *	pg/g	<0.261	0.261	4.98	N/A			0	6331982
2,3,7,8-Tetra CDF **	pg/g	<0.167	0.167	0.996	N/A	0.100	0.0167		6331982
1,2,3,7,8-Penta CDF **	pg/g	<0.159	0.159	4.98	N/A	0.0300	0.00477		6331982
2,3,4,7,8-Penta CDF **	pg/g	<0.149	0.149	4.98	N/A	0.300	0.0447		6331982
1,2,3,4,7,8-Hexa CDF **	pg/g	<0.143	0.143	4.98	N/A	0.100	0.0143		6331982
1,2,3,6,7,8-Hexa CDF **	pg/g	<0.148	0.148	4.98	N/A	0.100	0.0148		6331982
2,3,4,6,7,8-Hexa CDF **	pg/g	<0.136	0.136	4.98	N/A	0.100	0.0136		6331982
1,2,3,7,8,9-Hexa CDF **	pg/g	<0.147	0.147	4.98	N/A	0.100	0.0147		6331982
1,2,3,4,6,7,8-Hepta CDF **	pg/g	<0.158	0.158	4.98	N/A	0.0100	0.00158		6331982
1,2,3,4,7,8,9-Hepta CDF **	pg/g	<0.157	0.157	4.98	N/A	0.0100	0.00157		6331982
Octa CDF **	pg/g	<0.209	0.209	9.96	N/A	0.000300	0.0000627		6331982
Total Tetra CDF **	pg/g	<0.167	0.167	0.996	N/A			0	6331982
Total Penta CDF **	pg/g	<0.154	0.154	4.98	N/A			0	6331982
Total Hexa CDF **	pg/g	<0.143	0.143	4.98	N/A			0	6331982
Total Hepta CDF **	pg/g	<0.157	0.157	4.98	N/A			0	6331982
TOTAL TOXIC EQUIVALENCY	pg/g						0.525		
<p>EDL = Estimated Detection Limit  RDL = Reportable Detection Limit  TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,  The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.</p> <p>WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds</p> <p>QC Batch = Quality Control Batch</p> <p>* CDD = Chloro Dibenzo-p-Dioxin</p> <p>N/A = Not Applicable</p> <p>** CDF = Chloro Dibenzo-p-Furan</p>									



BUREAU  
VERITAS

BV Labs Job #: B9N2252  
Report Date: 2019/09/23

EcoMetrix Incorporated  
Client Project #: 19-2587  
Site Location: NPNS  
Sampler Initials: JT

### DIOXINS AND FURANS BY HRMS (TISSUE)

BV Labs ID		KOP298							
Sampling Date		2019/07/04							
COC Number		102089				TOXIC EQUIVALENCY		# of	
	UNITS	Q3	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
<b>Surrogate Recovery (%)</b>									
37CL4 2378 Tetra CDD *	%	88							6331982
C13-1234678 HeptaCDD *	%	88							6331982
C13-1234678 HeptaCDF **	%	68							6331982
C13-123478 HexaCDD *	%	85							6331982
C13-123478 HexaCDF **	%	75							6331982
C13-1234789 HeptaCDF **	%	72							6331982
C13-123678 HexaCDD *	%	107							6331982
C13-123678 HexaCDF **	%	75							6331982
C13-12378 PentaCDD *	%	67							6331982
C13-12378 PentaCDF **	%	56							6331982
C13-123789 HexaCDF **	%	77							6331982
C13-234678 HexaCDF **	%	70							6331982
C13-23478 PentaCDF **	%	62							6331982
C13-2378 TetraCDD *	%	76							6331982
C13-2378 TetraCDF **	%	71							6331982
C13-OCDD *	%	70							6331982
EDL = Estimated Detection Limit RDL = Reportable Detection Limit TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient, The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested. WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds QC Batch = Quality Control Batch * CDD = Chloro Dibenzo-p-Dioxin ** CDF = Chloro Dibenzo-p-Furan									





BUREAU  
VERITAS

BV Labs Job #: B9N2252  
Report Date: 2019/09/23

EcoMetrix Incorporated  
Client Project #: 19-2587  
Site Location: NPNS  
Sampler Initials: JT

### DIOXINS AND FURANS BY HRMS (TISSUE)

BV Labs ID		KOP299							
Sampling Date		2019/07/04							
COC Number		102089				TOXIC EQUIVALENCY		# of	
	UNITS	Q4	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
<b>Dioxins &amp; Furans</b>									
2,3,7,8-Tetra CDD *	pg/g	<0.151	0.151	0.996	N/A	1.00	0.151		6331982
1,2,3,7,8-Penta CDD *	pg/g	<0.108	0.108	4.98	N/A	1.00	0.108		6331982
1,2,3,4,7,8-Hexa CDD *	pg/g	<0.130	0.130	4.98	N/A	0.100	0.0130		6331982
1,2,3,6,7,8-Hexa CDD *	pg/g	<0.133	0.133	4.98	N/A	0.100	0.0133		6331982
1,2,3,7,8,9-Hexa CDD *	pg/g	<0.138	0.138	4.98	N/A	0.100	0.0138		6331982
1,2,3,4,6,7,8-Hepta CDD *	pg/g	<0.266	0.266	4.98	N/A	0.0100	0.00266		6331982
Octa CDD *	pg/g	<1.73 (1)	1.73	9.96	N/A	0.000300	0.000519		6331982
Total Tetra CDD *	pg/g	<0.151	0.151	0.996	N/A			0	6331982
Total Penta CDD *	pg/g	<0.108	0.108	4.98	N/A			0	6331982
Total Hexa CDD *	pg/g	<0.135	0.135	4.98	N/A			0	6331982
Total Hepta CDD *	pg/g	<0.266	0.266	4.98	N/A			0	6331982
2,3,7,8-Tetra CDF **	pg/g	<0.161	0.161	0.996	N/A	0.100	0.0161		6331982
1,2,3,7,8-Penta CDF **	pg/g	<0.168	0.168	4.98	N/A	0.0300	0.00504		6331982
2,3,4,7,8-Penta CDF **	pg/g	<0.157	0.157	4.98	N/A	0.300	0.0471		6331982
1,2,3,4,7,8-Hexa CDF **	pg/g	<0.154	0.154	4.98	N/A	0.100	0.0154		6331982
1,2,3,6,7,8-Hexa CDF **	pg/g	<0.158	0.158	4.98	N/A	0.100	0.0158		6331982
2,3,4,6,7,8-Hexa CDF **	pg/g	<0.146	0.146	4.98	N/A	0.100	0.0146		6331982
1,2,3,7,8,9-Hexa CDF **	pg/g	<0.158	0.158	4.98	N/A	0.100	0.0158		6331982
1,2,3,4,6,7,8-Hepta CDF **	pg/g	<0.254	0.254	4.98	N/A	0.0100	0.00254		6331982
1,2,3,4,7,8,9-Hepta CDF **	pg/g	<0.252	0.252	4.98	N/A	0.0100	0.00252		6331982
Octa CDF **	pg/g	<0.238	0.238	9.96	N/A	0.000300	0.0000714		6331982
Total Tetra CDF **	pg/g	<0.161	0.161	0.996	N/A			0	6331982
Total Penta CDF **	pg/g	<0.337 (2)	0.337	4.98	N/A			0	6331982
Total Hexa CDF **	pg/g	<0.154	0.154	4.98	N/A			0	6331982
Total Hepta CDF **	pg/g	<0.253	0.253	4.98	N/A			0	6331982
EDL = Estimated Detection Limit									
RDL = Reportable Detection Limit									
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,									
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.									
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds									
QC Batch = Quality Control Batch									
* CDD = Chloro Dibenzo-p-Dioxin									
N/A = Not Applicable									
** CDF = Chloro Dibenzo-p-Furan									
(1) RT>2 seconds - PCDD/DF analysis-Peak maxima of monitored ions exceeds 2 seconds									
(2) EMPC / NDR - Peak detected does not meet ratio criteria and has resulted in an elevated detection limit.									



BUREAU  
VERITAS

BV Labs Job #: B9N2252  
Report Date: 2019/09/23

EcoMetrix Incorporated  
Client Project #: 19-2587  
Site Location: NPNS  
Sampler Initials: JT

### DIOXINS AND FURANS BY HRMS (TISSUE)

BV Labs ID		KOP299							
Sampling Date		2019/07/04							
COC Number		102089				TOXIC EQUIVALENCY		# of	
	UNITS	Q4	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
TOTAL TOXIC EQUIVALENCY	pg/g						0.437		
<b>Surrogate Recovery (%)</b>									
37CL4 2378 Tetra CDD *	%	87							6331982
C13-1234678 HeptaCDD *	%	78							6331982
C13-1234678 HeptaCDF **	%	60							6331982
C13-123478 HexaCDD *	%	75							6331982
C13-123478 HexaCDF **	%	65							6331982
C13-1234789 HeptaCDF **	%	64							6331982
C13-123678 HexaCDD *	%	96							6331982
C13-123678 HexaCDF **	%	69							6331982
C13-12378 PentaCDD *	%	60							6331982
C13-12378 PentaCDF **	%	52							6331982
C13-123789 HexaCDF **	%	71							6331982
C13-234678 HexaCDF **	%	63							6331982
C13-23478 PentaCDF **	%	58							6331982
C13-2378 TetraCDD *	%	71							6331982
C13-2378 TetraCDF **	%	65							6331982
C13-OCDD *	%	62							6331982
<p>EDL = Estimated Detection Limit  RDL = Reportable Detection Limit  TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,  The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.  WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds  QC Batch = Quality Control Batch  * CDD = Chloro Dibenzo-p-Dioxin  ** CDF = Chloro Dibenzo-p-Furan</p>									



BUREAU VERITAS

BV Labs Job #: B9N2252  
Report Date: 2019/09/23

EcoMetrix Incorporated  
Client Project #: 19-2587  
Site Location: NPNS  
Sampler Initials: JT

### DIOXINS AND FURANS BY HRMS (TISSUE)

BV Labs ID		KOP300							
Sampling Date		2019/07/04							
COC Number		102089				TOXIC EQUIVALENCY		# of	
	UNITS	Q5	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
<b>Dioxins &amp; Furans</b>									
2,3,7,8-Tetra CDD *	pg/g	<0.111	0.111	0.993	N/A	1.00	0.111		6331982
1,2,3,7,8-Penta CDD *	pg/g	<0.150	0.150	4.97	N/A	1.00	0.150		6331982
1,2,3,4,7,8-Hexa CDD *	pg/g	<0.121	0.121	4.97	N/A	0.100	0.0121		6331982
1,2,3,6,7,8-Hexa CDD *	pg/g	<0.125	0.125	4.97	N/A	0.100	0.0125		6331982
1,2,3,7,8,9-Hexa CDD *	pg/g	<0.129	0.129	4.97	N/A	0.100	0.0129		6331982
1,2,3,4,6,7,8-Hepta CDD *	pg/g	<0.186	0.186	4.97	N/A	0.0100	0.00186		6331982
Octa CDD *	pg/g	0.976	0.232	9.93	N/A	0.000300	0.000293		6331982
Total Tetra CDD *	pg/g	<0.111	0.111	0.993	N/A			0	6331982
Total Penta CDD *	pg/g	<0.150	0.150	4.97	N/A			0	6331982
Total Hexa CDD *	pg/g	<0.126	0.126	4.97	N/A			0	6331982
Total Hepta CDD *	pg/g	<0.186	0.186	4.97	N/A			0	6331982
2,3,7,8-Tetra CDF **	pg/g	<0.165	0.165	0.993	N/A	0.100	0.0165		6331982
1,2,3,7,8-Penta CDF **	pg/g	<0.133	0.133	4.97	N/A	0.0300	0.00399		6331982
2,3,4,7,8-Penta CDF **	pg/g	<0.124	0.124	4.97	N/A	0.300	0.0372		6331982
1,2,3,4,7,8-Hexa CDF **	pg/g	<0.141	0.141	4.97	N/A	0.100	0.0141		6331982
1,2,3,6,7,8-Hexa CDF **	pg/g	<0.145	0.145	4.97	N/A	0.100	0.0145		6331982
2,3,4,6,7,8-Hexa CDF **	pg/g	<0.134	0.134	4.97	N/A	0.100	0.0134		6331982
1,2,3,7,8,9-Hexa CDF **	pg/g	<0.145	0.145	4.97	N/A	0.100	0.0145		6331982
1,2,3,4,6,7,8-Hepta CDF **	pg/g	<0.161	0.161	4.97	N/A	0.0100	0.00161		6331982
1,2,3,4,7,8,9-Hepta CDF **	pg/g	<0.160	0.160	4.97	N/A	0.0100	0.00160		6331982
Octa CDF **	pg/g	<0.222	0.222	9.93	N/A	0.000300	0.0000666		6331982
Total Tetra CDF **	pg/g	0.184	0.165	0.993	N/A			1	6331982
Total Penta CDF **	pg/g	<0.677 (1)	0.677	4.97	N/A			0	6331982
Total Hexa CDF **	pg/g	<0.141	0.141	4.97	N/A			0	6331982
Total Hepta CDF **	pg/g	<0.160	0.160	4.97	N/A			0	6331982
EDL = Estimated Detection Limit									
RDL = Reportable Detection Limit									
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,									
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.									
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds									
QC Batch = Quality Control Batch									
* CDD = Chloro Dibenzo-p-Dioxin									
N/A = Not Applicable									
** CDF = Chloro Dibenzo-p-Furan									
(1) EMPC / NDR - Peak detected does not meet ratio criteria and has resulted in an elevated detection limit.									



BUREAU  
VERITAS

BV Labs Job #: B9N2252  
Report Date: 2019/09/23

EcoMetrix Incorporated  
Client Project #: 19-2587  
Site Location: NPNS  
Sampler Initials: JT

### DIOXINS AND FURANS BY HRMS (TISSUE)

BV Labs ID		KOP300							
Sampling Date		2019/07/04							
COC Number		102089				TOXIC EQUIVALENCY		# of	
	UNITS	Q5	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
TOTAL TOXIC EQUIVALENCY	pg/g						0.418		
<b>Surrogate Recovery (%)</b>									
37CL4 2378 Tetra CDD *	%	96							6331982
C13-1234678 HeptaCDD *	%	89							6331982
C13-1234678 HeptaCDF **	%	72							6331982
C13-123478 HexaCDD *	%	87							6331982
C13-123478 HexaCDF **	%	80							6331982
C13-1234789 HeptaCDF **	%	70							6331982
C13-123678 HexaCDD *	%	112							6331982
C13-123678 HexaCDF **	%	82							6331982
C13-12378 PentaCDD *	%	69							6331982
C13-12378 PentaCDF **	%	59							6331982
C13-123789 HexaCDF **	%	82							6331982
C13-234678 HexaCDF **	%	74							6331982
C13-23478 PentaCDF **	%	67							6331982
C13-2378 TetraCDD *	%	80							6331982
C13-2378 TetraCDF **	%	76							6331982
C13-OCDD *	%	71							6331982
<p>EDL = Estimated Detection Limit  RDL = Reportable Detection Limit  TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,  The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.  WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds  QC Batch = Quality Control Batch  * CDD = Chloro Dibenzo-p-Dioxin  ** CDF = Chloro Dibenzo-p-Furan</p>									



### GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	3.7°C
-----------	-------

**Results relate only to the items tested.**



BUREAU  
VERITAS

BV Labs Job #: B9N2252  
Report Date: 2019/09/23

### QUALITY ASSURANCE REPORT

EcoMetrix Incorporated  
Client Project #: 19-2587  
Site Location: NPNS  
Sampler Initials: JT

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD		Reagent Blank		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	Value	UNITS	% Recovery	QC Limits
6323527	D10-Anthracene	2019/09/11	95	50 - 130	91	50 - 130	81	%			88	%		
6323527	D14-Terphenyl	2019/09/11	96	50 - 130	93	50 - 130	90	%			90	%		
6323527	D8-Acenaphthylene	2019/09/11	97	50 - 130	87	50 - 130	99	%			94	%		
6329263	2,4,6-Tribromophenol	2019/09/07	77	10 - 130	80	10 - 130	85	%						
6329263	2-Fluorophenol	2019/09/07	19	10 - 130	15	10 - 130	17	%						
6329263	D5-Phenol	2019/09/07	13	10 - 130	12	10 - 130	13	%						
6331982	37CL4 2378 Tetra CDD	2019/09/14	95	35 - 197	83	35 - 197	84	%						
6331982	C13-1234678 HeptaCDD	2019/09/14	88	23 - 140	85	23 - 140	95	%						
6331982	C13-1234678 HeptaCDF	2019/09/14	75	28 - 143	70	28 - 143	75	%						
6331982	C13-123478 HexaCDD	2019/09/14	99	32 - 141	90	32 - 141	94	%						
6331982	C13-123478 HexaCDF	2019/09/14	87	26 - 152	78	26 - 152	82	%						
6331982	C13-1234789 HeptaCDF	2019/09/14	79	26 - 138	77	26 - 138	80	%						
6331982	C13-123678 HexaCDD	2019/09/14	107	28 - 130	106	28 - 130	117	%						
6331982	C13-123678 HexaCDF	2019/09/14	88	26 - 123	74	26 - 123	82	%						
6331982	C13-12378 PentaCDD	2019/09/14	73	25 - 181	69	25 - 181	67	%						
6331982	C13-12378 PentaCDF	2019/09/14	62	24 - 185	56	24 - 185	60	%						
6331982	C13-123789 HexaCDF	2019/09/14	87	29 - 147	86	29 - 147	83	%						
6331982	C13-234678 HexaCDF	2019/09/14	78	28 - 136	73	28 - 136	78	%						
6331982	C13-23478 PentaCDF	2019/09/14	71	25 - 181	65	25 - 181	70	%						
6331982	C13-2378 TetraCDD	2019/09/14	84	25 - 164	77	25 - 164	82	%						
6331982	C13-2378 TetraCDF	2019/09/14	76	24 - 169	74	24 - 169	74	%						
6331982	C13-OCDD	2019/09/14	72	17 - 157	69	17 - 157	69	%						
6347840	Confirmation C13-2378 TetraCDF	2019/09/20					86	%						
6311749	Moisture	2019/09/03							1.4	25				
6323527	1-Methylnaphthalene	2019/09/11	100	50 - 130	92	50 - 130	<0.050	mg/kg	NC	50	<0.050	mg/kg		
6323527	2-Methylnaphthalene	2019/09/11	94	50 - 130	84	50 - 130	<0.050	mg/kg	NC	50	<0.050	mg/kg		
6323527	Acenaphthene	2019/09/11	105	50 - 130	93	50 - 130	<0.050	mg/kg	NC	50	<0.050	mg/kg		
6323527	Acenaphthylene	2019/09/11	92	50 - 130	82	50 - 130	<0.050	mg/kg	NC	50	<0.050	mg/kg		
6323527	Anthracene	2019/09/11	85	50 - 130	85	50 - 130	<0.050	mg/kg	NC	50	<0.050	mg/kg		
6323527	Benzo(a)anthracene	2019/09/11	83	50 - 130	84	50 - 130	<0.050	mg/kg	NC	50	<0.050	mg/kg		



BUREAU  
VERITAS

BV Labs Job #: B9N2252  
Report Date: 2019/09/23

### QUALITY ASSURANCE REPORT(CONT'D)

EcoMetrix Incorporated  
Client Project #: 19-2587  
Site Location: NPNS  
Sampler Initials: JT

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD		Reagent Blank		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	Value	UNITS	% Recovery	QC Limits
6323527	Benzo(a)pyrene	2019/09/11	110	50 - 130	81	50 - 130	<0.050	mg/kg	NC	50	<0.050	mg/kg		
6323527	Benzo(b)fluoranthene	2019/09/11	118	50 - 130	88	50 - 130	<0.050	mg/kg	NC	50	<0.050	mg/kg		
6323527	Benzo(g,h,i)perylene	2019/09/11	106	50 - 130	90	50 - 130	<0.050	mg/kg	NC	50	<0.050	mg/kg		
6323527	Benzo(j)fluoranthene	2019/09/11	97	50 - 130	84	50 - 130	<0.050	mg/kg	NC	50	<0.050	mg/kg		
6323527	Benzo(k)fluoranthene	2019/09/11	97	50 - 130	86	50 - 130	<0.050	mg/kg	NC	50	<0.050	mg/kg		
6323527	Chrysene	2019/09/11	95	50 - 130	95	50 - 130	<0.050	mg/kg	NC	50	<0.050	mg/kg		
6323527	Dibenz(a,h)anthracene	2019/09/11	86	50 - 130	74	50 - 130	<0.050	mg/kg	NC	50	<0.050	mg/kg		
6323527	Fluoranthene	2019/09/11	86	50 - 130	85	50 - 130	<0.050	mg/kg	NC	50	<0.050	mg/kg		
6323527	Fluorene	2019/09/11	98	50 - 130	83	50 - 130	<0.050	mg/kg	NC	50	<0.050	mg/kg		
6323527	Indeno(1,2,3-cd)pyrene	2019/09/11	86	50 - 130	72	50 - 130	<0.050	mg/kg	NC	50	<0.050	mg/kg		
6323527	Naphthalene	2019/09/11	105	50 - 130	92	50 - 130	<0.050	mg/kg	NC	50	<0.050	mg/kg		
6323527	Perylene	2019/09/11	100	50 - 130	83	50 - 130	<0.050	mg/kg	NC	50	<0.050	mg/kg		
6323527	Phenanthrene	2019/09/11	95	50 - 130	93	50 - 130	<0.050	mg/kg	NC	50	<0.050	mg/kg		
6323527	Pyrene	2019/09/11	85	50 - 130	87	50 - 130	<0.050	mg/kg	NC	50	<0.050	mg/kg		
6327290	Total Aluminum (Al)	2019/09/06					<0.20	mg/kg	4.5	40			28 (1)	75 - 125
6327290	Total Antimony (Sb)	2019/09/06	101	75 - 125	101	75 - 125	<0.0010	mg/kg	9.6	40				
6327290	Total Arsenic (As)	2019/09/06	NC	75 - 125	100	75 - 125	<0.0040	mg/kg	2.6	40			100	75 - 125
6327290	Total Barium (Ba)	2019/09/06	105	75 - 125	114	75 - 125	<0.010	mg/kg	55 (3)	40			83	75 - 125
6327290	Total Beryllium (Be)	2019/09/06	96	75 - 125	95	75 - 125	<0.0010	mg/kg	NC	40				
6327290	Total Bismuth (Bi)	2019/09/06					<0.0010	mg/kg	0.53	40				
6327290	Total Boron (B)	2019/09/06					<0.20	mg/kg	1.1	40				
6327290	Total Cadmium (Cd)	2019/09/06	96	75 - 125	98	75 - 125	<0.0010	mg/kg	1.1	40			104	75 - 125
6327290	Total Calcium (Ca)	2019/09/06					<2.0	mg/kg	36	60			106	75 - 125
6327290	Total Chromium (Cr)	2019/09/06	91	75 - 125	99	75 - 125	<0.010	mg/kg	NC	40				
6327290	Total Cobalt (Co)	2019/09/06	90	75 - 125	97	75 - 125	<0.0013	mg/kg	7.4	40			94	75 - 125
6327290	Total Copper (Cu)	2019/09/06	NC	75 - 125	96	75 - 125	<0.010	mg/kg	0.87	40			94	75 - 125
6327290	Total Iron (Fe)	2019/09/06					<0.25	mg/kg	10	40			102	75 - 125
6327290	Total Lead (Pb)	2019/09/06	98	75 - 125	102	75 - 125	<0.0010	mg/kg	5.3	40			97	75 - 125
6327290	Total Lithium (Li)	2019/09/06	106	75 - 125	104	75 - 125	<0.10	mg/kg	NC	40				
6327290	Total Magnesium (Mg)	2019/09/06					<0.40	mg/kg	1.7	40			101	75 - 125



BUREAU  
VERITAS

BV Labs Job #: B9N2252  
Report Date: 2019/09/23

### QUALITY ASSURANCE REPORT(CONT'D)

EcoMetrix Incorporated  
Client Project #: 19-2587  
Site Location: NPNS  
Sampler Initials: JT

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD		Reagent Blank		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	Value	UNITS	% Recovery	QC Limits
6327290	Total Manganese (Mn)	2019/09/06	NC	75 - 125	102	75 - 125	<0.010	mg/kg	3.4	40			99	75 - 125
6327290	Total Mercury (Hg)	2019/09/06	NC	75 - 125	101	75 - 125	<0.0020	mg/kg	1.4	40			110	75 - 125
6327290	Total Molybdenum (Mo)	2019/09/06	102	75 - 125	100	75 - 125	<0.0040	mg/kg	13	40				
6327290	Total Nickel (Ni)	2019/09/06	90	75 - 125	98	75 - 125	<0.010	mg/kg	0.87	40			88	75 - 125
6327290	Total Phosphorus (P)	2019/09/06					<2.0	mg/kg	1.3	40				
6327290	Total Potassium (K)	2019/09/06					<2.0	mg/kg	2.7	40			103	75 - 125
6327290	Total Selenium (Se)	2019/09/06	NC	75 - 125	97	75 - 125	<0.010	mg/kg	1.2	40			107	75 - 125
6327290	Total Silver (Ag)	2019/09/06	NC	75 - 125	94	75 - 125	<0.0010	mg/kg	0.087	40			101	75 - 125
6327290	Total Sodium (Na)	2019/09/06					<2.0	mg/kg	1.3	40			100	75 - 125
6327290	Total Strontium (Sr)	2019/09/06	NC	75 - 125	100	75 - 125	<0.010	mg/kg	16	60			100	75 - 125
6327290	Total Thallium (Tl)	2019/09/06	98	75 - 125	100	75 - 125	<0.00040	mg/kg	6.7	40				
6327290	Total Tin (Sn)	2019/09/06	88	75 - 125	101	75 - 125	<0.020	mg/kg	25	40				
6327290	Total Titanium (Ti)	2019/09/06	89	75 - 125	99	75 - 125	<0.020	mg/kg	1.5	40			29 (1)	75 - 125
6327290	Total Uranium (U)	2019/09/06	103	75 - 125	106	75 - 125	<0.00040	mg/kg	20	40			102	75 - 125
6327290	Total Vanadium (V)	2019/09/06	94	75 - 125	97	75 - 125	<0.020	mg/kg	NC	40				
6327290	Total Zinc (Zn)	2019/09/06	NC	75 - 125	104	75 - 125	0.103, RDL=0.040 (2)	mg/kg	1.6	40			98	75 - 125
6327291	Mercury (Hg)	2019/09/11	60 (4)	75 - 125	87	75 - 125	<0.0010	mg/kg	5.5	20			88	75 - 125
6329263	2,3,4,5-Tetrachlorophenol	2019/09/07	64	10 - 130	66	10 - 130	<0.02	ug/g	NC	50				
6329263	2,3,4,6-Tetrachlorophenol	2019/09/07	53	10 - 130	61	10 - 130	<0.02	ug/g	NC	50				
6329263	2,3,4-Trichlorophenol	2019/09/07	66	10 - 130	69	10 - 130	<0.02	ug/g	NC	50				
6329263	2,3,5,6-Tetrachlorophenol	2019/09/07	57	10 - 130	58	10 - 130	<0.02	ug/g	NC	50				
6329263	2,3,5-Trichlorophenol	2019/09/07	59	10 - 130	67	10 - 130	<0.02	ug/g	NC	50				
6329263	2,3,6-Trichlorophenol	2019/09/07	52	10 - 130	62	10 - 130	<0.02	ug/g	NC	50				
6329263	2,3-Dichlorophenol	2019/09/07	53	10 - 130	56	10 - 130	<0.02	ug/g	NC	50				
6329263	2,4,5-Trichlorophenol	2019/09/07	57	10 - 130	63	10 - 130	<0.02	ug/g	NC	50				
6329263	2,4,6-Trichlorophenol	2019/09/07	47	10 - 130	59	10 - 130	<0.02	ug/g	NC	50				
6329263	2,4-Dichlorophenol	2019/09/07	52	10 - 130	60	10 - 130	<0.02	ug/g	NC	50				
6329263	2,4-Dimethylphenol	2019/09/07	49	10 - 130	54	10 - 130	<0.02	ug/g	NC	50				





BUREAU  
VERITAS

BV Labs Job #: B9N2252  
Report Date: 2019/09/23

### QUALITY ASSURANCE REPORT(CONT'D)

EcoMetrix Incorporated  
Client Project #: 19-2587  
Site Location: NPNS  
Sampler Initials: JT

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD		Reagent Blank		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	Value	UNITS	% Recovery	QC Limits
6329263	2,5-Dichlorophenol	2019/09/07	54	10 - 130	63	10 - 130	<0.02	ug/g	NC	50				
6329263	2,6-Dichlorophenol	2019/09/07	46	10 - 130	62	10 - 130	<0.02	ug/g	NC	50				
6329263	2-Chlorophenol	2019/09/07	32	10 - 130	38	10 - 130	<0.02	ug/g	NC	50				
6329263	3 & 4-Chlorophenol	2019/09/07	53	10 - 130	33	10 - 130	<0.02	ug/g	NC	50				
6329263	3,4,5-Trichlorophenol	2019/09/07	59	10 - 130	60	10 - 130	<0.02	ug/g	NC	50				
6329263	3,4-Dichlorophenol	2019/09/07	64	10 - 130	57	10 - 130	<0.02	ug/g	NC	50				
6329263	3,5-Dichlorophenol	2019/09/07	61	10 - 130	66	10 - 130	<0.02	ug/g	NC	50				
6329263	4-Chloro-3-Methylphenol	2019/09/07	52	10 - 130	43	10 - 130	<0.02	ug/g	NC	50				
6329263	m/p-Cresol	2019/09/07	33	10 - 130	26	10 - 130	<0.02	ug/g	NC	50				
6329263	o-Cresol	2019/09/07	35	10 - 130	33	10 - 130	<0.02	ug/g	NC	50				
6329263	Pentachlorophenol	2019/09/07	50	10 - 130	45	10 - 130	<0.02	ug/g	NC	50				
6329263	Phenol	2019/09/07	13	10 - 130	12	10 - 130	<0.02	ug/g	NC	50				
6331982	1,2,3,4,6,7,8-Hepta CDD	2019/09/14	102	70 - 140	99	70 - 140	<0.124, EDL=0.124	pg/g	1.0	25				
6331982	1,2,3,4,6,7,8-Hepta CDF	2019/09/14	113	82 - 122	108	82 - 122	<0.133, EDL=0.133	pg/g	4.5	25				
6331982	1,2,3,4,7,8,9-Hepta CDF	2019/09/14	115	78 - 138	109	78 - 138	<0.132, EDL=0.132	pg/g	3.6	25				
6331982	1,2,3,4,7,8-Hexa CDD	2019/09/14	101	70 - 164	97	70 - 164	<0.123, EDL=0.123	pg/g	7.0	25				
6331982	1,2,3,4,7,8-Hexa CDF	2019/09/14	101	72 - 134	98	72 - 134	<0.128, EDL=0.128	pg/g	3.0	25				
6331982	1,2,3,6,7,8-Hexa CDD	2019/09/14	108	76 - 134	104	76 - 134	<0.126, EDL=0.126	pg/g	7.4	25				
6331982	1,2,3,6,7,8-Hexa CDF	2019/09/14	107	84 - 130	116	84 - 130	<0.132, EDL=0.132	pg/g	5.3	25				
6331982	1,2,3,7,8,9-Hexa CDD	2019/09/14	102	64 - 162	95	64 - 162	<0.131, EDL=0.131	pg/g	8.1	25				
6331982	1,2,3,7,8,9-Hexa CDF	2019/09/14	112	78 - 130	101	78 - 130	<0.132, EDL=0.132	pg/g	3.9	25				
6331982	1,2,3,7,8-Penta CDD	2019/09/14	109	25 - 181	101	25 - 181	<0.134, EDL=0.134	pg/g	3.9	25				



BUREAU  
VERITAS

BV Labs Job #: B9N2252  
Report Date: 2019/09/23

**QUALITY ASSURANCE REPORT(CONT'D)**

EcoMetrix Incorporated  
Client Project #: 19-2587  
Site Location: NPNS  
Sampler Initials: JT

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD		Reagent Blank		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	Value	UNITS	% Recovery	QC Limits
6331982	1,2,3,7,8-Penta CDF	2019/09/14	110	80 - 134	112	80 - 134	<0.142, EDL=0.142	µg/g	0.90	25				
6331982	2,3,4,6,7,8-Hexa CDF	2019/09/14	115	70 - 156	106	70 - 156	<0.122, EDL=0.122	µg/g	4.6	25				
6331982	2,3,4,7,8-Penta CDF	2019/09/14	107	68 - 160	102	68 - 160	<0.133, EDL=0.133	µg/g	0.98	25				
6331982	2,3,7,8-Tetra CDD	2019/09/14	86	67 - 158	83	67 - 158	<0.111, EDL=0.111	µg/g	4.7	25				
6331982	2,3,7,8-Tetra CDF	2019/09/14	103	75 - 158	90	75 - 158	<0.124, EDL=0.124	µg/g	2.2	25				
6331982	Octa CDD	2019/09/14	105	78 - 144	101	78 - 144	<0.186, EDL=0.186 (5)	µg/g	8.5	25				
6331982	Octa CDF	2019/09/14	99	63 - 170	90	63 - 170	<0.145, EDL=0.145	µg/g	7.5	25				
6331982	Total Hepta CDD	2019/09/14					<0.124, EDL=0.124	µg/g						
6331982	Total Hepta CDF	2019/09/14					<0.132, EDL=0.132	µg/g						
6331982	Total Hexa CDD	2019/09/14					<0.128, EDL=0.128	µg/g						
6331982	Total Hexa CDF	2019/09/14					<0.129, EDL=0.129	µg/g						
6331982	Total Penta CDD	2019/09/14					<0.134, EDL=0.134	µg/g						
6331982	Total Penta CDF	2019/09/14					<0.137, EDL=0.137	µg/g						
6331982	Total Tetra CDD	2019/09/14					<0.111, EDL=0.111	µg/g						
6331982	Total Tetra CDF	2019/09/14					<0.124, EDL=0.124	µg/g						



BUREAU  
VERITAS

BV Labs Job #: B9N2252  
Report Date: 2019/09/23

### QUALITY ASSURANCE REPORT(CONT'D)

EcoMetrix Incorporated  
Client Project #: 19-2587  
Site Location: NPNS  
Sampler Initials: JT

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD		Reagent Blank		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	Value	UNITS	% Recovery	QC Limits
6347840	Confirmation 2,3,7,8-Tetra CDF	2019/09/20					<0.078, EDL=0.078	µg/g						

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Reagent Blank: A blank matrix containing all reagents used in the analytical procedure. Used to determine any analytical contamination.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) Reference outside acceptance criteria - re-analysis yields similar results.

(2) Method Blank exceeds acceptance limits for Zn. Sample values for Zn are >10x the concentration of the method blank and the contamination is considered irrelevant.

(3) Duplicate RPD above control limit - Non-homogenous sample - Reanalysis yields similar results.

(4) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

(5) RT>2 seconds - PCDD/DF analysis-Peak maxima of monitored ions exceeds 2 seconds RT > 3 seconds - PCDD/DF analysis - Peak detected exceeds expected retention time (from internal standard) by greater than 3 seconds.



BUREAU  
VERITAS

BV Labs Job #: B9N2252  
Report Date: 2019/09/23

EcoMetrix Incorporated  
Client Project #: 19-2587  
Site Location: NPNS  
Sampler Initials: JT

### VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

---

Angel Guerrero, Team Leader, VOC Air

---

Anastasia Hamanov, Scientific Specialist

---

Andy Lu, Ph.D., P.Chem., Scientific Specialist

---

Kyle Reinhart, Project Manager

---

Owen Cosby, BSc.C.Chem, Supervisor, HRMS Services

---

Rosemarie MacDonald, Scientific Specialist (Organics)

---

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

# Methyl Mercury Results

Flett Research Ltd.

440 DeSalaberry Ave. Winnipeg, MB R2L 0Y7

Fax/Phone (204) 667-2505

E-mail: flett@flettresearch.ca Webpage: http://www.flettresearch.ca

MTBIOT090519XW1  
Page 1 of 1

**CLIENT:** Bureau Veritas - Mississauga: B9N2252

6740 Campobello Road  
Mississauga, ON L5N 2L8

**Date Received:** August 30, 2019  
**Sampling Date:** June 13, 2019 to July 4, 2019

**Matrix:** Tissue (wet)

**Transaction ID:** 897  
**PO/Contract No.:**  
**Date Analysed:** September 5, 2019  
**Analyst(s):** Xiang W.

**Analytical Method:** M10220: Methyl Mercury in Tissue by Digestion, Aqueous Ethylation, Purge & Trap, and CVAFS with an Automated System (Version 3)

**Detection Limit:** 4 ng/g (ML) MDL = 1 ng/g The MDL was determined based on 7 replicates of analytical blanks (98% confidence level) and a 100 mg wet sample size.

For reporting purposes results will be flagged below the ML which is considered a practical quantitation limit.

**Estimated Uncertainty:** The estimated uncertainty of this method has been determined to be ± 13% at a concentration level of 4470 ng/g (95% confidence)

Results authorized by Dr. Robert J. Flett, Chief Scientist

QUALITY DATA	Blanks		pg of MeHg in whole ethylation EPA vial	Gross Peak Area	Mean Ethylation Blank (ng/L)			
		Ethylation blank (H <sub>2</sub> O+Reagent)	0.18	112	0.00			
	Mean Eth. Blank (last 30 runs)	0.29		0.00				
		Net pg MeHg in whole Ethylation EPA vial	Gross Peak Area	Equiv. CH <sub>3</sub> Hg Conc. - based on current batch mean weight (0.0843g) of wet sample, ng/g (Biota)				
	Method Blank 1	0.13	192	0.124				
	Method Blank 2	0.08	159	0.073				
	Method Blank 3	0.06	149	0.053				
	Mean Method Blank	0.09		0.083				
	Standards		MeHg Standard Added to Ethylation EPA Vial (pg CH <sub>3</sub> Hg)	Gross Peak Area	Net Corrected MeHg Std Calibration Factor (units / pg)			
		Mean Value			1062			
Spike Recovery	Matrix Spike (MS) and Matrix Spike Duplicate (MSD)	Sample Identification	Sample Type	Gross Peak Area	% CH <sub>3</sub> Hg Recovery Used for Calculations	Wet Sample Mass (g)	Net CH <sub>3</sub> Hg as Hg (ng/g Wet-Wt)	CH <sub>3</sub> Hg Recovery (%)
		KOP281 (L1-M)	MS1	69928	100%	0.081	106	84.7
		KOP281 (L1-M)	MS1D	76240	100%	0.111	91	82.7
		KOP286 (L1-H)	MS2	40792	100%	0.064	85	89.8
		KOP286 (L1-H)	MS2D	38907	100%	0.051	100	86.4
		KOP291 (C1)	MS3	59150	100%	0.090	83	82.3
		KOP291 (C1)	MS3D	57153	100%	0.095	81	80.8
		KOP296 (Q1)	MS4	34075	100%	0.082	55	86.1
		KOP296 (Q1)	MS4D	36284	100%	0.095	51	92.3
		Mean of Recoveries						
QC Samples	Reference Material	Dorm-4 ID1501 (355± 28 ng/g)		28928	100%	0.013		86.8
		Dorm-4 ID1501 (355± 28 ng/g)	Repeat Aliquot	29540	100%	0.013		88.7
		Dorm-4 ID1501 (355± 28 ng/g)	Repeat Aliquot	31128	100%	0.013		93.5
		Mean of Dorm-4						89.7
Alternate Source Standard (A.S.S.)	A.S.S. - Alfa ID1302 (1000 ng/L)			22524	100%		<- Net CH <sub>3</sub> Hg as Hg (ng/L)	89.7

LAB ID	Sampling Details	Sample ID	Date Sampled	Sample Type	Gross Peak Area	% CH <sub>3</sub> Hg Recovery Used for Calculations	Weighed Wet Sample Mass (g)	Net CH <sub>3</sub> Hg as Hg (ng/g) Wet Wt. [recovery corrected]
96528	KOP281	L1-M	June 13, 2019		44607	85.6	0.10596	62.6
96529	KOP282	L2-M	June 13, 2019		47322	85.6	0.09341	76.7
96530	KOP283	L3-M	June 13, 2019		55488	85.6	0.10135	83.6
96531	KOP284	L4-M	June 13, 2019		27133	85.6	0.08394	49.3
96532	KOP285	L5-M	June 13, 2019		43988	85.6	0.09364	71.9
96533	KOP286	L1-H	June 13, 2019		6244	85.6	0.05576	16.6
96534	KOP287	L2-H	June 13, 2019		11033	85.6	0.05789	28.4
96535	KOP288	L3-H	June 13, 2019		15812	85.6	0.08221	29.4
96536	KOP289	L4-H	June 13, 2019		6464	85.6	0.07306	13.3
96537	KOP290	L5-H	June 13, 2019	DupA1	12915	85.6	0.07922	25.0
96537	KOP290	L5-H	June 13, 2019	DupA2	13108	85.6	0.08009	25.0
96538	KOP291	C1	June 13, 2019		25952	85.6	0.08972	44.3
96539	KOP292	C2	June 13, 2019		21502	85.6	0.06971	47.1
96540	KOP293	C3	June 13, 2019		21894	85.6	0.09445	35.2
96541	KOP295	C5	June 13, 2019		25487	85.6	0.07042	54.9
96542	KOP296	Q1	July 4, 2019		1606	85.6	0.08386	~ 2.65
96543	KOP297	Q2	July 4, 2019		1939	85.6	0.09211	~ 2.92
96544	KOP298	Q3	July 4, 2019		2288	85.6	0.08215	4.01
96545	KOP299	Q4	July 4, 2019		2301	85.6	0.08243	4.03
96546	KOP300	Q5	July 4, 2019	DupB1	2474	85.6	0.09012	~ 4.00
96546	KOP300	Q5	July 4, 2019	DupB2	3065	85.6	0.10841	4.14

Q:\Clients A-L\Bureau Veritas - Mississauga\2019\897\Methyl Mercury\MTBIOT090519XW1.xls

\* : See 'Comments' section above for discussion.

~ : Result below the official detection limit for this analyte in this matrix.

This test report shall not be reproduced, except in full, without written approval of the laboratory.  
Note: Results relate only to the items tested.

Dup : Duplicate - two subsamples of the same sample carried through the analytical procedure in an identical manner.

