APPENDIX G

Sediment Quality Data

GOLDER

Enviro (NZ) Limited
Kopeopeo Canal Remediation Project

Table G1: Dioxin Sediment Validation Quality Data

Golder Sample Reference	KC001A	KC002A	KC003A	KC004A	KC005A	KC006A	KC007A	KC008c	KC009c	KC010c	KC011c	KC012c	KC013c	KC014c	KC015c	KC016c	KC017c
Laboratory Reference	18-66095-1A	18-66095-2A	18-66095-3A	18-66095-4A	18-66095-5A	18-66095-6A	18-66095-7A	18-120099-1A	18-120099-18A	18-120099-17A	18-120099-16A	18-120099-15A	18-120099-14A	18-120099-13A	18-120099-12A	18-120099-11A	18-120099-10A
Sample Date	15-02-18	15-02-18	15-02-18	15-02-18	15-02-18	15-02-18	15-02-18	18-04-18	18-04-18	18-04-18	18-04-18	18-04-18	18-04-18	18-04-18	18-04-18	18-04-18	18-04-18
2378-TCDF	< 5	< 2	< 2	< 2	< 2	< 2	< 5	< 5	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
2378-TCDD	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
12378-PeCDF	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
23478-PeCDF	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
12378-PeCDD	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
123478-HxCDF	10	< 10	< 10	< 10	< 10	< 10	< 10	11	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
123678-HxCDF	< 10	< 10	< 10	< 10	< 10	< 10	< 10	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
234678-HxCDF	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 20	< 20	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 20
123789-HxCDF	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
123478-HxCDD	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
123678-HxCDD	46	< 10	< 10	31	< 10	13	41	56	61	< 10	< 10	17	11	19	< 10	10	46
123789-HxCDD	14	< 10	< 10	< 10	< 10	< 10	< 10	17	11	< 10	< 10	< 10	< 10	< 10	< 10	< 10	16
1234678-HpCDF	190	28	< 10	120	10	45	190	240	190	37	< 10	64	42	73	< 10	36	190
1234789-HpCDF	24	< 10	< 10	16	< 10	< 10	25	26	18	< 10	< 10	< 10	< 10	< 10	< 10	< 10	24
1234678-HpCDD	1,200	210	< 10	800	57	330	1,100	1,600	1,500	220	31	450	330	540	26	240	1,200
OCDF	1,000	190	< 20	680	54	270	1,300	1,100	750	350	35	390	240	420	23	180	990
OCDD	12,000	2,200	72	9,500	680	3,700	13,000	18,000	12,000	3,800	390	5,400	3,900	6,300	290	2,700	14,000
Total PCDD/F WHO-TEQ - Lowerbound	25	3.1	0.022	16	0.89	6.2	22	34	28	3.8	0.44	8.6	6.1	10	0.35	4.6	25
Total PCDD/F WHO-TEQ - Mediumbound	35	14	11	26	12	17	32	44	39	15	12	19	17	21	12	15	36
Total PCDD/F WHO-TEQ - Upperbound	45	26	23	37	23	28	43	54	50	26	23	30	28	32	23	26	46
Total PCDD/F I-TEQ - Lowerbound	34	4.8	0.072	23	1.4	9	32	47	37	6.7	0.74	13	9	15	0.57	6.6	35
Total PCDD/F I-TEQ - Mediumbound	43	15	10	32	11	18	41	56	46	17	11	22	18	24	11	16	45
Total PCDD/F I-TEQ - Upperbound	51	25	20	41	21	28	51	64	56	27	21	31	28	34	20	25	54

Notes
Concentrations expressed in units of pg/g.
Primary sample data only shown.
Denotes sample not representative as area re-dredged.

GOLDER

Enviro (NZ) Limited
Kopeopeo Canal Remediation Project

Table G1: Dioxin Sediment Validation Quality Data

Golder Sample Reference	KC018c	KC019a	KC020a	KC021a	KC022a	KC023a	KC024a	KC025a	KC026a	KC027a	KC028a	KC029a	KC030a	KC031a	KC032a	KC033a	KC034b
Laboratory Reference	18-126002-1A	18-126002-2A	18-120099-2A	18-120099-3A	18-120099-4A	18-120099-5A	18-120099-6A	18-120099-7A	18-120099-8A	18-120099-9A	18-120099-19A	18-120099-20A	18-147618-1A	18-147618-2A	18-147618-3A	18-147618-4A	18-147618-5A
Sample Date	17-04-18	17-04-18	18-04-18	18-04-18	18-04-18	18-04-18	18-04-18	18-04-18	18-04-18	18-04-18	18-04-18	18-04-18	21-05-18	21-05-18	21-05-18	21-05-18	21-05-18
2378-TCDF	< 2	< 10	< 2	< 2	< 5	< 2	< 2	< 5	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 5	< 2
2378-TCDD	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
12378-PeCDF	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
23478-PeCDF	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
12378-PeCDD	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
123478-HxCDF	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	17	< 10
123678-HxCDF	< 10	19	< 10	< 10	< 10	< 10	< 10	11	< 10	13	< 10	< 10	< 10	< 10	< 10	16	< 10
234678-HxCDF	< 10	< 20	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 20	< 10	< 10	< 10	< 10	< 10	< 50	< 10
123789-HxCDF	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
123478-HxCDD	< 10	11	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
123678-HxCDD	< 10	25	< 10	< 10	19	< 10	29	21	< 10	63	21	< 10	10	20	< 10	28	< 10
123789-HxCDD	< 10	< 30	< 10	< 10	< 10	< 10	< 10	< 10	< 10	16	< 10	< 10	< 10	< 10	< 10	15	< 10
1234678-HpCDF	< 10	150	< 10	< 10	80	12	100	72	21	200	100	27	49	97	10	170	23
1234789-HpCDF	< 10	21	< 10	< 10	13	< 10	15	10	< 10	22	15	< 10	12	14	< 10	38	< 10
1234678-HpCDD	45	680	33	42	520	88	740	570	140	1,500	580	190	270	590	58	1,100	140
OCDF	39	1,000	24	27	440	68	540	410	110	990	610	170	220	600	52	1,100	140
OCDD	450	10,000	390	510	6,700	960	9,400	6,400	1,500	16,000	6,200	2,200	3,400	8,400	780	16,000	1,700
Total PCDD/F WHO-TEQ - Lowerbound	0.6	17	0.45	0.58	10	1.3	14	12	2.1	32	11	2.9	5.4	12	0.93	26	2.2
Total PCDD/F WHO-TEQ - Mediumbound	12	29	12	12	21	13	25	22	13	42	22	14	16	22	12	37	13
Total PCDD/F WHO-TEQ - Upperbound	23	41	23	23	32	24	36	33	25	52	33	25	27	33	24	49	25
Total PCDD/F I-TEQ - Lowerbound	0.94	25	0.74	0.96	15	2	21	17	3.2	43	16	4.5	7.9	18	1.5	38	3.5
Total PCDD/F I-TEQ - Mediumbound	11	35	11	11	25	12	31	26	13	52	25	14	17	27	11	48	13
Total PCDD/F I-TEQ - Upperbound	21	46	21	21	34	22	40	35	23	61	35	24	27	37	21	58	23

Notes
Concentrations expressed in units of pg/g.
Primary sample data only shown.
Denotes sample not representative as area re-dredged.

GOLDER

Enviro (NZ) Limited
Kopeopeo Canal Remediation Project

Table G1: Dioxin Sediment Validation Quality Data

Golder Sample Reference	KC035a	KC036a	KC037a	KC038a	KC038C-M	KC038E-L	KC038G-R	KC038 I	KC039a	KC040a	KC041a	KC042a	KC042C-M	KC042E-L	KC042G-R	KC042 I	KC043a
Laboratory Reference	18-147618-6A	18-147618-7A	18-147618-8A	18-147618-9A	18-164592-1A	18-164592-2A	18-164592-3A	18-191659-2A	18-147618-11A	18-148443-1A	18-148443-2A	18-148443-3A	18-164592-4A	18-164592-6A	18-164592-5A	18-191659-3A	18-148443-4A
Sample Date	21-05-18	21-05-18	21-05-18	21-05-18	14-06-18	14-06-18	14-06-18	24-07-18	21-05-18	22-05-18	22-05-18	22-05-18	14-06-18	14-06-18	14-06-18	24-07-18	22-05-18
2378-TCDF	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 10	< 2	< 5	< 2	< 2	< 5
2378-TCDD	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
12378-PeCDF	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
23478-PeCDF	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
12378-PeCDD	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
123478-HxCDF	< 10	< 10	< 10	< 10	< 10	< 10	15	< 10	< 10	< 10	< 10	25	< 10	19	< 10	< 10	13
123678-HxCDF	< 10	< 10	11	< 10	< 20	< 20	< 20	< 10	< 10	< 10	< 10	33	< 20	< 20	< 10	< 10	< 10
234678-HxCDF	< 10	< 10	< 20	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 50	< 10	25	< 10	< 10	< 10
123789-HxCDF	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
123478-HxCDD	< 10	< 10	< 10	< 10	< 10	< 10	12	< 10	< 10	< 10	< 10	11	< 10	< 10	< 10	< 10	< 10
123678-HxCDD	< 10	< 10	48	18	22	26	91	45	< 10	< 10	15	180	18	110	< 10	18	20
123789-HxCDD	< 10	< 10	12	< 10	< 30	< 30	< 30	10	< 10	< 10	< 10	38	< 30	< 30	< 30	< 10	< 10
1234678-HpCDF	16	11	160	64	96	140	400	170	21	< 10	82	640	60	470	35	64	110
1234789-HpCDF	< 10	< 10	23	12	11	19	40	18	< 10	< 10	15	73	< 10	48	< 10	< 10	22
1234678-HpCDD	110	74	1,200	490	600	690	2,500	1,300	130	69	430	4,800	460	2,500	210	450	580
OCDF	100	67	970	360	490	790	1,900	950	120	53	510	3,100	380	1,900	170	340	730
OCDD	1,200	710	13,000	5,200	6,200	6,700	24,000	12,000	1,500	750	5,700	44,000	4,700	26,000	2,500	4,600	7,800
Total PCDD/F WHO-TEQ - Lowerbound	1.6	1.1	25	9.1	11	13	49	24	2	0.93	8.6	98	8.5	54	3.3	8.4	13
Total PCDD/F WHO-TEQ - Mediumbound	13	12	35	20	24	26	60	35	13	12	19	110	21	65	16	19	23
Total PCDD/F WHO-TEQ - Upperbound	24	24	46	31	36	38	71	45	25	24	30	120	33	77	28	30	34
Total PCDD/F I-TEQ - Lowerbound	2.6	1.6	35	13	16	19	67	33	3.1	1.5	13	130	12	73	5.1	12	19
Total PCDD/F I-TEQ - Mediumbound	12	12	44	22	27	29	77	42	13	11	22	140	23	83	16	21	28
Total PCDD/F I-TEQ - Upperbound	22	21	53	32	38	40	87	51	23	21	32	150	34	93	27	31	37

Notes
Concentrations expressed in units of pg/g.
Primary sample data only shown.
Denotes sample not representative as area re-dredged.

GOLDER

Enviro (NZ) Limited
Kopeopeo Canal Remediation Project

Table G1: Dioxin Sediment Validation Quality Data

Golder Sample Reference	KC044a	KC045a	KC046a	KC047a	KC047C-M	KC047E-L	KC047G-R	KC048a	KC049a	KC050a	KC051a	KC052a	KC053a	KC054a	KC054 C	KC054 E	KC054 G
Laboratory Reference	18-148443-6A	18-148443-7A	18-148443-8A	18-148443-9A	18-164592-7A	18-164592-9A	18-164592-8A	18-148443-10A	18-148443-11A	18-164592-10A	18-164592-11A	18-164592-12A	18-164592-13A	18-164592-14A	18-191659-4A	18-191659-5A	18-191659-6A
Sample Date	22-05-18	22-05-18	22-05-18	22-05-18	14-06-18	14-06-18	14-06-18	22-05-18	22-05-18	14-06-18	14-06-18	14-06-18	14-06-18	14-06-18	24-07-18	24-07-18	24-07-18
2378-TCDF	< 5	< 2	< 2	< 10	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
2378-TCDD	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
12378-PeCDF	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
23478-PeCDF	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
12378-PeCDD	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
123478-HxCDF	< 10	13	< 10	31	13	20	< 10	< 10	< 10	< 10	< 10	< 10	< 10	16	< 10	< 10	< 10
123678-HxCDF	14	< 10	< 10	32	< 20	< 20	< 10	< 10	< 10	< 10	< 20	< 10	< 10	< 20	< 10	< 10	< 10
234678-HxCDF	< 20	< 10	< 10	< 50	15	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	18	< 10	< 10	< 10
123789-HxCDF	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
123478-HxCDD	< 10	< 10	< 10	12	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
123678-HxCDD	31	20	11	220	31	39	19	< 10	14	22	< 10	13	< 10	70	31	< 10	26
123789-HxCDD	10	< 10	< 10	51	< 30	< 30	< 30	< 10	< 10	< 30	< 30	< 30	< 30	< 30	< 10	< 10	< 10
1234678-HpCDF	200	120	36	800	140	180	62	26	60	56	31	53	< 10	270	120	24	100
1234789-HpCDF	28	24	< 10	81	26	35	< 10	< 10	< 10	< 10	< 10	< 10	< 10	42	16	< 10	13
1234678-HpCDD	970	660	250	5,700	1,000	1,100	460	140	390	450	180	300	< 10	1,500	840	170	680
OCDF	1,400	700	210	4,500	970	850	340	180	390	270	190	260	< 20	1,600	610	130	540
OCDD	11,000	8,900	2,600	51,000	12,000	16,000	5,400	2,000	4200	4,900	2,200	3,700	86	21,000	8,500	1,700	6,900
Total PCDD/F WHO-TEQ - Lowerbound	21	14	4.8	120	21	24	8.8	2.3	7.3	8.8	2.8	6	0.026	35	16	2.5	13
Total PCDD/F WHO-TEQ - Mediumbound	32	24	16	130	33	36	21	14	18	21	16	18	12	47	26	14	24
Total PCDD/F WHO-TEQ - Upperbound	42	35	26	140	44	48	32	25	29	32	28	30	25	58	37	25	34
Total PCDD/F I-TEQ - Lowerbound	30	21	6.8	160	31	36	13	3.8	10	12	4.5	8.8	0.086	51	22	3.8	18
Total PCDD/F I-TEQ - Mediumbound	39	30	16	170	40	46	23	14	20	23	16	19	11	61	31	14	27
Total PCDD/F I-TEQ - Upperbound	48	39	26	180	50	57	34	24	29	33	27	30	22	71	41	24	37

Notes
Concentrations expressed in units of pg/g.
Primary sample data only shown.
Denotes sample not representative as area re-dredged.

Table G1: Dioxin Sediment Validation Quality Data

Golder Sample Reference	KC055a	KC056a	KC056c	KC056e	KC056g	KC056 i	KC056 k	KC056 m	KC057a	KC058a	KC058.5a	KC058.5 c	KC058.5 e	KC058.5 g	KC059a	KC060a	KC060 c
Laboratory Reference	18-164592-15A	18-205193-1A	18-222104-1A	18-222104-2A	18-222104-3A	18-299847-1A	18-299847-2A	18-299847-3A	18-205193-2A	18-205193-3A	18-241120-1A	18-299847-4A	18-299847-5A	18-299847-6A	18-205193-4A	18-222104-4A	18-299847-8A
Sample Date	14-06-18	13-08-18	03-09-18	03-09-18	03-09-18	28-11-18	28-11-18	28-11-18	13-08-18	13-08-18	24-09-18	28-11-18	28-11-18	28-11-18	13-08-18	03-09-18	28-11-18
2378-TCDF	< 2	< 5	< 2	< 5	< 2	< 2	< 5	< 2	< 5	< 5	< 5	< 2	< 2	< 2	< 5	< 5	< 2
2378-TCDD	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 5	< 2
12378-PeCDF	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
23478-PeCDF	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
12378-PeCDD	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
123478-HxCDF	< 10	< 20	< 10	27	< 10	< 10	10	< 10	< 10	< 40	26	< 10	< 10	< 10	< 10	38	< 10
123678-HxCDF	< 10	< 20	< 10	30	< 10	< 10	< 10	< 10	< 10	< 40	27	< 10	< 10	< 10	< 10	38	< 10
234678-HxCDF	< 10	< 30	< 20	< 50	< 20	< 10	< 20	< 10	< 10	< 40	< 30	< 20	< 10	< 10	< 20	< 70	< 10
123789-HxCDF	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 40	< 10	< 10	< 10	< 10	< 10	< 10	< 10
123478-HxCDD	< 10	< 10	< 10	15	< 10	< 10	< 10	< 10	< 10	< 40	13	< 10	< 10	< 10	< 10	16	< 10
123678-HxCDD	< 10	84	54	170	51	20	53	19	< 10	< 40	170	45	30	19	38	220	16
123789-HxCDD	< 30	< 30	19	41	13	< 10	< 20	< 10	< 10	< 40	50	< 20	< 20	< 10	< 20	61	< 10
1234678-HpCDF	< 10	330	230	630	220	57	190	65	< 20	61	650	190	120	58	140	920	62
1234789-HpCDF	< 10	41	24	75	25	< 10	23	< 10	< 10	< 40	< 80	22	13	< 10	< 20	110	< 10
1234678-HpCDD	29	2,100	1,500	4,300	1,400	670	1,500	540	90	350	4,600	1,300	920	490	900	7,400	430
OCDF	26	1,700	1,100	2,900	1,100	310	1,200	360	70	370	3,100	1,100	680	300	760	4,500	380
OCDD	340	23,000	15,000	40,000	15,000	5,800	16,000	4,900	900	3,900	46,000	12,000	7,800	4,200	9,100	74,000	3,800
Total PCDD/F WHO-TEQ - Lowerbound	0.4	41	30	91	28	11	29	9.5	1.2	5.4	96	24	16	8.7	17	150	7.8
Total PCDD/F WHO-TEQ - Mediumbound	13	54	40	100	38	22	40	20	13	27	110	35	27	20	29	160	19
Total PCDD/F WHO-TEQ - Upperbound	25	68	51	110	49	33	51	31	24	50	120	47	39	30	41	170	29
Total PCDD/F I-TEQ - Lowerbound	0.66	58	41	120	39	15	41	13	1.9	8.4	130	33	22	12	24	200	11
Total PCDD/F I-TEQ - Mediumbound	12	70	50	130	48	25	51	23	12	29	140	43	32	21	35	210	20
Total PCDD/F I-TEQ - Upperbound	23	83	60	140	58	34	61	32	22	50	150	53	42	31	45	220	30

Notes
Concentrations expressed in units of pg/g.
Primary sample data only shown.
Denotes sample not representative as area re-dredged.

GOLDER

Enviro (NZ) Limited
Kopeopeo Canal Remediation Project

Table G1: Dioxin Sediment Validation Quality Data

Golder Sample Reference	KCO60e2	KC060 g	KC061a	KC061 c	KCO61e2	KC061 g	KC062a	KC062c3	KC062e3	KC062 g	KCO62g2	KC063a	KC064a	KCO64c2	KC064e2	KC064 g	KC065a
Laboratory Reference	18-310340-1A	18-299847-9A	18-222104-5A	18-299847-10A	18-310340-2A	18-299847-11A	18-222104-6A	18-318060-10A	18-318060-11A	18-299847-12A	18-310340-3A	18-222104-7A	18-222104-8A	18-310340-4A	18-310340-5A	18-299847-19A	18-241120-2A
Sample Date	11-12-18	28-11-18	03-09-18	28-11-18	11-12-18	28-11-18	03-09-18	19-12-18	19-12-18	28-11-18	11-12-18	03-09-18	03-09-18	11-12-18	11-12-18	27-11-18	24-09-18
2378-TCDF	< 2	< 2	< 5	< 2	< 2	< 2	< 2	< 2	< 2	< 5	< 2	< 2	< 2	< 2	< 2	< 2	< 5
2378-TCDD	< 2	< 2	< 5	< 2	< 2	< 2	< 2	< 2	< 2	< 5	< 2	< 2	< 2	< 2	< 2	< 2	< 2
12378-PeCDF	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
23478-PeCDF	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
12378-PeCDD	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
123478-HxCDF	< 10	< 10	29	< 10	< 10	< 10	18	< 10	< 10	20	< 10	< 10	16	< 10	< 10	< 10	38
123678-HxCDF	< 10	< 10	25	< 10	< 10	< 10	19	< 10	< 10	19	< 10	< 10	15	< 10	< 10	< 10	35
234678-HxCDF	< 10	< 10	< 50	< 10	< 10	< 10	< 30	< 10	< 10	< 30	< 10	< 10	< 30	< 10	< 10	< 10	< 30
123789-HxCDF	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
123478-HxCDD	< 10	< 10	11	< 10	< 10	< 10	< 10	< 10	< 10	11	< 10	< 10	< 10	< 10	< 10	< 10	17
123678-HxCDD	< 10	14	140	22	< 10	< 10	130	14	11	130	22	23	92	27	< 10	18	210
123789-HxCDD	< 10	< 10	40	< 10	< 10	< 10	26	< 10	< 10	34	< 10	< 10	23	< 10	< 10	< 10	56
1234678-HpCDF	21	44	680	68	33	15	460	52	42	400	79	91	350	89	21	65	820
1234789-HpCDF	< 10	< 10	84	< 10	< 10	< 10	47	< 10	< 10	45	< 10	11	42	11	< 10	< 10	< 110
1234678-HpCDD	150	340	4,000	530	230	110	3,600	400	310	3,600	620	610	2,400	740	150	460	5,300
OCDF	100	270	3,500	380	200	86	2,400	260	240	2,000	470	560	1,800	450	100	410	3,700
OCDD	1,300	2,800	43,000	4,600	2,200	910	29,000	3,400	2,800	33,000	5,600	7,200	23,000	7,300	1,500	4,400	50,000
Total PCDD/F WHO-TEQ - Lowerbound	2.1	6.2	86	9.7	3.4	1.5	70	7	5.5	72	11	12	50	13	2.2	8.5	110
Total PCDD/F WHO-TEQ - Mediumbound	13	17	98	20	15	13	80	18	16	84	22	22	60	24	13	19	120
Total PCDD/F WHO-TEQ - Upperbound	25	28	110	31	26	24	90	29	27	95	33	33	70	35	25	30	130
Total PCDD/F I-TEQ - Lowerbound	3.1	8.3	120	13	5	2.2	92	9.6	7.7	97	15	17	67	19	3.3	12	150
Total PCDD/F I-TEQ - Mediumbound	13	18	130	23	15	12	100	19	17	110	25	27	76	28	13	21	160
Total PCDD/F I-TEQ - Upperbound	23	27	140	32	25	22	110	28	26	120	34	36	85	38	23	31	170

Notes
Concentrations expressed in units of pg/g.
Primary sample data only shown.
Denotes sample not representative as area re-dredged.

GOLDER

Enviro (NZ) Limited
Kopeopeo Canal Remediation Project

Table G1: Dioxin Sediment Validation Quality Data

Golder Sample Reference	KC065c3	KC065 e	KC065 g	KC066a	KCO66c2	KCO66e	KC066 g	KC067a	KC067c3	KCO67e2	KC067 g	KC068a	KC069a	KC070a	KC070 c	KC070 e	KCO70e2
Laboratory Reference	18-318060-9A	18-299847-20A	18-299847-21A	18-241120-3A	18-310340-6A	18-299847-23A	18-299847-24A	18-241120-4A	18-318060-8A	18-310340-7A	18-299847-25A	18-241120-5A	18-260459-1A	18-260459-2A	18-299847-13A	18-299847-14A	18-310340-8A
Sample Date	19-12-18	27-11-18	27-11-18	24-09-18	11-12-18	27-11-18	27-11-18	24-09-18	19-12-18	11-12-18	27-11-18	24-09-18	16-10-18	16-10-18	28-11-18	28-11-18	11-12-18
2378-TCDF	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 10	< 2	< 5	< 2
2378-TCDD	< 2	< 2	< 2	< 2	< 2	< 2	< 2	2.9	< 2	< 2	< 2	< 2	< 2	< 5	< 2	< 5	< 2
12378-PeCDF	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 20	< 10	< 10	< 10
23478-PeCDF	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
12378-PeCDD	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	12	< 10	< 10	< 10
123478-HxCDF	< 10	< 10	< 10	< 40	< 10	< 10	< 10	35	< 10	< 10	< 10	< 10	11	48	< 10	34	< 10
123678-HxCDF	< 10	< 10	< 10	< 40	< 10	< 10	< 10	34	< 10	< 10	< 10	< 10	< 10	38	< 10	29	< 10
234678-HxCDF	< 10	< 10	< 10	< 40	< 10	< 10	< 10	< 30	< 10	< 10	< 10	< 10	< 20	< 50	< 10	< 50	< 10
123789-HxCDF	< 10	< 10	< 10	< 40	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
123478-HxCDD	< 10	< 10	< 10	< 40	< 10	< 10	< 10	15	< 10	< 10	< 10	< 10	< 10	16	< 10	< 10	< 10
123678-HxCDD	< 10	13	16	140	16	16	< 10	200	< 10	< 10	22	26	60	190	40	130	< 10
123789-HxCDD	< 10	< 10	< 10	54	< 10	< 10	< 10	52	< 10	< 10	< 10	< 10	< 10	77	< 20	47	< 10
1234678-HpCDF	34	37	51	540	59	50	36	750	22	16	85	110	260	840	150	450	26
1234789-HpCDF	< 10	< 10	< 10	64	< 10	< 10	< 10	99	< 10	< 10	< 10	14	29	120	16	77	< 10
1234678-HpCDD	280	300	400	3,800	470	380	220	6,600	170	120	570	680	1,600	5,100	1,200	3,800	210
OCDF	170	210	250	2,800	340	280	210	4,600	110	80	490	600	1,700	4,200	800	2,500	130
OCDD	2,300	2,400	3,600	35,000	4,300	3,500	2,000	64,000	1,500	1,100	5,100	6,400	17,000	49,000	9,700	29,000	1,900
Total PCDD/F WHO-TEQ - Lowerbound	3.9	5.5	7.3	75	8.3	7	3.2	130	2.4	1.7	10	13	32	130	21	77	3
Total PCDD/F WHO-TEQ - Mediumbound	15	16	18	93	19	18	15	140	14	13	21	23	42	130	32	90	14
Total PCDD/F WHO-TEQ - Upperbound	26	27	29	110	30	29	26	150	25	24	32	34	53	140	43	100	26
Total PCDD/F I-TEQ - Lowerbound	5.6	7.3	10	100	12	9.7	4.8	180	3.5	2.5	14	18	45	160	28	99	4.4
Total PCDD/F I-TEQ - Mediumbound	16	17	19	120	21	19	15	190	13	12	24	27	54	170	38	110	14
Total PCDD/F I-TEQ - Upperbound	25	26	29	130	30	28	25	190	23	22	33	36	63	170	48	120	24

Notes
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Primary sample data only shown.
Denotes sample not representative as area re-dredged.

GOLDER

Enviro (NZ) Limited
Kopeopeo Canal Remediation Project

Table G1: Dioxin Sediment Validation Quality Data

Golder Sample Reference	KC070 g	KC071a	KC072a	KC073a	KC073 c	KC073 e	KC073 g	KC074a	KC075a	KC076a	KC076 C	KC076 e	KC076 g	KC077a	KC078a	KC079a	KCO79c
Laboratory Reference	18-299847-15A	18-260459-3A	18-260459-4A	18-260459-5A	18-299847-16A	18-299847-17A	18-299847-18A	18-260459-6A	18-261254-1A	18-261254-2A	18-299847-26A	18-299847-27A	18-299847-28A	18-261254-3A	18-277936-1A	18-277936-2A	18-310340-9A
Sample Date	28-11-18	16-10-18	16-10-18	16-10-18	28-11-18	28-11-18	28-11-18	16-10-18	17-10-18	17-10-18	29-11-18	29-11-18	29-11-18	17-10-18	05-11-18	05-11-18	11-12-18
2378-TCDF	< 2	< 2	< 2	< 5	< 5	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 10	4.2
2378-TCDD	< 2	< 2	< 2	< 5	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 10	< 2
12378-PeCDF	< 10	< 10	< 10	< 20	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
23478-PeCDF	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
12378-PeCDD	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	18	< 10
123478-HxCDF	< 10	10	11	60	54	< 10	21	49	< 10	33	< 10	< 10	11	15	< 10	74	12
123678-HxCDF	< 10	< 10	< 10	20	< 10	< 10	< 10	10	< 10	23	< 10	< 10	< 10	< 10	< 10	67	< 10
234678-HxCDF	< 10	< 20	< 20	< 30	< 20	< 20	< 20	< 20	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 100	13
123789-HxCDF	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
123478-HxCDD	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	10	< 10	< 10	< 10	< 10	< 10	27	< 10
123678-HxCDD	28	43	18	91	41	18	32	27	15	98	15	13	16	49	41	440	44
123789-HxCDD	< 10	< 10	< 10	34	14	< 10	15	13	< 10	31	< 10	< 10	< 10	< 10	< 20	< 100	17
1234678-HpCDF	100	180	120	620	150	120	150	170	60	600	81	38	61	280	210	1,700	200
1234789-HpCDF	12	24	22	110	55	23	34	60	< 10	82	14	< 10	15	32	27	210	28
1234678-HpCDD	710	1,100	470	4,500	1,000	540	1,000	720	370	2,700	400	300	430	1,900	1,400	11,000	1,300
OCDF	610	1,000	720	4,300	530	760	780	490	340	3,900	590	220	290	1,700	1,400	11,000	1,200
OCDD	6,300	11,000	6,500	52,000	8,200	4,700	9,600	8,900	4,100	28,000	4,000	2,900	4,400	13,000	14,000	100,000	13,000
Total PCDD/F WHO-TEQ - Lowerbound	13	22	11	90	26	10	22	22	7.1	63	7.8	5.6	9.2	33	25	240	29
Total PCDD/F WHO-TEQ - Mediumbound	24	33	22	100	36	22	32	32	18	72	19	16	19	43	36	260	38
Total PCDD/F WHO-TEQ - Upperbound	35	43	33	110	46	33	42	42	29	80	29	27	30	53	48	280	47
Total PCDD/F I-TEQ - Lowerbound	18	30	16	130	32	14	29	29	10	85	11	7.8	12	43	36	310	38
Total PCDD/F I-TEQ - Mediumbound	27	40	26	140	41	24	38	37	20	93	20	17	21	52	46	330	46
Total PCDD/F I-TEQ - Upperbound	37	49	35	150	50	34	47	45	29	100	30	27	30	61	56	350	54

Notes
Concentrations expressed in units of pg/g.
Primary sample data only shown.
Denotes sample not representative as area re-dredged.

GOLDER

Enviro (NZ) Limited
Kopeopeo Canal Remediation Project

Table G1: Dioxin Sediment Validation Quality Data

Golder Sample Reference	KCO79e	KCO79g	KC080a	KC080c	KC080e	KC080g	KC081a	KC081c	KC081e2	KC081g	KC082a	KC082c	KC082e	KC082g	KC083a	KC083c2	KC083e2
Laboratory Reference	18-310340-10A	18-310340-11A	18-277936-3A	18-318060-7A	18-318060-6A	18-318060-12A	18-277936-4A	18-312254-1A	18-318060-14A	18-312254-2A	18-277936-5A	18-312254-3A	18-312254-5A	18-312254-7A	18-277936-6A	18-318060-2A	18-318060-1A
Sample Date	11-12-18	11-12-18	05-11-18	19-12-18	19-12-18	19-12-18	05-11-18	13-12-18	19-12-18	13-12-18	05-11-18	13-12-18	13-12-18	13-12-18	05-11-18	19-12-18	19-12-18
2378-TCDF	2.8	< 2	< 10	< 2	< 2	< 2	< 10	< 2	< 2	< 2	< 5	< 2	< 2	< 2	< 20	< 2	< 2
2378-TCDD	< 2	< 2	< 20	< 2	< 2	< 5	< 10	< 2	< 2	< 2	< 10	< 2	< 2	< 2	13	< 2	< 2
12378-PeCDF	< 10	< 10	< 30	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
23478-PeCDF	< 10	< 10	11	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
12378-PeCDD	< 10	< 10	46	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	18	< 10	< 10
123478-HxCDF	< 10	< 10	96	< 10	13	13	22	< 10	< 10	12	16	< 10	< 10	< 10	46	< 10	< 10
123678-HxCDF	< 10	< 10	160	< 10	10	< 10	20	< 10	< 10	< 10	12	< 10	< 10	< 10	45	< 10	< 10
234678-HxCDF	< 10	< 10	140	< 10	< 20	< 10	< 20	< 10	< 10	< 10	< 20	< 10	< 10	< 10	< 50	< 10	< 10
123789-HxCDF	< 10	< 10	< 50	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
123478-HxCDD	< 10	< 10	< 50	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 20	< 10	< 10
123678-HxCDD	< 20	< 10	460	15	49	29	86	26	< 10	26	50	< 10	13	16	180	< 10	< 10
123789-HxCDD	< 10	< 10	200	< 10	23	< 10	31	< 10	< 10	< 10	< 20	< 10	< 10	< 10	80	< 10	< 10
1234678-HpCDF	48	27	3100	66	320	160	420	110	15	100	290	47	46	63	1,000	< 10	16
1234789-HpCDF	< 10	< 10	360	< 10	45	20	55	20	< 10	20	43	< 10	< 10	< 10	140	< 10	< 10
1234678-HpCDD	350	160	14,000	440	1,600	1,300	2,400	800	110	850	1,600	290	320	440	5,400	24	96
OCDF	240	170	25,000	410	2,400	1,500	2,900	660	80	520	2,400	350	270	410	6,600	26	170
OCDD	3,300	1,500	150,000	3,600	13,000	11,000	23,000	9,200	1,000	8,700	15,000	3,100	3,200	4,300	48,000	210	860
Total PCDD/F WHO-TEQ - Lowerbound	5.3	2.4	380	7.8	34	23	52	15	1.6	16	32	4.4	6	8	150	0.31	1.4
Total PCDD/F WHO-TEQ - Mediumbound	17	14	400	19	44	34	67	26	13	27	47	16	17	19	150	12	13
Total PCDD/F WHO-TEQ - Upperbound	29	25	410	29	53	46	81	36	24	37	62	27	28	30	160	23	24
Total PCDD/F I-TEQ - Lowerbound	7.8	3.5	480	11	45	32	71	22	2.3	23	45	6.8	8.4	11	180	0.48	2.2
Total PCDD/F I-TEQ - Mediumbound	18	13	500	20	53	42	83	31	12	32	58	17	18	21	180	10	12
Total PCDD/F I-TEQ - Upperbound	28	23	520	29	61	52	96	40	22	40	72	27	27	30	190	20	22

Notes
Concentrations expressed in units of pg/g.
Primary sample data only shown.
Denotes sample not representative as area re-dredged.

Table G1: Dioxin Sediment Validation Quality Data

Golder Sample Reference	KC083g2	KC084a	KC084a-1	KC084c2	KC084e2	KC084g2	KC085c	KC086e	KC087a	KC088c-1	KC088c-1b	KC088c-2	KC088c-3	KC088d	KC089a	KC090a	KC090a-1
Laboratory Reference	18-318060-13A	18-277936-7A	19-143370-1A	18-318060-3A	18-318060-5A	18-318060-4A	19-48686-1A	19-48686-2A	19-48686-3A	19-74226-2A	19-116913-1A	19-74226-3A	19-74226-4A	19-48686-4A	19-74226-5A	19-74226-6A	19-116913-2A
Sample Date	19-12-18	05-11-18	25-06-19	19-12-18	19-12-18	19-12-18	28-02-19	28-02-19	28-02-19	27-03-19	20-05-19	27-03-19	27-03-19	28-02-19	27-03-19	27-03-19	20-05-19
2378-TCDF	< 2	< 10	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 5	< 2	< 2	< 5	< 10	< 2	< 5	< 2
2378-TCDD	< 5	30	< 2	< 2	< 5	< 2	< 5	< 5	< 2	< 5	< 2	< 5	< 2	23	< 5	14	< 2
12378-PeCDF	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	27	< 10
23478-PeCDF	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	18	< 10
12378-PeCDD	13	< 30	< 10	< 10	20	< 10	< 10	< 10	< 10	14	< 10	< 10	< 10	50	< 10	37	< 10
123478-HxCDF	33	< 50	< 10	< 10	57	18	11	24	< 10	37	30	23	12	120	13	260	13
123678-HxCDF	< 10	< 50	< 10	< 10	37	12	< 10	< 10	< 10	54	14	14	< 10	67	< 10	130	11
234678-HxCDF	< 10	< 50	< 10	< 10	< 20	< 20	< 10	< 10	< 10	< 50	< 30	< 10	< 10	80	< 10	< 200	< 20
123789-HxCDF	< 10	< 50	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	34	< 10
123478-HxCDD	24	< 50	< 10	< 10	40	13	< 10	21	< 10	14	< 10	12	< 10	62	< 10	39	< 10
123678-HxCDD	34	110	< 10	12	130	53	38	34	11	170	88	29	25	360	80	730	34
123789-HxCDD	< 30	< 50	< 10	< 10	< 100	< 30	< 20	< 20	< 10	44	23	< 20	< 10	< 200	16	280	13
1234678-HpCDF	100	490	23	40	480	220	150	81	41	1,000	620	120	190	1600	780	5,300	290
1234789-HpCDF	28	85	< 10	< 10	100	29	21	26	< 10	130	79	32	21	270	79	920	45
1234678-HpCDD	1,200	2,700	150	370	4,500	1,900	1,000	820	330	5,900	2,800	1,000	1,100	11000	4200	35000	1,300
OCDF	350	3,000	180	250	2,300	1,200	900	240	340	7,000	4,300	500	1,200	9000	8100	30000	1,900
OCDD	11,000	31,000	2,000	3,000	44,000	17,000	9,100	7,400	3,400	59,000	24,000	11,000	8,900	98000	32000	340000	17,000
Total PCDD/F WHO-TEQ - Lowerbound	39	84	2.4	6.3	110	37	20	19	5.9	140	59	23	20	300	74	730	29
Total PCDD/F WHO-TEQ - Mediumbound	46	120	14	17	120	47	32	31	17	140	69	34	30	320	85	740	39
Total PCDD/F WHO-TEQ - Upperbound	53	150	25	28	130	58	44	43	28	150	79	45	41	330	96	750	49
Total PCDD/F I-TEQ - Lowerbound	40	110	3.9	8.6	130	49	27	25	8.6	180	79	31	27	350	100	970	42
Total PCDD/F I-TEQ - Mediumbound	49	130	14	18	150	59	37	35	18	180	88	41	36	370	110	980	51
Total PCDD/F I-TEQ - Upperbound	57	160	24	27	160	68	48	46	27	190	96	51	45	380	120	990	59

Notes
Concentrations expressed in units of pg/g.
Primary sample data only shown.
Denotes sample not representative as area re-dredged.

GOLDER

Enviro (NZ) Limited
Kopeopeo Canal Remediation Project

Table G1: Dioxin Sediment Validation Quality Data

Golder Sample Reference	KC090a-2	KC090a-3	KC091a	KC092a	KC093a	KC094a	KC095a	KC096a	KC097a	KC098a	KC098a-1	KC098a-2	KC098a-3	KC099a	KC100a	KC101a	KC102a
Laboratory Reference	19-116913-4A	19-116913-5A	19-74226-7A	19-74226-8A	19-74226-9A	19-74226-11A	19-74226-12A	19-74226-13A	19-74309-1A	19-90046-1A	19-116913-6A	19-116913-7A	19-116913-8A	19-90046-3A	19-90046-4A	19-90046-5A	19-90046-6A
Sample Date	20-05-19	20-05-19	27-03-19	27-03-19	27-03-19	27-03-19	27-03-19	27-03-19	27-03-19	16-04-19	20-05-19	20-05-19	20-05-19	16-04-19	16-04-19	16-04-19	16-04-19
2378-TCDF	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 5	< 2	< 2	< 2	< 2	< 5	< 2	< 2
2378-TCDD	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 5	< 2	< 2	< 2	< 2	< 2	< 2	< 2
12378-PeCDF	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
23478-PeCDF	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
12378-PeCDD	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
123478-HxCDF	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	94	< 10	17	< 10	< 10	49	< 10	< 10
123678-HxCDF	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	49	< 10	12	< 10	< 10	24	< 10	< 10
234678-HxCDF	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 70	< 10	< 30	< 10	< 10	< 30	< 10	< 10
123789-HxCDF	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
123478-HxCDD	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	18	< 10	< 10	< 10	< 10	< 10	< 10	< 10
123678-HxCDD	< 10	11	< 10	< 10	< 10	< 10	< 10	18	35	130	10	70	< 10	11	35	25	22
123789-HxCDD	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 60	< 10	17	< 10	< 10	< 20	< 10	< 10
1234678-HpCDF	50	82	55	21	19	14	12	140	130	910	79	390	< 10	82	230	110	130
1234789-HpCDF	< 10	12	10	< 10	< 10	< 10	< 10	16	17	180	< 10	43	< 10	10	< 100	< 20	< 20
1234678-HpCDD	190	360	260	120	120	80	64	560	740	4300	320	2,000	33	330	1,200	730	620
OCDF	350	620	330	-100	120	71	77	1,100	640	3700	570	2,200	43	560	1,200	660	780
OCDD	1,700	3,400	3,100	1,500	1,200	670	650	5,700	6,800	53000	3,800	19,000	320	3,700	15,000	7,600	7,700
Total PCDD/F WHO-TEQ - Lowerbound	3	6.8	4.3	1.9	1.8	1.2	0.98	11	15	100	6.3	42	0.44	6.6	30	13	12
Total PCDD/F WHO-TEQ - Mediumbound	14	18	16	13	13	12	12	22	25	120	17	53	12	17	42	24	23
Total PCDD/F WHO-TEQ - Upperbound	26	28	27	24	24	24	24	32	36	130	28	63	23	28	54	35	34
Total PCDD/F I-TEQ - Lowerbound	4.4	9.7	6.7	2.9	2.7	1.7	1.5	16	20	140	9.4	57	0.69	9.6	41	19	18
Total PCDD/F I-TEQ - Mediumbound	14	19	17	13	13	12	11	25	29	150	19	66	11	19	52	29	28
Total PCDD/F I-TEQ - Upperbound	24	28	26	23	23	21	21	34	39	170	28	75	21	28	62	38	37

Notes
Concentrations expressed in units of pg/g.
Primary sample data only shown.
Denotes sample not representative as area re-dredged.

GOLDER

Enviro (NZ) Limited
Kopeopeo Canal Remediation Project

Table G1: Dioxin Sediment Validation Quality Data

Golder Sample Reference	KC103a	KC104a	KC105a	KC106a	KC107a	KC108a	KC109a	KC110a	KC111a	KC112a	KC113a	KC114a	KC115a	KC116a	KC117a	KC118a	KC120a
Laboratory Reference	19-90046-7A	19-90046-9A	19-90046-10A	19-90046-11A	19-90046-12A	19-90046-13A	19-90046-17A	19-101746-2A	19-101746-3A	19-101746-4A	19-101746-5A	19-101746-7A	19-101746-8A	19-101746-9A	19-101746-10A	19-101746-11A	19-101746-13A
Sample Date	16-04-19	16-04-19	16-04-19	16-04-19	16-04-19	16-04-19	16-04-19	01-05-19	01-05-19	01-05-19	01-05-19	01-05-19	01-05-19	01-05-19	01-05-19	01-05-19	01-05-19
2378-TCDF	< 5	< 2	< 2	< 5	< 2	< 2	< 5	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
2378-TCDD	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
12378-PeCDF	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
23478-PeCDF	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
12378-PeCDD	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
123478-HxCDF	10	< 10	< 10	18	< 10	< 10	18	12	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
123678-HxCDF	16	< 10	< 10	< 10	< 10	< 10	< 30	11	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
234678-HxCDF	< 20	< 10	< 10	< 20	< 10	< 10	< 20	< 20	< 10	< 20	< 10	< 10	< 10	< 10	< 10	< 10	< 10
123789-HxCDF	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
123478-HxCDD	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
123678-HxCDD	44	21	15	29	< 10	< 10	17	63	< 10	34	27	< 10	14	11	< 10	12	10
123789-HxCDD	< 20	< 10	< 10	< 10	< 10	< 10	< 20	10	< 10	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
1234678-HpCDF	210	91	90	210	51	49	110	280	29	200	110	34	62	63	20	55	51
1234789-HpCDF	26	10	12	31	< 20	< 10	27	28	< 10	19	12	< 10	< 10	< 10	< 10	< 10	< 10
1234678-HpCDD	1,100	570	440	870	260	190	590	1,800	160	960	740	140	350	350	93	330	310
OCDF	1,200	570	660	1,300	330	360	420	1,500	180	1,100	670	210	350	380	120	280	300
OCDD	12,000	5,600	5,200	11,000	3,000	2,400	7,800	17,000	1,600	11,000	6,700	1,500	3,500	4,200	1,000	3,800	3,800
Total PCDD/F WHO-TEQ - Lowerbound	24	11	8.7	20	4.1	3.2	13	36	2.4	20	14	2.3	6.7	6.6	1.5	6.3	5.8
Total PCDD/F WHO-TEQ - Mediumbound	35	21	19	30	15	15	26	46	14	31	24	14	17	17	13	17	17
Total PCDD/F WHO-TEQ - Upperbound	46	32	30	41	27	26	38	56	25	41	35	25	28	28	24	28	27
Total PCDD/F I-TEQ - Lowerbound	34	15	13	28	6.4	5.2	19	49	3.7	28	19	3.4	9.4	9.8	2.2	9.1	8.7
Total PCDD/F I-TEQ - Mediumbound	43	24	22	38	16	15	30	58	14	38	28	13	19	19	12	19	18
Total PCDD/F I-TEQ - Upperbound	53	34	31	47	26	25	41	66	23	47	37	23	28	29	22	28	28

Notes
Concentrations expressed in units of pg/g.
Primary sample data only shown.
Denotes sample not representative as area re-dredged.

GOLDER

Enviro (NZ) Limited
Kopeopeo Canal Remediation Project

Table G1: Dioxin Sediment Validation Quality Data

Golder Sample Reference	KC121a	KC122a	KC123a	KC124a	KC125a	KC126a	KC127a	KC128a	KC129a	KC130a	KC131a	KC132a	KC133a	KC134a	KC134a-1	KC134a-2	KC134a-3
Laboratory Reference	19-101746-14A	19-116913-9A	19-116913-11A	19-116913-12A	19-116913-13A	19-116913-14A	19-116913-15A	19-116913-17A	19-128721-1A	19-128721-2A	19-128721-3A	19-128721-4A	19-128721-6A	19-128721-7A	19-141653-3A	19-141653-4A	19-141653-5A
Sample Date	01-05-19	20-05-19	20-05-19	20-05-19	20-05-19	20-05-19	20-05-19	20-05-19	05-06-19	05-06-19	05-06-19	05-06-19	05-06-19	05-06-19	25-06-19	25-06-19	25-06-19
2378-TCDF	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 5
2378-TCDD	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 5
12378-PeCDF	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
23478-PeCDF	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
12378-PeCDD	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 15	< 10	< 10	< 10
123478-HxCDF	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	15	15	< 10	< 10	< 10	23	< 10	< 10	< 10
123678-HxCDF	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	18	19	< 10	< 10	< 10	28	< 10	< 10	< 10
234678-HxCDF	< 10	< 10	< 10	< 10	< 10	< 20	< 10	< 10	< 30	< 40	< 10	< 10	< 10	< 30	< 10	< 10	< 20
123789-HxCDF	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
123478-HxCDD	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 20	< 10	< 10	< 10
123678-HxCDD	< 10	< 10	25	49	< 10	38	17	19	90	78	25	< 10	33	140	< 10	< 10	57
123789-HxCDD	< 10	< 10	< 10	11	< 10	12	< 10	< 10	< 25	< 30	< 10	< 10	< 15	< 40	< 10	< 10	13
1234678-HpCDF	16	< 10	110	270	< 10	170	76	99	350	420	110	< 10	110	480	12	< 10	230
1234789-HpCDF	< 10	< 10	12	27	< 10	19	< 10	13	40	51	12	< 10	14	51	< 10	< 10	26
1234678-HpCDD	86	28	690	1,700	-25	1,000	500	510	2,500	2,000	590	27	910	3,900	80	16	1,700
OCDF	100	32	620	1,700	-20	930	490	570	1,700	2,300	590	25	580	2,500	75	-20	1,400
OCDD	820	260	5,900	14,000	95	9,500	4,900	5,600	21,000	18,000	5,200	240	7,400	37,000	700	140	15,000
Total PCDD/F WHO-TEQ - Lowerbound	1.3	0.37	13	31	0.028	20	9.1	10	48	42	11	0.35	16	75	1.2	0.2	31
Total PCDD/F WHO-TEQ - Mediumbound	13	12	23	41	12	31	20	21	60	54	22	12	27	91	12	12	44
Total PCDD/F WHO-TEQ - Upperbound	24	23	34	51	23	42	31	31	71	66	33	23	38	110	24	23	56
Total PCDD/F I-TEQ - Lowerbound	1.9	0.57	17	42	0.095	27	13	14	64	56	15	0.54	22	100	1.7	0.3	43
Total PCDD/F I-TEQ - Mediumbound	12	11	26	51	10	37	22	24	74	67	25	10	31	120	12	10	54
Total PCDD/F I-TEQ - Upperbound	22	20	36	59	20	46	32	33	84	78	34	20	41	130	21	20	65

Notes
Concentrations expressed in units of pg/g.
Primary sample data only shown.
Denotes sample not representative as area re-dredged.

Table G1: Dioxin Sediment Validation Quality Data

Golder Sample Reference	KC135a	KC136a	KC137a	KC138a	KC139a	KC140a	KC141a	KC142a	KC142a-1	KC142a-2	KC142a-2b	KC142a-3	KC142a-3b	KC143a	KC144a	KC145a	KC146a
Laboratory Reference	19-128721-8A	19-128721-9A	19-128721-10A	19-128721-12A	19-128721-13A	19-128721-14A	19-128721-15A	19-141653-6A	19-146387-1A	19-146387-2A	19-151322-1A	19-146387-3A	19-151322-2A	19-141653-8A	19-141653-9A	19-141653-10A	19-141653-11A
Sample Date	05-06-19	05-06-19	05-06-19	05-06-19	05-06-19	05-06-19	05-06-19	25-06-19	02-07-19	02-07-19	09-07-19	02-07-19	09-07-19	25-06-19	25-06-19	25-06-19	25-06-19
2378-TCDF	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 5	< 2	< 5	< 2	< 5	< 2	< 2	< 2	< 2	< 2
2378-TCDD	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 5	< 2	< 5	< 2	< 5	< 2	< 2	< 2	< 2	< 2
12378-PeCDF	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
23478-PeCDF	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
12378-PeCDD	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 20	< 10	17	< 10	24	< 10	< 10	< 10	< 10	< 10
123478-HxCDF	< 10	< 10	< 10	< 10	12	< 10	< 10	37	< 10	56	< 10	51	< 10	< 10	< 10	< 10	< 10
123678-HxCDF	12	< 10	< 10	< 10	13	< 10	< 10	18	< 10	85	< 10	92	< 10	< 10	< 10	< 10	< 10
234678-HxCDF	< 20	< 10	< 20	< 10	< 20	< 10	< 10	< 50	< 10	< 100	< 10	< 100	< 10	< 10	< 10	< 10	< 10
123789-HxCDF	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
123478-HxCDD	< 10	< 10	< 10	< 10	< 10	< 10	< 10	11	< 10	25	< 10	25	< 10	< 10	< 10	< 10	< 10
123678-HxCDD	38	25	36	< 10	70	25	21	300	< 10	300	< 10	270	< 10	< 10	28	31	< 10
123789-HxCDD	< 20	< 10	< 15	< 10	< 25	< 10	< 10	57	< 10	100	< 10	98	< 10	< 10	< 10	< 10	< 10
1234678-HpCDF	210	150	180	< 10	270	110	100	1,000	29	1,500	50	1,200	< 10	< 10	150	120	< 10
1234789-HpCDF	27	17	19	< 10	29	12	12	87	< 10	150	< 10	130	< 10	< 10	19	15	< 10
1234678-HpCDD	1,100	700	980	20	1,800	640	570	8,800	190	8,700	270	8,100	46	46	790	840	10
OCDF	1,300	930	1,100	-20	1,500	660	610	6,400	160	7,100	320	7,000	28	42	1,100	880	-20
OCDD	10,000	7,100	8,800	160	16,000	4,800	5,400	71,000	1,800	77,000	2,900	77,000	430	500	7,300	7,500	100
Total PCDD/F WHO-TEQ - Lowerbound	22	14	18	0.25	36	12	11	160	2.8	200	4.2	200	0.6	0.62	15	15	0.13
Total PCDD/F WHO-TEQ - Mediumbound	33	24	30	12	47	23	21	180	14	210	15	210	12	12	26	26	11
Total PCDD/F WHO-TEQ - Upperbound	44	35	41	23	58	33	32	200	25	220	27	220	23	23	36	37	23
Total PCDD/F I-TEQ - Lowerbound	30	19	25	0.36	48	16	15	220	4.2	250	6.4	240	0.92	1	21	21	0.2
Total PCDD/F I-TEQ - Mediumbound	40	29	35	10	58	25	24	230	14	260	16	250	11	11	30	31	10
Total PCDD/F I-TEQ - Upperbound	49	38	45	20	67	34	34	250	24	270	26	270	21	21	39	40	20

Notes
Concentrations expressed in units of pg/g.
Primary sample data only shown.
Denotes sample not representative as area re-dredged.

Enviro (NZ) Limited
Kopeopeo Canal Remediation Project

Table G1: Dioxin Sediment Validation Quality Data

Golder Sample Reference	KC147a	KC148a	KC149a	KC150a	KC151a	KC152a	KC153a	KC154a	KC155a
Laboratory Reference	19-141653-12A	19-141653-14A	19-141653-15A	19-141653-16A	19-141653-17A	19-141653-19A	19-141653-21A	19-141653-22A	19-141653-23A
Sample Date	25-06-19	25-06-19	25-06-19	25-06-19	25-06-19	25-06-19	25-06-19	25-06-19	25-06-19
2378-TCDF	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
2378-TCDD	< 2	< 2	< 2	< 2	< 2	< 5	< 5	< 2	< 2
12378-PeCDF	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
23478-PeCDF	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
12378-PeCDD	< 10	< 10	< 10	< 10	< 10	< 20	< 10	< 10	< 10
123478-HxCDF	11	< 10	< 10	< 10	< 10	11	18	< 10	< 10
123678-HxCDF	< 10	< 10	< 10	< 10	< 10	< 10	15	< 10	< 10
234678-HxCDF	< 10	< 10	< 10	< 10	< 10	< 20	< 40	< 10	< 10
123789-HxCDF	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
123478-HxCDD	< 10	< 10	< 10	< 10	< 10	11	15	< 10	< 10
123678-HxCDD	49	< 10	13	18	11	72	100	29	23
123789-HxCDD	14	< 10	< 10	< 10	< 10	18	34	< 10	< 10
1234678-HpCDF	190	17	40	110	41	340	450	120	130
1234789-HpCDF	33	< 10	< 10	18	< 10	37	52	13	16
1234678-HpCDD	1,500	110	320	550	270	2,000	2,600	740	590
OCDF	1,300	130	210	710	240	2,500	3,300	720	740
OCDD	16,000	1,100	2,700	5,300	2,300	18,000	23,000	6,800	5,400
Total PCDD/F WHO-TEQ - Lowerbound	30	1.6	5.8	10	5	41	57	14	12
Total PCDD/F WHO-TEQ - Mediumbound	40	13	17	21	16	57	69	25	22
Total PCDD/F WHO-TEQ - Upperbound	49	24	27	32	27	74	81	35	33
Total PCDD/F I-TEQ - Lowerbound	42	2.5	7.8	15	6.8	55	76	19	16
Total PCDD/F I-TEQ - Mediumbound	50	12	17	24	16	68	86	28	25
Total PCDD/F I-TEQ - Upperbound	59	22	27	33	26	80	96	38	34

Notes
Concentrations expressed in units of pg/g.
Primary sample data only shown.
Denotes sample not representative as area re-dredged.

GOLDER

EnviroNZ Limited
Kopeopeo Canal Remediation Project

Table G2: Sediment Validation QA/QC Data - Field Duplicate Results

Sample Location	KC005a			KC012c			KC016c			KC022a			KC025a			KC038a			KC043a		
Golder Sample Reference	KC005A	KC005DQ	RPD (%)	KC012c	KC012DQ	RPD (%)	KC016c	KC016DQ	RPD (%)	KC022a	KC022DQ	RPD (%)	KC025a	KC025DQ	RPD (%)	KC038a	KC038b	RPD (%)	KC043a	KC043b	RPD (%)
Laboratory Reference	18-66095-5	18-66207-1		18-120099-15	18-120030-6		18-120099-11	18-120030-3		18-120099-4	18-120030-5		18-120099-7	18-120030-4		18-147618-9	18-147618-10		18-148443-4	18-148443-5	
Sample Date	15-02-18	15-02-18		18-04-18	18-04-18		18-04-18	18-04-18		18-04-18	18-04-18		18-04-18	18-04-18		21-05-18	21-05-18		22-05-18	22-05-18	
Sample Type	Primary	Duplicate		Primary	Duplicate		Primary	Duplicate		Primary	Duplicate		Primary	Duplicate		Primary	Duplicate		Primary	Duplicate	
2378-TCDF	< 2	< 2	<50	< 2	< 2	<50	< 2	< 2	<50	< 5	< 2	<50	< 5	< 2	<50	< 2	< 5	<50	< 5	< 5	<50
2378-TCDD	< 2	< 2	<50	< 2	< 2	<50	< 2	< 2	<50	< 2	< 2	<50	< 2	< 2	<50	< 2	< 2	<50	< 2	< 2	<50
12378-PeCDF	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50
23478-PeCDF	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50
12378-PeCDD	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50
123478-HxCDF	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	18	<u>57</u>	13	18	32
123678-HxCDF	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	11	< 10	10	< 10	21	<u>71</u>	< 10	< 10	<50
234678-HxCDF	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 50	<50	< 10	< 20	<50
123789-HxCDF	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50
123478-HxCDD	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50
123678-HxCDD	< 10	< 10	<50	17	< 10	<u>52</u>	10	< 10	0	19	< 10	<u>62</u>	21	< 10	<u>71</u>	18	110	**144**	20	28	33
123789-HxCDD	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	19	<u>62</u>	< 10	< 10	<50
1234678-HpCDF	10	10	0	64	17	**116**	36	< 10	<u>113</u>	80	< 10	<u>156</u>	72	< 10	<u>151</u>	64	410	**146**	110	140	24
1234789-HpCDF	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	13	< 10	26	10	< 10	0	12	49	**121**	22	29	27
1234678-HpCDD	57	53	7	450	120	**116**	240	27	**160**	520	63	**157**	570	37	**176**	490	3,300	**148**	580	780	29
OCDF	54	50	8	390	120	**106**	180	24	**153**	440	56	**155**	410	31	**172**	360	2,300	**146**	730	740	1
OCDD	680	700	3	5,400	1,300	**122**	2,700	260	**165**	6,700	680	**163**	6,400	360	**179**	5,200	29,000	**139**	7,800	9,300	18
Total PCDD/F I-TEQ - Upperbound	21	21	0	31	23	30	25	20	22	34	21	47	35	21	50	32	110	**110**	37	43	15

Notes

Concentrations expressed in units of pg/g.

A RPD value of <50% has been assigned where concentrations in both the primary and duplicate sample are <LORs.

Bold denotes exceedance of the DQI (50%) where concentrations in both samples detected above the LORs.

Underlined denotes exceedance of the 50% DQI where concentration detected above LORs in one sample.

GOLDER

EnviroNZ Limited
Kopeopeo Canal Remediation Project

Table G2: Sediment Validation QA/QC Data - Field Duplicate Results

Sample Location	KC051a			KC056a			KC057a			KC058.5g			KC062a			KC064a			KC065g		
Golder Sample Reference	KC051a	KC051b	RPD (%)	KC056a	KC056b	RPD (%)	KC057a	KC057b	RPD (%)	KC058.5g	KC058.5h	RPD (%)	KC062a	KC062b	RPD (%)	KC064a	KC064b	RPD (%)	KC065g	KC065h	RPD (%)
Laboratory Reference	18-164592-11	18-164592-16		18-205193-1	18-278178-1		18-205193-2	18-205193-8		18-299847-6	18-299847-7		18-222104-6	18-222104-9		18-222104-8	18-278170-1		18-299847-21	18-299847-22	
Sample Date	14-06-18	14-06-18		13-08-18	13-08-18		13-08-18	13-08-18		28-11-18	28-11-18		03-09-18	03-09-18		03-09-18	03-09-18		27-11-18	27-11-18	
Sample Type	Primary	Duplicate		Primary	Duplicate		Primary	Duplicate		Primary	Duplicate		Primary	Duplicate		Primary	Duplicate		Primary	Duplicate	
2378-TCDF	< 2	< 2	<50	< 5	< 30	<50	< 5	< 5	<50	< 2	< 2	<50	< 2	< 2	<50	< 2	< 10	<50	< 2	< 2	<50
2378-TCDD	< 2	< 2	<50	< 2	< 10	<50	< 2	< 2	<50	< 2	< 2	<50	< 2	< 5	<50	< 2	< 10	<50	< 2	< 2	<50
12378-PeCDF	< 10	< 10	<50	< 10	< 20	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50
23478-PeCDF	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50
12378-PeCDD	< 10	< 10	<50	< 10	15	40	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50
123478-HxCDF	< 10	< 10	<50	< 20	27	30	< 10	< 10	<50	< 10	< 10	<50	18	24	29	16	17	6	< 10	< 10	<50
123678-HxCDF	< 20	< 10	<50	< 20	57	<u>96</u>	< 10	< 10	<50	< 10	< 10	<50	19	32	**51**	15	20	29	< 10	< 10	<50
234678-HxCDF	< 10	< 10	<50	< 30	< 40	<50	< 10	< 10	<50	< 10	< 10	<50	< 30	< 50	<50	< 30	< 30	<50	< 10	< 10	<50
123789-HxCDF	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50
123478-HxCDD	< 10	< 10	<50	< 10	< 20	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	14	33	< 10	< 10	<50	< 10	< 10	<50
123678-HxCDD	< 10	< 10	<50	84	180	**73**	< 10	< 10	<50	19	20	5	130	230	**56**	92	100	8	16	19	17
123789-HxCDD	< 30	< 30	<50	< 30	50	50	< 10	< 10	<50	< 10	< 10	<50	26	48	**59**	23	28	20	< 10	< 10	<50
1234678-HpCDF	31	< 10	<u>102</u>	330	560	**52**	< 20	< 20	<50	58	63	8	460	790	**53**	350	340	3	51	64	23
1234789-HpCDF	< 10	< 10	<50	41	67	48	< 10	< 10	<50	< 10	< 10	<50	47	82	**54**	42	45	7	< 10	< 10	<50
1234678-HpCDD	180	50	**113**	2,100	4,000	**62**	90	85	6	490	520	6	3,600	5,900	48	2,400	2,500	4	400	450	12
OCDF	190	56	**109**	1,700	2,900	**52**	70	68	3	300	320	6	2,400	4,100	**52**	1,800	1,900	5	250	380	41
OCDD	2,200	630	**111**	23,000	35,000	41	900	990	10	4,200	4,700	11	29,000	48,000	49	23,000	23,000	0	3,600	4,100	13
Total PCDD/F I-TEQ - Upperbound	27	23	16	83	150	**58**	22	22	0	31	32	3	110	180	48	85	97	13	29	30	3

Notes

Concentrations expressed in units of pg/g.

A RPD value of <50% has been assigned where concentrations in both the primary and duplicate sample are <LORs.

Bold denotes exceedance of the DQI (50%) where concentrations in both samples detected above the LORs.

Underlined denotes exceedance of the 50% DQI where concentration detected above LORs in one sample.

EnviroNZ Limited
Kopeopeo Canal Remediation Project

Table G2: Sediment Validation QA/QC Data - Field Duplicate Results

Sample Location	KC072a		RPD (%)	KC076a		RPD (%)	KC081a		RPD (%)	KC081e2		RPD (%)	KC082c		RPD (%)	KC082e		RPD (%)	KC084a-1		RPD (%)
Golder Sample Reference	KC072a	KC072b		KC076a	KC076b		KC081a	KC081b		KC081e2	DUPE01		KC082c	KC082d		KC082e	KC082f		KC084a-1	DUPE04-25062019	
Laboratory Reference	18-260459-4	18-260459-7		18-261254-2	18-278154-1		18-277936-4	18-277936-8		18-318060-14	18-318060-15		18-312254-3	18-312254-4		18-312254-5	18-312254-6		19-143370-1	19-143370-2	
Sample Date	16-10-18	16-10-18		17-10-18	17-10-18		05-11-18	05-11-18		19-12-18	19-12-18		13-12-18	13-12-18		13-12-18	13-12-18		25-06-19	25-06-19	
Sample Type	Primary	Duplicate		Primary	Duplicate		Primary	Duplicate		Primary	Duplicate		Primary	Duplicate		Primary	Duplicate		Primary	Duplicate	
2378-TCDF	< 2	< 2	<50	< 2	< 10	<50	< 10	< 10	<50	< 2	< 2	<50	< 2	< 2	<50	< 2	< 2	<50	< 2	< 2	<50
2378-TCDD	< 2	< 2	<50	< 2	< 10	<50	< 10	< 10	<50	< 2	< 2	<50	< 2	< 2	<50	< 2	< 2	<50	< 2	< 2	<50
12378-PeCDF	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50
23478-PeCDF	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50
12378-PeCDD	< 10	< 10	<50	< 10	< 10	<50	< 10	11	10	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50
123478-HxCDF	11	25	**78**	33	30	10	22	25	13	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50
123678-HxCDF	< 10	17	<u>52</u>	23	24	4	20	24	18	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50
234678-HxCDF	< 20	< 40	<50	< 10	< 30	<50	< 20	< 30	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50
123789-HxCDF	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50
123478-HxCDD	< 10	< 10	<50	10	< 10	0	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50
123678-HxCDD	18	42	**80**	98	96	2	86	110	24	< 10	< 10	<50	< 10	< 10	<50	13	16	21	< 10	< 10	<50
123789-HxCDD	< 10	< 10	<50	31	37	18	31	32	3	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50
1234678-HpCDF	120	340	**96**	600	580	3	420	540	25	15	< 10	40	47	29	47	46	58	23	23	35	41
1234789-HpCDF	22	55	**86**	82	74	10	55	64	15	< 10	< 10	<50	< 10	< 10	<50	< 10	11	10	< 10	< 10	<50
1234678-HpCDD	470	1,200	**87**	2,700	2,900	7	2,400	3,000	22	110	48	**78**	290	190	42	320	390	20	150	190	24
OCDF	720	2,300	**105**	3,900	4,000	3	2,900	3,600	22	80	38	**71**	350	200	**55**	270	330	20	180	310	**53**
OCDD	6,500	17,000	**89**	28,000	29,000	4	23,000	29,000	23	1,000	450	**76**	3,100	1,800	**53**	3,200	3,900	20	2,000	2,000	0
Total PCDD/F I-TEQ - Upperbound	35	63	**57**	100	110	10	96	110	14	22	21	5	27	24	12	27	29	7	24	24	0

Notes

Concentrations expressed in units of pg/g.

A RPD value of <50% has been assigned where concentrations in both the primary and duplicate sample are <LORs.

Bold denotes exceedance of the DQI (50%) where concentrations in both samples detected above the LORs.

Underlined denotes exceedance of the 50% DQI where concentration detected above LORs in one sample.

GOLDER

EnviroNZ Limited
Kopeopeo Canal Remediation Project

Table G2: Sediment Validation QA/QC Data - Field Duplicate Results

Sample Location	KC088c-1			KC090a-1			KC093a			KC098a			KC103a			KC108a			KC113a		
Golder Sample Reference	KC088c-1	DUPE01-270319	RPD (%)	KC090a-1	DUPE01-200519	RPD (%)	KC093a	DUPE02-270319	RPD (%)	KC098a	DUPE01-160419	RPD (%)	KC103a	DUPE02-160419	RPD (%)	KC108a	DUPE03-160419	RPD (%)	KC0113a	DUPE01-10519	RPD (%)
Laboratory Reference	19-74226-2	19-74226-1		19-116913-2	19-118500-1		19-74226-9	19-74226-10		19-90046-1	19-90046-2		19-90046-7	19-90046-8		19-90046-13	19-90046-14		19-101746-5	19-101746-6	
Sample Date	27-03-19	27-03-19		20-05-19	20-05-19		27-03-19	27-03-19		16-04-19	16-04-19		16-04-19	16-04-19		16-04-19	16-04-19		01-05-19	01-05-19	
Sample Type	Primary	Duplicate		Primary	Duplicate		Primary	Duplicate		Primary	Duplicate		Primary	Duplicate		Primary	Duplicate		Primary	Duplicate	
2378-TCDF	< 5	< 2	<50	< 2	< 2	<50	< 2	< 2	<50	< 5	< 10	<50	< 5	< 5	<50	< 2	< 2	<50	< 2	< 2	<50
2378-TCDD	< 5	< 5	<50	< 2	< 2	<50	< 2	< 2	<50	< 5	< 5	<50	< 2	< 2	<50	< 2	< 2	<50	< 2	< 2	<50
12378-PeCDF	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50
23478-PeCDF	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50
12378-PeCDD	14	< 10	33	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50
123478-HxCDF	37	39	5	13	< 10	26	< 10	< 10	<50	94	64	38	10	< 10	0	< 10	< 10	<50	< 10	< 10	<50
123678-HxCDF	54	38	35	11	< 10	10	< 10	< 10	<50	49	49	0	16	< 10	46	< 10	< 10	<50	< 10	< 10	<50
234678-HxCDF	< 50	< 40	<50	< 20	< 10	<50	< 10	< 10	<50	< 70	< 70	<50	< 20	< 10	<50	< 10	< 10	<50	< 10	< 10	<50
123789-HxCDF	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50
123478-HxCDD	14	15	7	< 10	< 10	<50	< 10	< 10	<50	18	14	25	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50
123678-HxCDD	170	220	26	34	11	**102**	< 10	< 10	<50	130	100	26	44	23	**63**	< 10	< 10	<50	27	13	**70**
123789-HxCDD	44	56	24	13	< 10	26	< 10	< 10	<50	< 60	< 50	<50	< 20	< 10	<50	< 10	< 10	<50	< 10	< 10	<50
1234678-HpCDF	1,000	1,300	26	290	87	**108**	19	21	10	910	860	6	210	110	**63**	49	17	**97**	110	55	**67**
1234789-HpCDF	130	150	14	45	16	**95**	< 10	< 10	<50	180	140	25	26	14	**60**	< 10	< 10	<50	12	< 10	18
1234678-HpCDD	5,900	6,700	13	1,300	470	**94**	120	140	15	4,300	3,400	23	1,100	670	49	190	76	**86**	740	350	**72**
OCDF	7,000	7,600	8	1,900	830	**78**	120	120	0	3,700	4,000	8	1,200	890	30	360	140	**88**	670	300	**76**
OCDD	59,000	63,000	7	17,000	9,600	**56**	1,200	1,300	8	53,000	52,000	2	12,000	7,100	**51**	2,400	870	**94**	6,700	3,200	**71**
Total PCDD/F I-TEQ - Upperbound	190	210	10	59	36	48	23	23	0	170	150	13	53	37	36	25	22	13	37	28	28

Notes

Concentrations expressed in units of pg/g.

A RPD value of <50% has been assigned where concentrations in both the primary and duplicate sample are <LORs.

Bold denotes exceedance of the DQI (50%) where concentrations in both samples detected above the LORs.

Underlined denotes exceedance of the 50% DQI where concentration detected above LORs in one sample.

Table G2: Sediment Validation QA/QC Data - Field Duplicate Results

Sample Location	KC118a		RPD (%)	KC122a		RPD (%)	KC127a		RPD (%)	KC132a		RPD (%)	KC137a		RPD (%)	KC142a		RPD (%)
Golder Sample Reference	KC118a	DUPE02-10519		KC122a	DUPE02-200519		KC127a	DUPE03-200519		KC132a	DUPE01-060519		KC137a	DUPE02-060519		KC142a	DUPE03-25062019	
Laboratory Reference	19-101746-11	19-101746-12		19-116913-9	19-118500-2		19-116913-15	19-118500-3		19-128721-4	19-128721-5		19-128721-10	19-128721-11		19-146387-2	19-143370-5	
Sample Date	01-05-19	01-05-19		20-05-19	20-05-19		20-05-19	20-05-19		05-06-19	05-06-19		05-06-19	05-06-19		25-06-19	25-06-19	
Sample Type	Primary	Duplicate		Primary	Duplicate		Primary	Duplicate		Primary	Duplicate		Primary	Duplicate		Primary	Duplicate	
2378-TCDF	< 2	< 2	<50	< 2	< 2	<50	< 2	< 2	<50	< 2	< 2	<50	< 2	< 2	<50	< 5	< 10	<50
2378-TCDD	< 2	< 2	<50	< 2	< 2	<50	< 2	< 2	<50	< 2	< 2	<50	< 2	< 2	<50	< 5	< 2	<50
12378-PeCDF	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	17	52
23478-PeCDF	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	11	10
12378-PeCDD	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 20	18	11
123478-HxCDF	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	37	94	**87**
123678-HxCDF	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	18	47	**89**
234678-HxCDF	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 20	< 10	<50	< 50	< 100	<50
123789-HxCDF	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50
123478-HxCDD	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	11	20	**58**
123678-HxCDD	12	16	29	< 10	< 10	<50	17	21	21	< 10	< 10	<50	36	23	44	300	760	**87**
123789-HxCDD	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50	< 15	< 10	<50	57	120	**71**
1234678-HpCDF	55	80	37	< 10	13	26	76	89	16	< 10	< 10	<50	180	120	40	1,000	2,400	**82**
1234789-HpCDF	< 10	< 10	<50	< 10	< 10	<50	< 10	11	10	< 10	< 10	<50	19	19	0	87	180	**70**
1234678-HpCDD	330	440	29	28	61	**74**	500	580	15	27	34	23	980	740	28	8,800	22,000	**86**
OCDF	280	420	40	32	72	**77**	490	500	2	25	32	25	1,100	1,000	10	6,400	15,000	**80**
OCDD	3,800	5,100	29	260	570	**75**	4,900	5,300	8	240	280	15	8,800	8,800	0	71,000	160,000	**77**
Total PCDD/F I-TEQ - Upperbound	28	31	10	20	21	5	32	33	3	20	21	5	45	40	12	250	550	**75**

Notes

Concentrations expressed in units of pg/g.

A RPD value of <50% has been assigned where concentrations in both the primary and duplicate sample are <LORs.

Bold denotes exceedance of the DQI (50%) where concentrations in both samples detected above the LORs.

Underlined denotes exceedance of the 50% DQI where concentration detected above LORs in one sample.

GOLDER

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Table G2: Sediment Validation QA/QC Data - Field Duplicate Results

Sample Location	KC142a-2		RPD (%)	KC147a		RPD (%)	KC152a		RPD (%)
Golder Sample Reference	KC142a-2	DUPE01-02072019		KC147a	DUPE02-25062019		KC152a	DUPE01-25062019	
Laboratory Reference	19-146387-2	19-146387-4		19-141653-12	19-143370-4		19-141653-19	19-143370-3	
Sample Date	02-07-19	02-07-19		25-06-19	25-06-19		25-06-19	25-06-19	
Sample Type	Primary	Duplicate		Primary	Duplicate		Primary	Duplicate	
2378-TCDF	< 5	< 5	<50	< 2	< 2	<50	< 2	< 2	<50
2378-TCDD	< 5	< 5	<50	< 2	< 2	<50	< 5	< 2	<50
12378-PeCDF	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50
23478-PeCDF	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50
12378-PeCDD	17	17	0	< 10	< 10	<50	< 20	11	58
123478-HxCDF	56	60	7	11	< 10	10	11	13	17
123678-HxCDF	85	83	2	< 10	10	0	< 10	18	57
234678-HxCDF	< 100	< 100	<50	< 10	< 10	<50	< 20	< 20	<50
123789-HxCDF	< 10	< 10	<50	< 10	< 10	<50	< 10	< 10	<50
123478-HxCDD	25	31	21	< 10	< 10	<50	11	< 10	10
123678-HxCDD	300	340	13	49	38	25	72	68	6
123789-HxCDD	100	87	14	14	< 20	35	18	< 20	11
1234678-HpCDF	1,500	1,500	0	190	180	5	340	320	6
1234789-HpCDF	150	150	0	33	20	49	37	35	6
1234678-HpCDD	8,700	9,300	7	1,500	1,100	31	2,000	2,300	14
OCDF	7,100	7,000	1	1,300	1,200	8	2,500	2,300	8
OCDD	77,000	87,000	12	16,000	10,000	46	18,000	22,000	20
Total PCDD/F I-TEQ - Upperbound	270	290	7	59	48	21	80	80	0

Notes

Concentrations expressed in units of pg/g.

A RPD value of <50% has been assigned where concentrations in both the primary and duplicate sample are <LORs.

Bold denotes exceedance of the DQI (50%) where concentrations in both samples detected above the LORs.

Underlined denotes exceedance of the 50% DQI where concentration detected above LORs in one sample.

Table G3: Sediment Validation QA/QC Data - Inter-laboratory Results

Sample Location	KC005a		RPD (%)	KC024a		RPD (%)	KC033a		RPD (%)	KC045a		RPD (%)	KC053a		RPD (%)	KC060a		RPD (%)	KC067a		RPD (%)	KC078a		RPD (%)	KC060c		RPD (%)
Laboratory Reference	18-66207-1A	18-145247-8A		18-120099-6A	18-145247-9A		18-120974-4A	18-145247-10A		18-148443-7A	18-260707-4A		18-164592-13A	18-260707-6A		18-222104-4A	18-260707-9A		18-241120-4A	18-260707-10A		18-277936-1A	19-132627-1B		18-299847-8A	19-132627-2B	
Sample Type	Primary	Inter-Lab		Primary	Inter-Lab		Primary	Inter-Lab		Primary	Inter-Lab		Primary	Inter-Lab		Primary	Inter-Lab		Primary	Inter-Lab		Primary	Inter-Lab		Primary	Inter-Lab	
2378-TCDF	< 2	< 0.1	<50	< 2	0.17	169	< 10	1.2	157	< 2	0.37	138	< 2	< 0.06	<50	< 5	1.1	128	< 2	0.85	81	< 2	< 0.4	<50	< 2	< 0.2	<50
2378-TCDD	< 2	< 0.3	<50	< 2	0.31	146	< 2	1.7	16	< 2	< 0.2	<50	< 2	< 0.08	<50	< 5	2.8	56	2.9	2.3	23	< 2	< 0.5	<50	< 2	< 0.2	<50
12378-PeCDF	< 10	0.16	194	< 10	0.77	171	< 10	4.6	74	< 10	1.1	160	< 10	< 0.07	<50	< 10	6.8	38	< 10	5.5	58	< 10	1	164	< 10	0.31	188
23478-PeCDF	< 10	< 0.2	<50	< 10	< 2	<50	< 10	< 10	<50	< 10	< 3	<50	< 10	< 0.06	<50	< 10	< 20	<50	< 10	< 20	<50	< 10	< 3	<50	< 10	< 0.8	<50
12378-PeCDD	< 10	< 0.1	<50	< 10	1.1	160	< 10	6.7	40	< 10	1.1	160	< 10	< 0.09	<50	< 10	8.8	13	< 10	6.6	41	< 10	1.2	157	< 10	0.41	184
123478-HxCDF	< 10	1.6	145	< 10	5.7	55	38	36	5	13	11	17	< 10	< 0.09	<50	38	35	8	35	29	19	< 10	7.5	29	< 10	1.8	139
123678-HxCDF	< 10	0.48	182	< 10	5.7	55	34	31	9	< 10	7	35	< 10	< 0.09	<50	38	40	5	34	32	6	< 10	6.6	41	< 10	1.9	136
234678-HxCDF	< 10	< 0.2	<50	< 10	2.1	131	< 50	13	117	< 10	1.6	145	< 10	< 0.1	<50	< 70	14	133	< 30	9.7	102	< 10	2.3	125	< 10	0.9	167
123789-HxCDF	< 10	< 0.2	<50	< 10	1	164	< 10	4.8	70	< 10	1.2	157	< 10	< 0.08	<50	< 10	7.5	29	< 10	6.1	48	< 10	1.2	157	< 10	0.54	180
123478-HxCDD	< 10	< 0.3	<50	< 10	2.5	120	13	15	14	< 10	2.5	120	< 10	< 0.1	<50	16	18	12	15	13	14	< 10	3.1	105	< 10	1.3	154
123678-HxCDD	< 10	2	133	29	27	7	190	210	10	20	21	5	< 10	0.37	186	220	210	5	200	160	22	41	33	22	16	11	37
123789-HxCDD	< 10	0.85	169	< 10	4.9	68	55	32	**53**	< 10	5.4	60	< 30	0.15	198	61	45	30	52	33	45	< 20	7.2	94	< 10	2.4	123
1234678-HpCDF	10	13	26	100	110	10	780	920	16	120	110	9	< 10	1.8	139	920	830	10	750	600	22	210	220	5	62	48	25
1234789-HpCDF	< 10	3.7	92	15	17	13	95	130	31	24	27	12	< 10	0.33	187	110	120	9	99	100	1	27	28	4	< 10	7.8	25
1234678-HpCDD	53	67	23	740	700	6	5,100	5,210	2	660	590	11	< 10	9	11	7,400	5,420	31	6,600	3,890	**52**	1,400	970	36	430	280	42
OCDF	50	65	26	540	370	37	4,000	5,020	23	700	620	12	< 20	9.9	68	4,500	5,950	28	4,600	3,670	22	1,400	1,500	7	380	290	27
OCDD	700	1,030	38	9,400	7,830	18	56,000	53,600	4	8,900	8,050	10	86	94	9	74,000	59,600	22	64,000	42,200	41	14,000	9,780	35	3,800	2,610	37

Notes
Concentrations expressed in units of pg/g.
A RPD value of <50% has been assigned where concentrations in both the primary and duplicate sample are <LORs.
Bold denotes exceedance of the DQI (50%) where concentrations in both samples detected above the LORs.
Underlined denotes exceedance of the 50% DQI where concentration detected above LORs in one sample.

Table G3: Sediment Validation QA/QC Data - Inter-laboratory Results

Sample Location	KC064g		RPD (%)	KC079g		RPD (%)	KC062c3		RPD (%)	KC093a		RPD (%)	KC108a		RPD (%)
Laboratory Reference	18-299847-19A	19-132627-4B		18-310340-11A	19-132627-5B		18-318060-10A	19-132627-6B		19-74226-9A	19-132627-8B		19-90046-13A	19-132627-9B	
Sample Type	Primary	Inter-Lab		Primary	Inter-Lab		Primary	Inter-Lab		Primary	Inter-Lab		Primary	Inter-Lab	
2378-TCDF	< 2	< 0.3	<50	< 2	< 0.3	<50	< 2	< 0.1	<50	< 2	< 0.07	<50	< 2	< 0.1	<50
2378-TCDD	< 2	< 0.3	<50	< 2	< 0.3	<50	< 2	< 0.4	<50	< 2	< 0.07	<50	< 2	< 0.1	<50
12378-PeCDF	< 10	0.3	188	< 10	< 0.3	<50	< 10	0.46	182	< 10	0.11	196	< 10	0.25	190
23478-PeCDF	< 10	< 1	<50	< 10	< 0.4	<50	< 10	< 0.2	<50	< 10	< 0.3	<50	< 10	< 0.7	<50
12378-PeCDD	< 10	< 0.4	<50	< 10	< 0.3	<50	< 10	< 0.4	<50	< 10	< 0.2	<50	< 10	0.4	185
123478-HxCDF	< 10	2.4	123	< 10	< 0.4	<50	< 10	2.1	131	< 10	0.6	177	< 10	< 2	<50
123678-HxCDF	< 10	2.1	131	< 10	1.1	160	< 10	2.3	125	< 10	0.49	181	< 10	1.8	139
234678-HxCDF	< 10	1.2	157	< 10	< 0.6	<50	< 10	0.99	164	< 10	< 0.06	<50	< 10	0.73	173
123789-HxCDF	< 10	0.43	184	< 10	< 0.7	<50	< 10	0.55	179	< 10	< 0.07	<50	< 10	< 0.5	<50
123478-HxCDD	< 10	1.6	145	< 10	0.6	177	< 10	1.2	157	< 10	0.34	187	< 10	1.4	151
123678-HxCDD	18	14	25	< 10	5.5	58	14	13	7	< 10	2.9	110	< 10	7.6	27
123789-HxCDD	< 10	2.6	117	< 10	1.3	154	< 10	2.8	113	< 10	0.23	191	< 10	1.6	145
1234678-HpCDF	65	68	5	27	28	4	52	55	6	19	15	24	49	60	20
1234789-HpCDF	< 10	9.8	2	< 10	4.4	78	< 10	8.7	14	< 10	2.3	125	< 10	8.8	13
1234678-HpCDD	460	380	19	160	130	21	400	330	19	120	77	44	190	210	10
OCDF	410	360	13	170	170	0	260	300	14	120	85	34	360	380	5
OCDD	4,400	3,370	27	1,500	1,330	12	3,400	2,940	15	1,200	770	44	2,400	2,620	9

Notes
Concentrations expressed in units of pg/g.
A RPD value of <50% has been assigned wher
Bold denotes exceedance of the DQI (50%) wh
Underlined denotes exceedance of the 50% DC

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Table G4: Sediment Validation QA/QC Data - Rinsate Blank Results

Sample Location	Rinsate Blanks																	
Golder Sample Reference	RQ1-180418	RQ2180418	RDQ-20180522	RDQ2-20180522	RQ1-130818	RQ1-030918	RQ1-240918	RQ01-161018	RQ1-051118	RQ01-281118	RQ01-131218	RQ01-191218	RQ01-160419	RQ01-10519	RQ01-200519	RQ01-050619	RQ01-250619	RQ01-02072019
Laboratory Reference	18-120063-1	18-126024-1	18-148479-1	18-148479-4	18-205206-1	18-225889-1	18-241209-1	18-260520-1	18-277987-1	18-298833-1	18-312291-1	18-318090-1	19-90114-1	19-101711-1	19-116977-1	19-128735-1	19-141670-1	19-146391-1
Sample Date	18-04-18	18-04-18	22-05-18	22-05-18	13-08-18	03-09-18	24-09-18	16-10-18	05-11-18	28-11-18	13-12-18	19-12-18	16-04-19	01-05-19	20-05-19	05-06-19	25-06-19	02-07-19
Sample Type	Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank
2378-TCDF	< 1.87	< 2.33	< 1.59	< 1.82	< 2.34	< 0.885	< 1.64	< 2.16	< 0.784	< 1.37	< 1.53	< 1.17	< 2.48	< 1.05	< 0.767	< 1.69	< 1.18	< 1.2
2378-TCDD	< 2.39	< 3.13	< 3.49	< 4.19	< 2.8	< 0.908	< 1.37	< 2.38	< 1.69	< 2.47	< 1.82	< 1.96	< 3	< 1.2	< 1.01	< 0.424	< 1.89	< 1.44
12378-PeCDF	< 1.48	< 0.99	< 2.66	< 1.78	< 1.13	< 0.627	< 0.814	< 1.08	< 0.751	< 1.01	< 0.496	< 0.551	< 5.51	< 0.718	< 0.79	< 2.89	< 3.13	< 1.38
23478-PeCDF	< 1.47	< 0.918	< 2.47	< 1.66	< 1.11	< 0.61	< 0.779	< 1.15	< 0.769	< 1.05	< 0.496	< 0.557	< 5.58	< 0.631	< 0.775	< 0.926	< 2.79	< 1.32
12378-PeCDD	< 2.97	< 2.7	< 3.27	< 2.05	< 5.47	< 1.46	< 2.78	< 2.64	< 1.3	< 2.29	< 2.28	< 2.31	< 3.76	< 2.98	< 1.46	< 2.28	< 1.78	< 2.23
123478-HxCDF	< 2.49	< 1.52	< 2.73	< 2.83	< 1.87	< 1.54	< 1.7	< 1.49	< 1.26	< 1.3	< 1.08	< 1.25	< 3.72	< 1.4	< 1.75	< 2.78	< 1.27	< 1.22
123678-HxCDF	< 2.48	< 1.51	< 2.61	< 2.85	< 1.69	< 1.57	< 1.63	< 1.44	< 1.2	< 1.24	< 1.06	< 1.24	< 3.77	< 1.46	< 1.75	< 2.86	< 1.31	< 1.22
234678-HxCDF	< 2.49	< 1.52	< 3.06	< 2.88	< 1.53	< 1.53	< 1.79	< 1.53	< 1.28	< 1.34	< 1.04	< 1.22	< 3.88	< 1.38	< 1.8	< 2.96	< 1.33	< 1.27
123789-HxCDF	< 3.15	< 2.08	< 3.67	< 3.62	< 1.92	< 2.03	< 2.26	< 1.96	< 1.75	< 1.75	< 1.38	< 1.76	< 5.04	< 1.88	< 2.39	< 3.65	< 1.71	< 1.61
123478-HxCDD	< 2.03	< 2.17	< 2.73	< 2.09	< 2.34	< 1.36	< 2.32	< 2.53	< 1.28	< 2.05	< 1.66	< 1.17	< 8.44	< 1.4	< 1.87	< 3.43	< 1.46	< 1.86
123678-HxCDD	< 2	< 2.21	< 2.86	< 2.24	< 2.52	< 1.45	< 2.51	< 2.77	< 1.34	< 2.14	< 1.73	< 1.12	< 8.92	< 1.37	< 2.01	< 2.97	< 1.66	< 1.82
123789-HxCDD	< 2.11	< 2.25	< 2.73	< 2.09	< 2.43	< 1.41	< 2.4	< 2.62	< 1.32	< 2.13	< 1.72	< 1.22	< 8.34	< 1.38	< 1.9	< 3.38	< 1.48	< 1.9
1234678-HpCDF	< 2.09	< 2.28	< 2.15	< 2	< 2.66	5.05	< 2.2	< 1.71	< 1.39	< 1.33	< 1.06	< 0.947	< 2.86	< 0.836	< 2.05	< 1.66	< 1.53	< 1.6
1234789-HpCDF	< 1.63	< 2.77	< 2.71	< 2.52	< 2.36	< 1.74	< 2.67	< 2.19	< 1.8	< 1.68	< 1.23	< 1.21	< 3.46	< 1.15	< 2.61	< 2.19	< 1.84	< 2.06
1234678-HpCDD	< 3.14	< 2.36	< 3.52	< 4	< 3.37	26.3	< 2.89	< 1.68	< 1.62	< 2.06	< 1.73	< 2.02	< 6.25	< 1.88	< 2.59	< 3.93	< 1.66	< 2.15
OCDF	< 3.01	< 3.91	< 7.94	< 7.42	< 6.57	28.7	< 5.62	< 3.01	< 2.9	< 3.01	< 4.2	< 3.47	< 12.3	< 3.08	< 4.15	< 5.86	< 4.45	< 4.53
OCDD	21.1	< 2.15	< 9.28	< 3.85	10.1	340	8.83	< 9.1	9.09	5.99	< 14.3	< 3.17	< 9.43	< 1.93	< 5.55	< 3.94	5.72	< 4.61
Total PCDD/F I-TEQ - Upperbound	6.64	6.63	8.79	8.27	7.91	3.85	4.91	6.05	3.84	5.58	4.41	4.48	12.6	4.22	3.67	4.63	5.53	4.56

Notes
Concentrations expressed in units of pg/g.

EnviroNZ Limited
Kopeopeo Canal Remediation Project

Table G5: Sediment Validation QA/QC Data - Trip Blank Results

Sample Location	Trip Blanks																		
Golder Sample Reference	TQ(15-2-18)	TQ01	TQ02	TQI-20180521	TQ2-220518	TQ2-14062018	TQ1-150618	TQ01-240718	TQ1-130818	TQ1-030918	TQ1-240918	TQ01-161018	TQ1-051118	TQ01-281118	TQ01-131218	TQ01-270319	TQ01-160419	TQ01-10519	TQ01-200519
Laboratory Reference	18-68096-2	18-120030-1	18-120030-2	18-147618-12	18-148479-2	18-165418-7	18-165425-9	18-191659-1	18-205223-1	18-222104-11	18-241196-1	18-260487-1	18-277972-2	18-298837-1	18-312278-1	19-74226-15	19-90046-16	19-101746-1	19-118500-4
Sample Date	15-02-18	18-04-18	18-04-18	21-05-18	22-05-18	14-06-18	15-06-18	24-07-18	13-08-18	03-09-18	24-09-18	16-10-18	05-11-18	28-11-18	13-12-18	27-03-19	16-04-19	01-05-19	20-05-19
Sample Type	Trip Blank	Trip Blank	Trip Blank	Trip Blank	Trip Blank	Trip Blank	Trip Blank	Trip Blank	Trip Blank	Trip Blank	Trip Blank	Trip Blank	Trip Blank	Trip Blank	Trip Blank	Trip Blank	Trip Blank	Trip Blank	Trip Blank
2378-TCDF	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 5	< 2	< 2	< 2
2378-TCDD	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
12378-PeCDF	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
23478-PeCDF	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
12378-PeCDD	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
123478-HxCDF	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	11	< 10	< 10	< 10
123678-HxCDF	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	21	< 10	< 10	< 10
234678-HxCDF	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 20	< 10	< 10	< 10
123789-HxCDF	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
123478-HxCDD	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
123678-HxCDD	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	83	< 10	< 10	< 10
123789-HxCDD	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	21	< 10	< 10	< 10
1234678-HpCDF	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	340	< 10	< 10	< 10
1234789-HpCDF	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	34	< 10	< 10	< 10
1234678-HpCDD	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	2,400	< 10	< 10	< 10
OCDF	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	1,700	< 20	< 20	< 20
OCDD	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	24	< 20	< 20	< 40	< 20	< 20	24,000	< 20	< 20	< 20
Total PCDD/F I-TEQ - Upperbound	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	84	20	20	20

Notes
Concentrations expressed in units of pg/g.

EnviroNZ Limited
Kopeopeo Canal Remediation Project

Table G5: Sediment Validation QA/QC Data - Trip Blank Results

Sample Location			
Golder Sample Reference	TQ01-060519	TQ01-25062019	TQ01-02072019
Laboratory Reference	19-128721-16	19-143370-6	19-146387-5
Sample Date	05-06-19	25-06-19	02-07-19
Sample Type	Trip Blank	Trip Blank	Trip Blank
2378-TCDF	< 2	< 2	< 2
2378-TCDD	< 2	< 2	< 2
12378-PeCDF	< 10	< 10	< 10
23478-PeCDF	< 10	< 10	< 10
12378-PeCDD	< 10	< 10	< 10
123478-HxCDF	< 10	< 10	< 10
123678-HxCDF	< 10	< 10	< 10
234678-HxCDF	< 10	< 10	< 10
123789-HxCDF	< 10	< 10	< 10
123478-HxCDD	< 10	< 10	< 10
123678-HxCDD	< 10	< 10	< 10
123789-HxCDD	< 10	< 10	< 10
1234678-HpCDF	< 10	< 10	< 10
1234789-HpCDF	< 10	< 10	< 10
1234678-HpCDD	< 10	< 10	< 10
OCDF	< 20	< 20	< 20
OCDD	< 20	< 40	< 100
Total PCDD/F I-TEQ - Upperbound	20	20	20

Notes
Concentrations expressed in units of pg/g.