

From: Halbur, Kathy <halbur.kathy@epa.gov>
Sent: Thursday, October 2, 2014 12:51 PM
To: Beggs, Tauren R - DNR; Evans, Elizabeth - DHS
Subject: Aniwa As Site
Attachments: aniwa.pdf; aniwa.csv

Hi:

Thanks for the feedback on the water treatment system options.
The results of the XRF survey are attached. Let me know if you have any questions.
My next step is sending the Town a General Notice of Liability/Information Request (aka GNL/104e) letter – hopefully late next week. I am simultaneously starting to work on the Action Memo.

Thanks,
Kathy



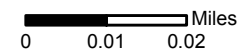
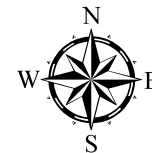
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Legend

▲ aniwa_high

Aniwa XRF Sampling

Aniwa



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SITE_ID	id	ID_GPS	X	Y	Mo	Mo_ERR	Mo_CHEM_Sr	
1	NIST2781	NIST2781	325305.5	4983005	34.6	1.4	Molybden	224
2	1_s	1_s	325318.4	4983031	-1111.1	2.6	Molybden	45.6
3	1_6in	1_6in	325317.5	4983032	-1111.1	3.1	Molybden	60
4	1_1ft	1_1ft	325317.4	4983031	-1111.1	3	Molybden	69
5	1_2ft	1_2ft	325318.6	4983031	-1111.1	4.2	Molybden	68.4
6	1_2bft	1_2bft	325317.3	4983032	-1111.1	3.4	Molybden	101.6
7	2_s	2_s	325313.2	4983038	-1111.1	3.1	Molybden	61.2
8	2_6in	2_6in	325310.5	4983036	-1111.1	3	Molybden	66.2
9	2_1ft_4in	2_1ft_4in	325312.4	4983037	-1111.1	3.1	Molybden	14
10	2_2ft	2_2ft	325312.8	4983037	-1111.1	2.8	Molybden	12
11	3_s	3_s	325316.5	4983040	-1111.1	2.8	Molybden	52.3
12	3_7in	3_7in	325316.8	4983040	-1111.1	3	Molybden	37.5
13	3_1ft6in	3_1ft6in	325316.8	4983040	-1111.1	3.4	Molybden	98.8
14	3_1ft_6in	3_1ft_6in	325317.6	4983040	-1111.1	3.1	Molybden	86.1
15	3_2ft	3_2ft	325317.5	4983039	-1111.1	3.5	Molybden	80.4
16	4_surface	4_surface	325314	4983028	-1111.1	2.6	Molybden	58.5
17	5_surface	5_surface	325313.9	4983032	-1111.1	2.7	Molybden	49.5
18	6_surface	6_surface	325312.6	4983034	-1111.1	3.2	Molybden	87.4
19	7_surface	7_surface	325312.7	4983034	-1111.1	2.8	Molybden	36.1

Sr_ERR	Sr_CHEM_IPb	Pb_ERR	Pb_CHEM_Hg	Hg_ERR	Hg_CHEM_Cu
	3 Strontium	194	4 Lead	38	4 Mercury 631
	1.1 Strontium	6.3	1.5 Lead	-1111.1	6 Mercury -1111.1
	1.4 Strontium	13	1.8 Lead	-1111.1	7 Mercury -1111.1
	1.4 Strontium	13.8	1.6 Lead	-1111.1	6 Mercury 10
	1.8 Strontium	11	2 Lead	-1111.1	9 Mercury 14
	1.8 Strontium	10.7	1.7 Lead	-1111.1	7 Mercury -1111.1
	1.4 Strontium	12.5	1.8 Lead	-1111.1	7 Mercury -1111.1
	1.3 Strontium	11.5	1.6 Lead	-1111.1	7 Mercury 11
	0.8 Strontium	7.2	1.9 Lead	-1111.1	9 Mercury 18
	0.7 Strontium	-1111.1	5 Lead	-1111.1	7 Mercury 14
	1.2 Strontium	7.5	1.5 Lead	-1111.1	6 Mercury 13
	1.1 Strontium	10.1	1.8 Lead	-1111.1	7 Mercury 10
	1.7 Strontium	9.4	1.6 Lead	-1111.1	7 Mercury 12
	1.7 Strontium	9.9	1.7 Lead	-1111.1	7 Mercury 21
	1.6 Strontium	10.9	1.7 Lead	-1111.1	7 Mercury 18
	1.1 Strontium	14	1.6 Lead	-1111.1	6 Mercury 10
	1.1 Strontium	14.3	1.6 Lead	-1111.1	5.9 Mercury 10
	1.6 Strontium	21.6	1.9 Lead	-1111.1	8 Mercury 13
	1 Strontium	9.1	1.7 Lead	-1111.1	8 Mercury 12

Cu_ERR	Cu_CHEM_Co	Co_ERR	Co_CHEM_Mn	Mn_ERR	Mn_CHEM_Zr	
9	Copper	-1111.1	102 Cobalt	885	71 Manganese	400
8	Copper	-1111.1	35 Cobalt	125	18 Manganese	125
9	Copper	-1111.1	61 Cobalt	354	43 Manganese	227
3	Copper	-1111.1	57 Cobalt	375	33 Manganese	295
4	Copper	-1111.1	85 Cobalt	431	57 Manganese	352
9	Copper	-1111.1	72 Cobalt	621	62 Manganese	411
9	Copper	-1111.1	56 Cobalt	424	50 Manganese	224
3	Copper	-1111.1	46 Cobalt	207	28 Manganese	258
4	Copper	-1111.1	161 Cobalt	407	62 Manganese	125
3	Copper	-1111.1	131 Cobalt	318	51 Manganese	77.9
3	Copper	-1111.1	73 Cobalt	334	38 Manganese	168
3	Copper	-1111.1	85 Cobalt	352	40 Manganese	187
3	Copper	-1111.1	68 Cobalt	250	28 Manganese	474
3	Copper	-1111.1	106 Cobalt	475	48 Manganese	213
3	Copper	-1111.1	87 Cobalt	461	44 Manganese	408
3	Copper	-1111.1	56 Cobalt	428	32 Manganese	254
3	Copper	-1111.1	50 Cobalt	291	32 Manganese	223
3	Copper	-1111.1	68 Cobalt	1639	101 Manganese	387
3	Copper	-1111.1	91 Cobalt	382	39 Manganese	166

Zr_ERR	Zr_CHEM_IRb	Rb_ERR	Rb_CHEM_As	As_ERR	As_CHEM_Ni	
5	Zirconium	24	1.2 Rubidium	25	3 Arsenic	94
2	Zirconium	20.2	1 Rubidium	8.2	1.2 Arsenic	-1111.1
3	Zirconium	52.6	1.4 Rubidium	37.3	1.8 Arsenic	-1111.1
4	Zirconium	46.5	1.2 Rubidium	18.4	1.4 Arsenic	10
6	Zirconium	54.5	1.7 Rubidium	-1111.1	5 Arsenic	-1111.1
5	Zirconium	60.1	1.4 Rubidium	4.4	1.3 Arsenic	24
3	Zirconium	40	1.3 Rubidium	60	2 Arsenic	-1111.1
3	Zirconium	37	1.1 Rubidium	164	3 Arsenic	-1111.1
3	Zirconium	85.7	1.8 Rubidium	227	4 Arsenic	65
1.9	Zirconium	80.4	1.6 Rubidium	8.9	1.4 Arsenic	66
3	Zirconium	48	1.2 Rubidium	15.2	1.3 Arsenic	19
3	Zirconium	44.5	1.3 Rubidium	18.9	1.6 Arsenic	22
5	Zirconium	54.7	1.4 Rubidium	7	1.3 Arsenic	21
3	Zirconium	58.2	1.4 Rubidium	9	1.4 Arsenic	37
5	Zirconium	58.6	1.4 Rubidium	9.1	1.4 Arsenic	21
3	Zirconium	38.6	1.1 Rubidium	22.1	1.5 Arsenic	14
3	Zirconium	31	1 Rubidium	8.2	1.3 Arsenic	-1111.1
5	Zirconium	55.3	1.3 Rubidium	715	6 Arsenic	15
3	Zirconium	47.9	1.3 Rubidium	589	6 Arsenic	25

Ni_ERR	Ni_CHEM_ Fe	Fe_ERR	Fe_CHEM_ Cr	Cr_ERR	Cr_CHEM_ Le_ERR	
5	Nickel	32511	200 Iron	243	36 Chromium	0
9	Nickel	3816	37 Iron	-1111.1	31 Chromium	0
11	Nickel	10331	80 Iron	-1111.1	55 Chromium	0
3	Nickel	10635	76 Iron	69	16 Chromium	0
14	Nickel	13460	123 Iron	-1111.1	75 Chromium	0
4	Nickel	15639	108 Iron	-1111.1	71 Chromium	0
10	Nickel	8366	70 Iron	-1111.1	62 Chromium	0
9	Nickel	6937	55 Iron	-1111.1	39 Chromium	0
6	Nickel	63880	414 Iron	158	45 Chromium	0
5	Nickel	47507	297 Iron	-1111.1	110 Chromium	0
4	Nickel	17537	113 Iron	63	20 Chromium	0
4	Nickel	19344	137 Iron	-1111.1	67 Chromium	0
4	Nickel	13353	97 Iron	-1111.1	46 Chromium	0
5	Nickel	32352	207 Iron	-1111.1	73 Chromium	0
4	Nickel	22819	150 Iron	-1111.1	61 Chromium	0
3	Nickel	10577	75 Iron	-1111.1	40 Chromium	0
9	Nickel	8680	65 Iron	-1111.1	47 Chromium	0
4	Nickel	13708	98 Iron	-1111.1	56 Chromium	0
4	Nickel	24157	157 Iron	-1111.1	60 Chromium	0

P_ERR	S_ERR	Cl_ERR	K_ERR	Ca_ERR	Ti	Ti_ERR	Ti_CHEM_↑Zn	
0	0	0	0	0	0	3618	267 Titanium	1274
0	0	0	0	0	0	14600	615 Titanium	67
0	0	0	0	0	0	1395	150 Titanium	84
0	0	0	0	0	0	8560	417 Titanium	84
0	0	0	0	0	0	2200	233 Titanium	23
0	0	0	0	0	0	2820	248 Titanium	40
0	0	0	0	0	0	1637	174 Titanium	53
0	0	0	0	0	0	822	94 Titanium	48
0	0	0	0	0	0	4676	424 Titanium	47
0	0	0	0	0	0	3628	329 Titanium	39
0	0	0	0	0	0	13624	757 Titanium	84
0	0	0	0	0	0	13247	739 Titanium	98
0	0	0	0	0	0	3157	191 Titanium	30
0	0	0	0	0	0	3025	231 Titanium	116
0	0	0	0	0	0	2760	205 Titanium	38
0	0	0	0	0	0	1595	109 Titanium	50
0	0	0	0	0	0	1531	129 Titanium	39
0	0	0	0	0	0	1795	152 Titanium	62
0	0	0	0	0	0	2267	174 Titanium	45

Zn_ERR	Zn_CHEM_Se	Se_ERR	Se_CHEM_Br_ERR	Ag	Ag_ERR	Ag_CHEM_
12	Zinc	21.1	1.3 Selenium	0	71	4 Silver
3	Zinc	-1111.1	2.1 Selenium	0	-1111.1	11 Silver
3	Zinc	-1111.1	2.3 Selenium	0	-1111.1	12 Silver
3	Zinc	-1111.1	2.1 Selenium	0	-1111.1	11 Silver
3	Zinc	-1111.1	2.8 Selenium	0	-1111.1	15 Silver
2	Zinc	-1111.1	2.3 Selenium	0	-1111.1	12 Silver
3	Zinc	-1111.1	2.2 Selenium	0	-1111.1	12 Silver
2	Zinc	-1111.1	2.1 Selenium	0	-1111.1	11 Silver
3	Zinc	-1111.1	2.8 Selenium	0	-1111.1	14 Silver
2	Zinc	-1111.1	2.3 Selenium	0	-1111.1	13 Silver
3	Zinc	-1111.1	2.1 Selenium	0	-1111.1	12 Silver
3	Zinc	-1111.1	2.3 Selenium	0	-1111.1	12 Silver
2	Zinc	-1111.1	2.3 Selenium	0	-1111.1	11 Silver
4	Zinc	-1111.1	2.4 Selenium	0	-1111.1	13 Silver
2	Zinc	-1111.1	2.4 Selenium	0	-1111.1	12 Silver
2	Zinc	-1111.1	2.1 Selenium	0	-1111.1	10 Silver
2	Zinc	-1111.1	1.9 Selenium	0	-1111.1	11 Silver
3	Zinc	-1111.1	2.7 Selenium	0	-1111.1	11 Silver
2	Zinc	-1111.1	2.5 Selenium	0	-1111.1	12 Silver

Cd	Cd_ERR	Cd_CHEM_Sn	Sn_ERR	Sn_CHEM_Sb	Sb_ERR	Sb_CHEM_
-1111.1	14	Cadmium	48	8 Tin	-1111.1	26 Antimony
-1111.1	14	Cadmium	-1111.1	23 Tin	-1111.1	27 Antimony
-1111.1	15	Cadmium	-1111.1	25 Tin	-1111.1	30 Antimony
-1111.1	14	Cadmium	-1111.1	24 Tin	-1111.1	28 Antimony
-1111.1	19	Cadmium	-1111.1	32 Tin	-1111.1	38 Antimony
-1111.1	15	Cadmium	-1111.1	26 Tin	-1111.1	30 Antimony
-1111.1	15	Cadmium	-1111.1	26 Tin	-1111.1	30 Antimony
-1111.1	14	Cadmium	-1111.1	24 Tin	-1111.1	28 Antimony
-1111.1	18	Cadmium	-1111.1	30 Tin	-1111.1	36 Antimony
-1111.1	16	Cadmium	-1111.1	28 Tin	-1111.1	33 Antimony
-1111.1	15	Cadmium	-1111.1	25 Tin	-1111.1	29 Antimony
-1111.1	15	Cadmium	-1111.1	26 Tin	-1111.1	30 Antimony
-1111.1	15	Cadmium	-1111.1	25 Tin	-1111.1	30 Antimony
-1111.1	16	Cadmium	-1111.1	27 Tin	-1111.1	32 Antimony
-1111.1	16	Cadmium	-1111.1	27 Tin	-1111.1	32 Antimony
-1111.1	13	Cadmium	-1111.1	21 Tin	-1111.1	25 Antimony
-1111.1	14	Cadmium	-1111.1	23 Tin	-1111.1	27 Antimony
-1111.1	14	Cadmium	-1111.1	25 Tin	-1111.1	29 Antimony
-1111.1	15	Cadmium	-1111.1	25 Tin	-1111.1	30 Antimony

I_ERR	Ba	Ba_ERR	Ba_CHEM_U	U_ERR	U_CHEM_UNITS	UNITS	DEVICE
0	-1111.1	-1111.1	Barium	38	3	Uranium ppm	innov-x del
0	-1111.1	-1111.1	Barium	-1111.1	4.2	Uranium ppm	innov-x del
0	-1111.1	-1111.1	Barium	-1111.1	5	Uranium ppm	innov-x del
0	-1111.1	-1111.1	Barium	-1111.1	4.8	Uranium ppm	innov-x del
0	-1111.1	-1111.1	Barium	-1111.1	6	Uranium ppm	innov-x del
0	-1111.1	-1111.1	Barium	-1111.1	5.8	Uranium ppm	innov-x del
0	-1111.1	-1111.1	Barium	-1111.1	4.9	Uranium ppm	innov-x del
0	-1111.1	-1111.1	Barium	-1111.1	5	Uranium ppm	innov-x del
0	-1111.1	-1111.1	Barium	-1111.1	6	Uranium ppm	innov-x del
0	-1111.1	-1111.1	Barium	-1111.1	5.2	Uranium ppm	innov-x del
0	-1111.1	-1111.1	Barium	-1111.1	4.8	Uranium ppm	innov-x del
0	-1111.1	-1111.1	Barium	-1111.1	4.8	Uranium ppm	innov-x del
0	-1111.1	-1111.1	Barium	-1111.1	5.4	Uranium ppm	innov-x del
0	-1111.1	-1111.1	Barium	-1111.1	5.7	Uranium ppm	innov-x del
0	-1111.1	-1111.1	Barium	-1111.1	5.6	Uranium ppm	innov-x del
0	-1111.1	-1111.1	Barium	-1111.1	4.1	Uranium ppm	innov-x del
0	-1111.1	-1111.1	Barium	-1111.1	4.3	Uranium ppm	innov-x del
0	-1111.1	-1111.1	Barium	-1111.1	5.3	Uranium ppm	innov-x del
0	-1111.1	-1111.1	Barium	-1111.1	4.7	Uranium ppm	innov-x del

DEC_DEG_	DEC_DEG_	DATE	TIME	PDOP	GPS_ELEV	GPS_DEVIC	NOTES	ZONE
-89.2157	44.97899	#####	134910	1.7	424.99	Standard G	NIST morn	16
-89.2155	44.97923	#####	140244	2.6	426.39	Standard G	surface ho	16
-89.2156	44.97924	#####	140653	1.9	427.53	Standard G	hot zone	16
-89.2156	44.97923	#####	141155	1.8	427.42	Standard G	hot zone	16
-89.2155	44.97923	#####	141640	1.9	428.13	Standard G	hot zone	16
-89.2156	44.97924	#####	142237	2.7	428.73	Standard G	hot zone	16
-89.2156	44.97929	#####	142834	4.1	427.06	Standard G		16
-89.2156	44.97927	#####	143139	1.8	440.08	Standard G		16
-89.2156	44.97928	#####	143609	1.8	430.07	Standard G		16
-89.2156	44.97929	#####	144016	2.1	431.61	Standard G		16
-89.2156	44.97931	#####	144611	2	427.9	Standard G		16
-89.2156	44.97931	#####	145011	2.3	425.29	Standard G		16
-89.2156	44.97931	#####	145401	4	425.29	Standard G		16
-89.2156	44.97931	#####	145612	2.5	426.68	Standard G		16
-89.2156	44.9793	#####	150037	2.6	430.81	Standard G		16
-89.2156	44.9792	#####	150450	2.2	423.47	Standard G	path	16
-89.2156	44.97924	#####	150700	2.2	425.5	Standard G	path	16
-89.2156	44.97926	#####	150832	2.2	427.57	Standard G	path	16
-89.2156	44.97926	#####	151024	2.7	430.41	Standard G	path	16

