DISSOLVED METALS

Date	Flow		Aluminum	Cadmium	Copper	Iron	Lead
18-Aug-09	105	Concentration	131	1.8	17.4	1340	1
		Concentration with GKM	548	3	90	3275	1
		% Difference	318%	51%	418%	144%	48%
22-Sep-09	114	Concentration	171	1.8	14.7	1500	1
		Concentration with GKM	555	3	82	3283	1
		% Difference	224%	47%	456%	119%	44%
17-Nov-09	68	Concentration	959	2.8	36.9	3020	1
		Concentration with GKM	1582	4	148	5956	2
		% Difference	65%	50%	301%	97%	74%
17-Feb-10	61	Concentration	3290	2.6	35.9	3250	2.7
		Concentration with GKM	3933	4	160	6511	3
		% Difference	20%	60%	344%	100%	29%
17-Mar-10	68	Concentration	2720	2.6	35.1	2500	1.3
		Concentration with GKM	3309	4	146	5446	2
		% Difference	22%	54%	317%	118%	56%
13-Apr-10	171	Concentration	212	2.8	19.2	1930	1
		Concentration with GKM	469	3	64	3120	1
		% Difference	121%	20%	234%	62%	30%
14-Sep-10	98	Concentration	25	1.8	13	1460	0.2
		Concentration with GKM	473	3	91	3530	1
		% Difference	1791%	55%	599%	142%	263%
02-Nov-10	99	Concentration	193	2.1	14.5	2160	0.2
		Concentration with GKM	634	3	92	4200	1
		% Difference	228%	46%	532%	94%	260%
15-Mar-11	57	Concentration	1570	2.6	25.2	1800	1.5
		Concentration with GKM	2297	4	158	5317	2
		% Difference	46%	64%	525%	195%	58%
16-Aug-11	158	Concentration	100	1.3	20	703	1
		Concentration with GKM	378	2	68	2000	1
		% Difference	278%	48%	242%	184%	32%
13-Sep-11	106	Concentration	130	1.7	20	1040	1
		Concentration with GKM	543	3	92	2961	1
		% Difference	318%	54%	360%	185%	48%
18-Oct-11	131	Concentration	103	1.6	20	1350	1
		Concentration with GKM	438	2	78	2905	1
		% Difference	325%	47%	292%	115%	39%
04-Oct-12	71	Concentration	418	1.85	10.5	2150	0.255
		Concentration with GKM	1025	3	117	4980	1
		% Difference	145%	73%	1019%	132%	283%
24-Sep-14	250	Concentration	38.9	1.19	3.02	443	0.1
		Concentration with GKM	216	2	34	1267	0
		% Difference	455%	33%	1021%	186%	208%
GKM	**1.34**		**33286**	**75.3**	**5800**	**155286**	**39.3**

Median Concentration	182	1.825	19.6	1650	1
Maximum Concentration	551	3	91	3406	1
Minimum Concentration	2.26	0.51	3.89	1.25	0.52
Median Concentration with GKM	551	3	91	3406	1
Maximum Concentration with GKM	3933	4	160	6511	3
Minimum Concentration with GKM	216	2	34	1267	0
Median % Difference	226%	51%	389%	125%	52%
Maximum % Difference	1791%	73%	1021%	195%	283%
Minimum % Difference	20%	20%	234%	62%	29%

GOLD KING MINE CONCENTRATION

Manganese	Zinc
1420	636
1830	933
29%	47%
1370	617
1748	891
28%	44%
2490	1120
3098	1567
24%	40%
2710	1110
3381	1607
25%	45%
2880	1170
3480	1616
21%	38%
1770	837
2020	1019
14%	22%
1360	676
1799	994
32%	47%
1660	747
2091	1061
26%	42%
2340	972
3066	1506
31%	55%
923	476
1201	676
30%	42%
1280	590
1688	885
32%	50%
1180	572
1512	812
28%	42%
1660	745
2258	1180
36%	58%
863	362
1039	489
20%	35%
34000	**24286**

1540	710.5
1925	1006
0.28	0.43
1925	1006
3480	1616
1039	489
28%	43%
36%	58%
14%	22%

DISSOLVED METALS CONCENTRATIONS WITH AND WITHOUT TREATING GOLD KING MINE DISCHARGE						
	18-Aug-09	**22-Sep-09**	**17-Nov-09**	**17-Feb-10**	**17-Mar-10**	**13-Apr-10**
FLOW	105	114	68	61	68	171
Aluminum	131	171	959	3290	2720	212
With Added GKM	548	555	1582	3933	3309	469
% Increase	318%	224%	65%	20%	22%	121%
Cadmium	1.8	1.8	2.8	2.6	2.6	2.8
With Added GKM	3	3	4	4	4	3
% Increase	51%	47%	50%	60%	54%	20%
Copper	17.4	14.7	36.9	35.9	35.1	19.2
With Added GKM	90	82	148	160	146	64
% Increase	418%	456%	301%	344%	317%	234%
Iron	1340	1500	3020	3250	2500	1930
With Added GKM	3275	3283	5956	6511	5446	3120
% Increase	144%	119%	97%	100%	118%	62%
Lead	1	1	1	2.7	1.3	1
With Added GKM	1.48	1.44	1.74	3.48	2.03	1.30
% Increase	48%	44%	74%	29%	56%	30%
Manganese	1420	1370	2490	2710	2880	1770
With Added GKM	1830	1748	3098	3381	3480	2020
% Increase	29%	28%	24%	25%	21%	14%
Zinc	636	617	1120	1110	1170	837
With Added GKM	933	891	1567	1607	1616	1019
% Increase	47%	44%	40%	45%	38%	22%

	gpm	cfs
Gold King Flow	600	1.33690

Gold King Average Concentrations

	ug/L
Aluminum	33286
Cadmium	75
Copper	5800
Iron	155286
Lead	39
Manganese	34000
Zinc	24286

14-Sep-10	02-Nov-10	15-Mar-11	16-Aug-11	13-Sep-11	18-Oct-11	04-Oct-12	24-Sep-14	Median
98	99	57	158	106	131	71	250	102
25	193	1570	100	130	103	418	38.9	182
473	634	2297	378	543	438	1025	216	551
1791%	228%	46%	278%	318%	325%	145%	455%	226%
1.8	2.1	2.6	1.3	1.7	1.6	1.85	1.19	1.83
3	3	4	2	3	2	3	2	2.93
55%	46%	64%	48%	54%	47%	73%	33%	51%
13	14.5	25.2	20	20	20	10.5	3.02	19.6
91	92	158	68	92	78	117	34	91.2
599%	532%	525%	242%	360%	292%	1019%	1021%	389%
1460	2160	1800	703	1040	1350	2150	443	1650
3530	4200	5317	2000	2961	2905	4980	1267	3406
142%	94%	195%	184%	185%	115%	132%	186%	125%
0.2	0.2	1.5	1	1	1	0.255	0.1	1.00
0.73	0.72	2.37	1.32	1.48	1.39	0.98	0.31	1.42
263%	260%	58%	32%	48%	39%	283%	208%	52%
1360	1660	2340	923	1280	1180	1660	863	1540
1799	2091	3066	1201	1688	1512	2258	1039	1925
32%	26%	31%	30%	32%	28%	36%	20%	28%
676	747	972	476	590	572	745	362	711
994	1061	1506	676	885	812	1180	489	1006
47%	42%	55%	42%	50%	42%	58%	35%	43%

Minimum	Maximum
57	250
25	3290
216	3933
20%	1791%
1.19	2.80
1.58	4.27
20%	73%
3.02	36.9
33.9	160
234%	1021%
443	3250
1267	6511
62%	195%
0.100	2.70
0.308	3.48
29%	283%
863	2880
1039	3480
14%	36%
362	1170
489	1616
22%	58%

DISSOLVED METALS CONCENTRATIONS WITH AND WITHOUT TREATING GOLD KING MINE DISCHARGE						
	18-Aug-09	**22-Sep-09**	**17-Nov-09**	**17-Feb-10**	**17-Mar-10**	**13-Apr-10**
FLOW	105	114	68	61	68	171
Aluminum	131	171	959	3290	2720	212
With Added GKM	479	491	1480	3828	3213	426
% Increase	266%	187%	54%	16%	18%	101%
Cadmium	1.8	1.8	2.8	2.6	2.6	2.8
With Added GKM	3	3	4	4	4	3
% Increase	43%	40%	42%	50%	45%	17%
Copper	17.4	14.7	36.9	35.9	35.1	19.2
With Added GKM	78	71	130	139	128	57
% Increase	349%	381%	252%	288%	265%	195%
Iron	1340	1500	3020	3250	2500	1930
With Added GKM	2956	2988	5474	5977	4963	2923
% Increase	121%	99%	81%	84%	99%	51%
Lead	1	1	1	2.7	1.3	1
With Added GKM	1.40	1.37	1.62	3.36	1.91	1.25
% Increase	40%	37%	62%	24%	47%	25%
Manganese	1420	1370	2490	2710	2880	1770
With Added GKM	1762	1686	2998	3271	3382	1979
% Increase	24%	23%	20%	21%	17%	12%
Zinc	636	617	1120	1110	1170	837
With Added GKM	884	846	1493	1526	1543	989
% Increase	39%	37%	33%	37%	32%	18%

	gpm	cfs
Gold King Flow	500	1.11408

Gold King Average Concentrations

	ug/L
Aluminum	33286
Cadmium	75
Copper	5800
Iron	155286
Lead	39
Manganese	34000
Zinc	24286

14-Sep-10	02-Nov-10	15-Mar-11	16-Aug-11	13-Sep-11	18-Oct-11	04-Oct-12	24-Sep-14	Median
98	99	57	158	106	131	71	250	102
25	193	1570	100	130	103	418	38.9	182
399	561	2178	332	475	383	926	186	485
1495%	191%	39%	232%	265%	272%	121%	379%	189%
1.8	2.1	2.6	1.3	1.7	1.6	1.85	1.19	1.83
3	3	4	2	2	2	3	2	2.77
46%	39%	54%	40%	45%	39%	61%	28%	42%
13	14.5	25.2	20	20	20	10.5	3.02	19.6
78	79	136	60	80	69	100	29	78.5
500%	444%	439%	202%	301%	244%	852%	852%	325%
1460	2160	1800	703	1040	1350	2150	443	1650
3189	3864	4742	1785	2644	2648	4516	1130	3089
118%	79%	163%	154%	154%	96%	110%	155%	105%
0.2	0.2	1.5	1	1	1	0.255	0.1	1.00
0.64	0.63	2.22	1.27	1.40	1.32	0.86	0.27	1.35
220%	217%	48%	27%	40%	32%	236%	174%	44%
1360	1660	2340	923	1280	1180	1660	863	1540
1727	2020	2947	1155	1620	1457	2160	1010	1870
27%	22%	26%	25%	27%	23%	30%	17%	23%
676	747	972	476	590	572	745	362	711
941	1009	1419	643	836	772	1109	468	965
39%	35%	46%	35%	42%	35%	49%	29%	36%

Minimum	Maximum
57	250
25	3290
186	3828
16%	1495%
1.19	2.80
1.52	3.99
17%	61%
3.02	36.9
28.7	139
195%	852%
443	3250
1130	5977
51%	163%
0.100	2.70
0.274	3.36
24%	236%
863	2880
1010	3382
12%	30%
362	1170
468	1543
18%	49%

Gold King Mine Discharge (No Qualifiers)

	8/10/2015	8/13/2015	8/15/2015	8/17/2015	8/19/2015
DISSOLVED METALS					
Aluminum (ug/L)	35000	36000	34000	33000	32000
Cadmium (ug/L)	65	66	82	80	83
Copper (ug/L)	6000	6100	4600	5800	5600
Iron (ug/L)	120000	370000	150000	110000	110000
Lead (ug/L)	32	78	42	32	28
Manganese (ug/L)	33000	34000	36000	32000	32000
Zinc (ug/L)	25000	26000	20000	24000	22000
TOTAL METALS AND MISC					
Aluminum (ug/L)	38000	36000	33000	33000	33000

8/22/2015	8/24/2015	AVERAGE
32000	31000	33286
82	69	75.3
5900	6600	5800
130000	97000	155286
38	25	39.3
35000	36000	34000
25000	28000	24286
33000	32000	34000

	A72 Current				A72 Historic				
DISSOLVED METALS									
					ALL				RUNOFF
	Average	Median	Min	Max	Average	Median	Min	Max	Average
Aluminum	58.7	35	24	220	635	151	32.4	3290	55.7
Arsenic	0.37	0.37	0.37	0.37	ND	ND	ND	ND	ND
Cadmium	**1.81**	**1.8**	**1.5**	**2.1**	**1.52**	**1.47**	0.6	**2.8**	**0.854**
Chromium	ND	ND	ND	ND	1.83	1.83	1.83	1.83	ND
Copper	14.6	15	9.8	**20**	14.7	11.75	3.02	**36.9**	5.59
Iron	672	670	520	910	1220	924.5	199	**3250**	463
Lead	0.446	0.06	0.06	4.1	1.09	0.955	0.202	2.7	0.406
Manganese	1111	1100	920	1300	1157	923	219	**2880**	456
Nickel	4.22	4.3	3.5	4.9	3.84	3.35	0.727	8.2	0.869
Selenium	1.41	0.58	0.58	3.4	ND	ND	ND	ND	ND
Silver	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	**513**	**490**	**400**	**640**	**545**	**476**	133	**1170**	**273**
TOTAL METALS									
					ALL				**RUNOFF**
	Average	Median	Min	Max	Average	Median	Min	Max	Average
Aluminum	**1664**	**1700**	**1400**	**1800**	**2107**	**1840**	573	**8840**	1111
Arsenic	0.954	0.89	0.56	1.5					
Cadmium	1.87	1.9	1.6	2.3	1.66	1.60	0.80	2.90	1.04
Copper	57.5	58	48	62	27.5	27.9	10.3	47.5	20.1
Iron	2791	2600	2100	3700	3175	2865	787	7710	2125
Lead	8.24	7.4	4.9	18	24.4	6.20	3.30	328	21.0
Manganese	1127	1100	1000	1300	1236	1071.5	311	3110	570
Mercury	ND	ND	ND	ND					
Zinc	**536**	**530**	**460**	**620**	**586**	**559**	**221**	**1150**	**325**
Hardness	184	190	160	200	93.5	76	55	174	68.25

This only uses A72 data through 8/20/2015 for current data.

A72 Historic

RUNOFF			NON-RUNOFF				4a Acute WQS	4a Chronic WQS
Median	Min	Max	Average	Median	Min	Max		
45.6	32.4	99.3	767	193	32.4	3290		
ND	ND	ND	ND	ND	ND	ND	340	100
0.8	0.6	**1.47**	**1.96**	**1.8**	**0.902**	**2.8**	2.90	0.67
ND	ND	ND	1.83	1.83	1.83	1.83	16	11
4.8	3.6	7.61	**19.1**	**16.1**	3.02	**36.9**	23.9	15.1
403	199	809	1695	1500	443	**3250**		1830*
0.406	0.202	0.61	1.44	1.4	0.255	2.7	125	4.9
450	219	759	1626	1420	477	**2880**	3658	2021
0.901	0.727	0.979	4.45	4.75	0.979	8.2	784	87
ND	ND	ND	ND	ND	ND	ND	18.4	4.6
ND	ND	ND	ND	ND	ND	ND	5.79	0.21
250	133	**443**	**728**	**676**	**288**	**1170**	240*	240*

RUNOFF			**NON-RUNOFF**					
Median	Min	Max	Average	Median	Min	Max		
921	573	**3060**	**2389**	**2080**	1110	**4440**	1360*	1360*
0.90	0.80	1.51	2.05	1.97	1.11	2.90		
17.05	12.2	36.1	31.0	33.5	10.3	46.7		
1320	787	5300	3945	3360	1340	7710		
12.3	3.30	99.8	6.68	5.80	3.42	14.2		
492	311	846	1724	1450	884	3110		
							0.01	
306	**221**	**483**	**770**	**684**	**391**	**1150**		
69	55	80	144	144	114	174	184	