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DEPARTMENT OF
WATER RESOURCES

April 28, 2010

Aaron Marshall
Idaho Department of Water Resources
322 E Front St
PO Box 83720
Boise, ID 83720-0098

**Subject: Annual Diversion Volume Data
Water Right 72-7573 (Thompson Creek Mining Co.)**

Dear Aaron,

As agreed during our September 2008 meeting, enclosed is diversion volume data for Thompson Creek Mining Company's pit-water diversions from January through December 2009. The record indicates a total 487.4 acre-feet of water diverted from the pit during the 2009 calendar year for use in the company's mining operation.

To the extent that this data may be used to set a diversion volume limit on the license issued for this right, I would like to offer the following observations. Permit 72-7573 and licensed right 72-7414 both authorize diversion of ground water (from the mine pit) for industrial use. Right 72-7414 lists an annual diversion volume limit of 803.6 acre-feet. When this right is used in combination with 72-7193 and 72-7257, the total annual volume limit for the three rights combined is 3,108 acre feet.

Rights 72-7193 and 72-7257 both list individual annual diversion volume limits of 1,600 acre feet. Both rights also list combined annual diversion volume limits of 2,916 when used together. When these two rights are fully diverted, the volume remaining for diversion under 72-7414 is limited to 192 acre feet ($3,108 - 2,916 = 192$ acre feet). Therefore, the license for 72-7573 should allow diversion of at least 295.4 acre feet based on 487.4 acre-feet measured during 2009 and the effective limit of 192 acre feet for 72-7414 when 72-7193 and 72-7257 are fully diverted.

Consideration should also be given to variances in annual precipitation. The quantity of water diverted from the pit is highly correlated with direct precipitation, runoff, and ground water seepage captured by the pit. Removal of water collected in the pit is necessary for continued mining operations. During some years when precipitation is greater than that experienced during 2009, the mine will need to remove greater volumes of water and will use the water as authorized for industrial use.

The National Resource Conservation Service (NRCS) provided precipitation index data for three NRCS SNOTEL weather stations surrounding the mine, including

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Galena, Banner Summit, and Mill Creek Summit (copy enclosed). The past sixty years of data from the three stations is summed to yield a combined index. When the data are ranked from high to low, the 2009 water year ranks number 24th of 60 with a combined index of 70.1. The 1974 water year represents the top-ranked year with an index of 107.9. Based on this data set, if the mine was operating in 1974, we could expect that approximately 54% more water would enter the pit in that year than in 2009 ($107.9 / 70.1 = 1.54$).

Stream gaging records provide another data set documenting the potential variability in anticipated diversion volume. The USGS has continuously maintained a stream gaging station on Thompson Creek since October 1972 (site no. 13297330). Annual discharge statistics show that 2009 is ranked 14th of the 37 years of data with a mean average discharge of 19.4 cfs. In comparison, the mean annual discharge in 1997 was 37.9 cfs, nearly twice the 2009 mean discharge.

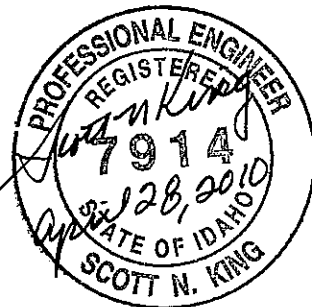
In summary, Thompson Creek Mining Company's ground water "pit watering" diversions are highly correlated with contributing flows from direct precipitation, snowmelt, runoff, and tributary ground water. Removal of water that collects in the mine pit is essential to continued mine operation. Climate station and stream gaging records show that water quantities entering the pit are expected to vary. The 2009 water year may be somewhat "above average" when ranked and compared to the available record, but it certainly is not a peak water supply year. Higher water yields are anticipated in future years. Therefore, the license issued for this permit should provide the flexibility for the mine to react to variable tributary flows by allowing higher diversion volumes in excess of that diverted during 2009. The alternative option of obtaining a new permit authorizing greater diversion volume as a reaction to increased tributary flows due to normal climate variability seems not only impractical, but likely impossible to obtain in a timely fashion.

Please contact me if you have any questions regarding this analysis.

Sincerely,

Scott N. King, P.E.
Supervising Engineer

cc: Bert Doughty
Dylan Lawrence



Enclosures: 2009 Pit Dewatering Diversion Volume Report
NRCS Snow Water Content Indexes
USGS Thompson Creek Annual Discharge Statistics

File: 272.0050

Thompson Creek Mining Company		
2009 Pit Dewatering Diversions		
	Total Gallons	Total Acre-Feet
	Per Month	Per Month
Jan-09	7,992,000	24.53
Feb-09	1,458,000	4.47
Mar-09	7,722,000	23.70
Apr-09	21,588,000	66.25
May-09	0	0.00
Jun-09	15,321,600	47.02
Jul-09	20,076,000	61.61
Aug-09	27,720,000	85.07
Sep-09	14,616,000	44.85
Oct-09	20,331,000	62.39
Nov-09	9,963,000	30.58
Dec-09	12,042,000	36.96
Total	158,829,600	487.43

NRCS Snow Water Content Indexes

Weight: 1.00 Station: 14E01S, MILL CREEK SUMMIT SNOTEL
 Weight: 1.00 Station: 15E11S, BANNER SUMMIT SNOTEL
 Weight: 1.00 Station: 14E01S, MILL CREEK SUMMIT SNOTEL

Start Yr. 1950 End Yr. 2009

Year	MILL CREEK SUMMIT SNOTEL	BANNER SUMMIT SNOTEL	GALENA SNOTEL	Total	Rank
74	34.7	42.6	30.6	107.9	1
65	33	41.6	30.9	105.5	2
56	32.5	40.8	30.5	103.8	3
97	32.9	39.2	29.5	101.6	4
71	28.3	38.6	28	94.9	5
72	27.4	39.6	24.7	91.7	6
82	28.8	34.7	26	89.5	7
50	25.3	39	23	87.3	8
52	23.5	39.1	24	86.6	9
58	26.6	31.9	25.8	84.3	10
83	23.1	33.9	27.2	84.2	11
99	26.3	35.4	22.3	84	12
69	26.6	31.2	26.1	83.9	13
51	26.6	31.5	24.4	82.5	14
6	22.1	33.9	25.8	81.8	15
96	27.2	31.5	20.4	79.1	16
75	22.1	32.9	23.4	78.4	17
54	22	34.4	21.6	78	18
86	22.8	31.3	23.1	77.2	19
76	24.9	31.1	20	76	20
95	20.8	29.2	24.3	74.3	21
53	22.3	31.2	19.3	72.8	22
67	22.8	28.2	20.4	71.4	23
9	27.6	27.2	15.3	70.1	24
57	19.8	31.5	18.7	70	25
80	20.1	30.7	19.1	69.9	26
62	21	27.8	19.9	68.7	27
8	23	27.6	17.8	68.4	28
78	18.9	30.5	18.3	67.7	29
70	19.4	29.8	17.9	67.1	30
89	20.1	28.3	18.3	66.7	31
3	19.4	29.2	17.4	66	32
64	19.3	26.3	19.6	65.2	33
93	17.5	26.8	20.1	64.4	34
84	19.5	26.4	18.1	64	35
85	19	26.6	16.8	62.4	36

NRCS Snow Water Content Indexes

59	20.3	24.7	17.3	62.3	37
2	18.2	25.7	15	58.9	38
0	18.5	24.3	15.3	58.1	39
68	18.3	22.8	15.2	56.3	40
66	16.3	24.1	14.5	54.9	41
61	16.1	23.2	14.7	54	42
98	15.7	20.3	14.7	50.7	43
73	13.7	22.7	13.5	49.9	44
60	14.3	22.9	12.6	49.8	45
81	13.7	20.3	15.3	49.3	46
55	14.8	22.3	11.9	49	47
7	18.5	19.4	10.8	48.7	48
79	14.8	20.4	12.9	48.1	49
4	14.6	20.2	13.2	48	50
88	15.9	18.8	11.9	46.6	51
63	16.3	15.2	15	46.5	52
91	16.5	17.8	10.8	45.1	53
90	14.7	18.2	11.4	44.3	54
5	13	15.7	12.1	40.8	55
92	12.9	16.3	10.4	39.6	56
87	14.2	15.6	9.8	39.6	57
94	10.2	15.7	8.9	34.8	58
1	11.2	11.3	7.3	29.8	59
77	7.3	9	4.4	20.7	60

USGS 13297330 THOMPSON CREEK NR CLAYTON ID

Annual discharge statistics

		year	cfs	rank
USGS	13297330	1997	37.9	1
USGS	13297330	1974	32.3	2
USGS	13297330	1982	31.9	3
USGS	13297330	1996	28.9	4
USGS	13297330	1986	26.2	5
USGS	13297330	1976	24.6	6
USGS	13297330	1999	23.3	7
USGS	13297330	1984	22.6	8
USGS	13297330	1978	21	9
USGS	13297330	1975	20.3	10
USGS	13297330	1983	20.3	11
USGS	13297330	2006	20.2	12
USGS	13297330	1993	20	13
USGS	13297330	2009	19.4	14 ← 2009
USGS	13297330	1995	18.9	15
USGS	13297330	1980	18.4	16
USGS	13297330	1998	17.3	17
USGS	13297330	2008	17.2	18
USGS	13297330	2007	15.6	19
USGS	13297330	1985	14.3	20
USGS	13297330	2003	13.9	21
USGS	13297330	1981	13.6	22
USGS	13297330	2000	12.6	23
USGS	13297330	2002	12.1	24
USGS	13297330	1988	12	25
USGS	13297330	1989	11.4	26
USGS	13297330	1991	10.8	27
USGS	13297330	1979	10.5	28
USGS	13297330	1990	10.5	29
USGS	13297330	1973	10.2	30
USGS	13297330	2004	9.7	31
USGS	13297330	2005	9.17	32
USGS	13297330	1992	8.82	33
USGS	13297330	1987	8.68	34
USGS	13297330	1994	6.15	35
USGS	13297330	2001	6.1	36
USGS	13297330	1977	4.7	37

max	37.9
min	4.7
avg	16.8