

High Iron, Manganese Levels in Upper Ross Creek

by Sandy Goldman

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For the past few years, we have noticed a degradation of water quality in upper Ross Creek during the summer when flows are low. Nearest the dam, rocks in the bed of the creek are covered with orange material the color of rust, and the water itself is not clear. There are often floccules of orange material suspended in the water column and orange filaments attached to sticks and rocks. Further downstream, the orange material is no longer present, but rocks in the bed are coated with thin black deposits. These two colors suggest contamination by iron (Fe) and manganese (Mn). Water samples were collected on three days, about a month apart, at four locations covering some 1,600 feet of Ross Creek. For comparison, one sample was collected from San Anselmo Creek at Creek Park, upstream of the confluence of Ross and San Anselmo creeks. Samples tested were consistently high at upstream locations, exceeding published standards for chronic harm.

We do not know the exact source of the Fe and Mn, nor do we know the best way to lower the levels. However, we anticipate that this problem will be addressed when the designs for operating Phoenix Lake as a detention basin are developed and reviewed. A more complete report can be downloaded at our website under Projects.

Results of 2011 Fe and Mn Testing in Upper Ross Creek

		Water over spillway?	Vault	RC1	RC1.25	RC1.5	SA Creek at Creek Park
Distance from Vault (ft)			-	45	525	1,600	N/A
Fe (mg/l)	6/30/11	Yes	9.70	1.50	0.78	0.67	0.560
Fe (mg/l)	7/23/11	No	9.30	160.00	1.40	0.99	
Fe (mg/l)	8/29/11	No	18.00	150.00	9.90	1.50	
Mn (mg/l)	6/30/11	Yes	<u>2.30</u>	<u>0.29</u>	0.21	Not Detected	0.037
Mn (mg/l)	7/23/11	No	<u>2.20</u>	<u>5.40</u>	0.35	0.14	
Mn (mg/l)	8/29/11	No	<u>7.20</u>	<u>5.70</u>	<u>5.80</u>	0.20	

Note:

- 6/27/11 spillway flowing briskly
- 7/8/11 moderate flow over spillway
- 7/17/11 spillway at a trickle

Exceeds EPA standards for Fe causing chronic harm (1.00 mg/l)

Exceeds Canadian standards for Fe (0.30 mg/l)

Exceeds British Columbia standards for Mn causing chronic harm at H = 50 mg/l CaCO₃ (0.80 mg/l)

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