

# **Mount Polley Mining Corporation**

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September 3<sup>rd</sup>, 2015

Ministry of Environment Mining Operations Environmental Protection 2080 Labieux Rd. Nanaimo, BC V9T 6J9

## WEEKLY POST-TSF BREACH REPORT – AUGUST 26<sup>TH</sup> – SEPTEMBER 1<sup>ST</sup>, 2015

#### **Rehabilitation Work**

Silt Curtain	The turbidity barrier (silt curtain) installed in Quesnel Lake near the outlet of the constructed Edney Creek channel is in good condition.
Monitoring	MPMC staff members conduct environmental monitoring when work in the Hazeltine Creek riparian zone is occurring.
Hazeltine Creek Rehabilitation	<ul> <li>Phase one of re-contouring in Hazeltine Creek in Reach 3 is complete, with the exception of the canyon "blow-out" zone. Hazeltine Creek continues to flow out of the new outlet from the lower sedimentation pond, separate from the outlet of Edney Creek, which has been rehabilitated for fish use.</li> <li>This week: <ul> <li>Gravel was placed at the base of the fish fence upstream of the weir.</li> <li>Preparations for cleaning out the lower Hazeltine Creek sedimentation ponds continued.</li> <li>Wood waste cleanup was carried out in lower Hazeltine Creek.</li> </ul> </li> </ul>
Edney Creek and Adjacent Quesnel Lake Shoreline	Edney Creek and adjacent Quesnel Lake shoreline rehabilitation work was completed for the season last week. This week access roads to the Edney Creek floodplains were removed.

### Water Management

Polley Lake	Polley Lake water elevation = 922.17m (September 1 <sup>st</sup> ) The Polley Lake weir valve remained open this week to allow approximately 0.15 m <sup>3</sup> /s of outflow from Polley Lake into Hazeltine Creek.
Water Management	All water from the Tailings Storage Facility (TSF) water collection system continues to be transferred to the Springer Pit via the Central Collection Sump (CCS). No releases of water to the environment occurred this week. Dewatering from the Springer Pit to the CCS via the West Ditch is ongoing to supply water for: the turbomisters at the Main Seepage Pond; dust suppression sprinklers on the TSF; and, process water to the Mill.
	Please refer to the May 28 <sup>th</sup> , 2015 weekly report for an overview map of the TSF water management system.
Springer Pit	The total volume of tailings deposited in the Springer Pit as of September 1 <sup>st</sup> is 287,513 tonnes (208,343 m <sup>3</sup> including water retained in tailings)
	<ul> <li>Water Elevations (September 1<sup>st</sup>):</li> <li>Springer Pit = 1018.72m (-0.05m from last week)</li> <li>Groundwater well GW12-2a = 1013.31m (+0.11m from last week)</li> <li>Groundwater well GW12-2b = 1013.40m (+0.08m from last week)</li> <li>Groundwater well GW15-1a = 1019.39m (+0.30m from last week)</li> <li>Groundwater well GW15-1b = 1019.31m (+0.27m from last week)</li> <li>Groundwater well GW15-2a = 1021.81m (+0.03m from last week)</li> <li>Groundwater well GW15-2b = 1022.11m (+0.03m from last week)</li> <li>Groundwater well GW15-2b = 1022.11m (+0.03m from last week)</li> <li>Map of the groundwater well locations is included as Figure 1 of the July 23<sup>rd</sup> weekly report. Note that the suffix "a" indicates the deep well in the pair, and the</li> </ul>
	suffix "b" indicates the shallow well in the pair. Monthly water quality results for parameters of interest from the Springer Pit supernatant and adjacent groundwater wells will be included in this report as they become available. Results for key parameters from a sample collected of the Springer Pit supernatant on August 12 <sup>th</sup> are provided in Table 1. Results from July samples (taken prior to return tailings deposition in the Springer Pit) are provided for context.
Discharge System	<ul> <li>Work related to installation of infrastructure for the proposed short-term water discharge plan was carried out this week including: <ul> <li>Construction of a pad and access road for the water treatment plant continued.</li> <li>Culverts for the water treatment plant pumps were installed.</li> <li>Construction of the Quesnel Lake discharge pipeline grade continued.</li> </ul> </li> </ul>

Table 1. Water chemistry results from the Springer Pit supernatant (station E11)

Sample Location		E11 - Spr	inger Pit Su	pernatant
Date Sampled		09-Jul-15	29-Jul-15	12-Aug-15
Parameter	Units		Water	
Physical Tests				
Conductivity	uS/cm	1070	1090	1070
Hardness (as CaCO3)	mg/L	526	579	547
рН	pН	8.03	8.12	8.27
Total Suspended Solids	mg/L	<3.0	<3.0	20.40
Turbidity	NTU	0.60	1.47	10.30
Anions and Nutrients				
Nitrate (as N)	mg/L	7.46	7.58	7.4500
Sulfate (SO4)	mg/L	457	472	459.0
Total Metals				
Aluminum (Al)-Total	mg/L	0.438	0.0791	0.195
Arsenic (As)-Total	mg/L	0.00132	0.00138	0.00576
Cadmium (Cd)-Total	mg/L	0.0000358	<0.000060	0.0000565
Copper (Cu)-Total	mg/L	0.0211	0.0804	0.138
Iron (Fe)-Total	mg/L	0.039	0.124	0.235
Lead (Pb)-Total	mg/L	<0.000050	0.000185	0.000198
Molybdenum (Mo)-Total	mg/L	0.122	0.128	0.139
Selenium (Se)-Total	mg/L	0.0365	0.0383	0.0375
Dissolved Metals				
Aluminum (Al)-Dissolved	mg/L	0.0059	0.0048	0.0062
Arsenic (As)-Dissolved	mg/L	0.00117	0.00117	0.00112
Cadmium (Cd)-Dissolved	mg/L	0.000026	<0.000050	0.0000478
Copper (Cu)-Dissolved	mg/L	0.0166	0.0286	0.0240
Iron (Fe)-Dissolved	mg/L	<0.030	<0.030	<0.030
Lead (Pb)-Dissolved	mg/L	<0.000050	<0.000050	<0.000050
Molybdenum (Mo)- Dissolved	mg/L	0.122	0.124	0.127
Selenium (Se)-Dissolved	mg/L	0.0357	0.0389	0.0361

### Government, First Nations and Stakeholder Engagement

Publications and Website Updates	Mount Polley will continue to present interpreted environmental monitoring results and updates on remediation work on the <u>Mount Polley Updates</u> page of the Imperial Metals website ( <u>www.imperialmetals.com</u> ). No updates were posted this week.
Engagement Activities and Communications with Regulators	<ul> <li>Activities relating to government, First Nations, and stakeholder communication and engagement this week included: <ul> <li>The weekly Ministry of Environment (MoE) update call on August 26<sup>th</sup>.</li> <li>Community meetings in Williams Lake and Quesnel on August 26<sup>th</sup> and August 27<sup>th</sup>, respectively.</li> <li>A tour of fish habitat rehabilitation work with First Nations staff and their consultant on September 1<sup>st</sup>.</li> </ul> </li> </ul>

### **Environmental Monitoring Program**

Water Quality Monitoring Program	<ul> <li>The current water quality monitoring program is outlined in the table below. All sampling was completed as scheduled this this week and in the month of August. Hazeltine Creek continues to enter Quesnel Lake from the new lower sedimentation pond outflow. Sampling stations will remain adjusted as follows until otherwise noted: <ul> <li>Station EDC-02 is not being sampled; it is no longer relevant because Hazeltine and Edney Creeks are Quesnel Lake as separate outflows.</li> <li>Stations QUL-54, QUL-55, and QUL-56 have been shifted from the mouth of the combined Edney/Hazeltine outflow channel to the mouth of the new outflow channel from the lower sedimentation pond into Quesnel Lake. These stations are named QUL-54a, QUL-55a, and QUL-56a.</li> <li>Station HAC-01b at the outflow of the lower sedimentation pond has been moved to station HAC-01c at the new outflow from the lower sedimentation pond.</li> <li>The continuous monitoring sonde at HAC-01b has been temporarily removed.</li> </ul> </li> <li>Supplemental sampling of Cariboo River and quarterly chronic toxicity testing of Polley Lake (P2 surface), Quesnel Lake (QUL-55a surface) and Quesnel River (QUR-1) were conducted last week.</li> </ul>			
	Area	Monitoring Type	Frequency	Stations
	Polley Lake	Samples	Monthly	P1, P2
	,	Profiles	Bi-monthly	P1, P2
	Hazeltine Creek	Samples	Weekly	HAC-01b
			Monthly	HAC-05, HAC-08, HAC-10
		Field Parameters	Continuous	HAC-01b
	Edney Creek	Samples	Weekly	EDC-02
			Monthly	EDC-01
	Quesnel Lake	Profiles	Weekly	QUL-54, QUL-55, QUL-56
		Profiles	Bi-monthly	QUL-21a, QUL-18, QUL-66a, QUL-2a, QUL-79
		Profiles	Monthly	QUL-40a, QUL-120a
		Samples	Weekly	QUL-55
		Samples	Monthly	QUL-2a, QUL-18, QUL-40a, QUL-120a
	Quesnel River	Samples	Bi-monthly	QUR-1
		Field Parameters	Continuous	QUR-1
	Please refer to pre- these sampling loca	vious weekly reports ations.	, such as the	May 7 <sup>th</sup> , 2015 report, for a map of

Water Quality Monitoring Results	<ul> <li>Figure 1 is a time series graph of field turbidity readings in lower Hazeltine Creek upstream of the sedimentation ponds and downstream of the ponds, at the outflow into Quesnel Lake. The graph shows data since construction and armouring of the new Hazeltine Creek channel was completed in mid-May.</li> <li>Figure 2 shows a turbidity and temperature profile from this week at site QUL-55a, near the mouth of the new outflow channel from the lower Hazeltine Creek sedimentation pond to Quesnel Lake.</li> <li>Figure 3 shows a time series graph of turbidity at site QUR-1. Turbidity data are from laboratory analysis completed by ALS Environmental. This chart will be updated every second week, as per the monitoring frequency of this station in the sampling program.</li> </ul>
Other Monitoring Programs	Following completion of the <u>Post-Event Impact Assessment Report</u> , MPMC has moved on to the next phase of monitoring following the tailings dam failure, which includes carrying out recommendations made in the Post-Event Impact Assessment Report. Minnow Environmental continued a sediment and benthic invertebrate monitoring program on site this week in areas including Polley Lake, Hazeltine Creek, and Quesnel Lake. Collection of remaining vegetation metal uptake samples from the Hazeltine Creek area, as part of the Human Health and Ecological Risk Assessment, was carried out this week.

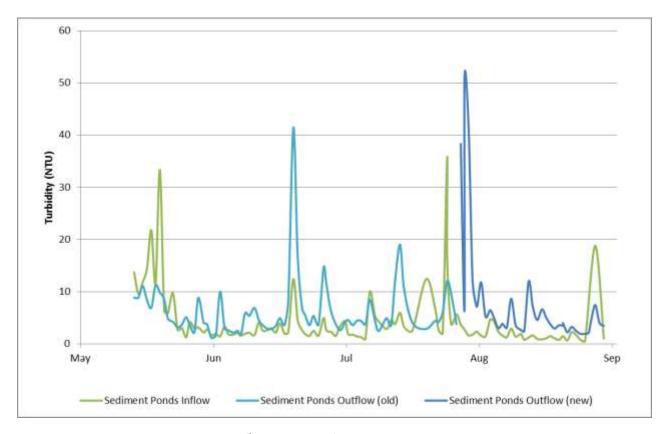


Figure 1. Time series graph for May 13<sup>th</sup> – August 31<sup>st</sup> showing turbidity levels at monitoring locations in lower Hazeltine Creek

Note: outflow from the Hazeltine Creek lower sedimentation pond now flows into Quesnel Lake via a new, channel, separate from the outflow of the rehabilitated Edney Creek channel.

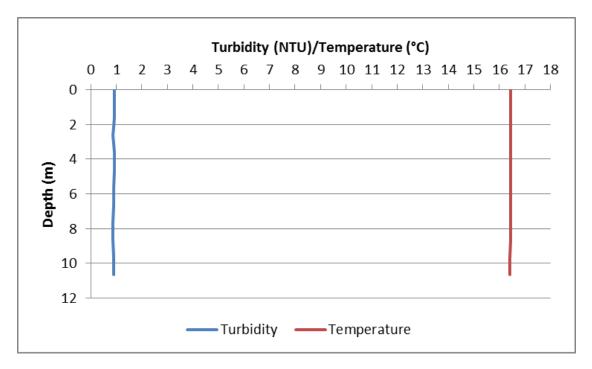


Figure 2. Turbidity and temperature profiles at station QUL-55a (at the mouth of the new outflow channel from the Hazeltine Creek lower sedimentation pond) on August 31<sup>st</sup>

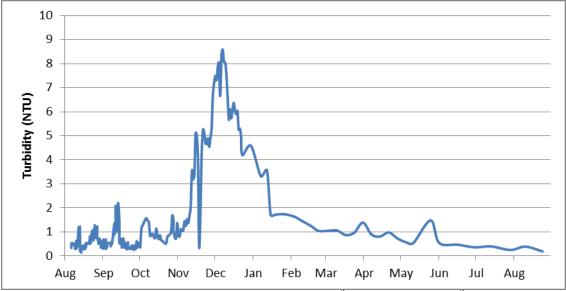


Figure 3. Turbidity time series at station QUR-1 (August 6<sup>th</sup>, 2014 – August 24<sup>th</sup>, 2015)