

# **Mount Polley Mining Corporation**

an Imperial Metals company Box 12 • Likely, BC VOL 1NO • T 250.790.2215 • F 250.790.2613

July 30<sup>th</sup>, 2015

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

### WEEKLY POST-TSF BREACH REPORT – JULY 22<sup>ND</sup> – 28<sup>TH</sup>, 2015

### **Government, First Nations and Stakeholder Engagement**

| Publications<br>and<br>Website Updates                            | Mount Polley will continue to present interpreted environmental monitoring results and updates on remediation work on the Mount Polley Updates page of the Imperial Metals website ( <a href="www.imperialmetals.com">www.imperialmetals.com</a> ).  A Polley Lake Sampling Video was posted on July 29 <sup>th</sup> .   |
|---|---|
| Engagement<br>Activities and<br>Communications<br>with Regulators | Activities relating to government, First Nations, and stakeholder communication and engagement this week included:  • The weekly MoE update call on July 22 <sup>nd</sup> .  • Participation in the MoE Environmental Working Group meeting on July 24 <sup>th</sup> .  On July 16 <sup>th</sup> Mount Polley Mining Corporation (MPMC) submitted a permit amendment application to MoE for a short-term water discharge to Quesnel Lake. The public comment period will be open until August 23 <sup>rd</sup> . The Environmental Protection Notice can be viewed in the Williams Lake Tribune (July 22 <sup>nd</sup> , page A23). |

#### **TSF Construction**

| Construction |
|--------------|
| Update       |

The amendment to permit M-200 approving repair of the TSF breach to manage 2015 freshet was received from the Ministry of Energy and Mines (MEM) on December 17<sup>th</sup>, 2014. Buttress placement for the Perimeter Embankment is ongoing; all other work associated with the 2015 Freshet Management Embankment construction is complete.

## **Water Management**

| Polley Lake             | Polley Lake water elevation = 922.37m (July 28 <sup>th</sup> ) The Polley Lake weir valve remained open this week to allow approximately 0.2 m <sup>3</sup> /s of outflow from Polley Lake into Hazeltine Creek.  |  |  |
|-------------------------|---|--|--|
| TSF Water<br>Collection | 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 and dust suppression sprinklers on the TSF. Please refer to the May 28 <sup>th</sup> , 2015 weekly report for an overview map of the TSF water management system.   |  |  |
|                         | Outside the TSF, Construction of the tailings line pipe grade and installation of the pipe in anticipation of re-starting mill operation is in the final stages.  |  |  |
| Springer Pit            | Permit amendments from MoE and MEM were received on July 9 <sup>th</sup> allowing MPMC to return to restricted mining and milling operations with tailings deposition into the Springer Pit.  |  |  |
|                         | Volume of tailings deposited = 0m <sup>3</sup>  |  |  |
|                         | Water Elevations (July 28 <sup>th</sup> ):  • Springer Pit = 1016.96m (+0.29m from last week)  • Groundwater well GW12-2a = 1013.05m (-0.03m from last week)  • Groundwater well GW12-2b = 1013.15m (+0.01m from last week)  • Groundwater well GW15-1a = 1018.14m (+0.22m from last week)  • Groundwater well GW15-1b = 1017.04m (-0.77m from last week)  • Groundwater well GW15-2a = 1021.74m (-0.04m from last week)  • Groundwater well GW15-2b = 1022.01m (-0.02m from last week)  A 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 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. Purging and sampling of all of the groundwater wells adjacent to the Springer Pit was conducted this week (note: this causes some fluctuations in the water elevations). |  |  |

### **Sediment and Erosion Control Measures**

| Silt Curtain                      | The turbidity barrier (silt curtain) installed in Quesnel Lake near the outlet of the constructed Edney (Hazeltine) Creek channel is in good condition.  |
|-----------------------------------|--|
| Monitoring                        | Environmental monitors are monitoring ongoing sediment and erosion control and rehabilitation work. This monitoring is being conducted by MPMC staff. Installation of silt fence and use of rip rap for erosion control was conducted this week as part of the Edney Creek work.   |
| Hazeltine Creek<br>Rehabilitation | Work this week was focussed on the lower reaches of Edney Creek and the Quesnel Lake shore area.   |
| Edney Creek                       | <ul> <li>This week work continued on construction of the new Edney Creek channel outlet and additional fish habitat features including: <ul> <li>Diversion of Edney Creek into Hazeltine Creek upstream of the upper sedimentation pond (after completion of the fish salvage program) to dewater the channel to allow construction.</li> <li>Completion of the temporary outflow channel from the lower sedimentation pond to Quesnel Lake to dewater the lower Hazeltine/Edney Creek channel to allow construction. Water was slowly diverted into this new channel over the course of days, supervised by environmental monitors. Lock blocks and a fish fence were installed at the outlet of this channel as fish barriers.</li> <li>Transport and stockpiling of rip rap material.</li> <li>Reinforcement of select locations in the lower Edney Creek channel and placement of rip rap.</li> <li>Placement of habitat feature rocks in lower Edney Creek commenced.</li> <li>Construction of a water flow through pathway for an off channel habitat pond.</li> <li>Sloping of the shoreline on the peninsula to the south of the Edney Creek mouth, and cleanup of woody debris and extraction of native gravels from this area.</li> <li>Mixing of spawning gravel piles at the prescribed ratio.</li> <li>Construction of equipment access to portions of the work area, as required.</li> </ul> </li> </ul> |

#### **Environmental Monitoring Program**

### Water Quality Monitoring Program

The current water quality monitoring program is outlined in the table below. All monitoring was completed as scheduled this week.

Because of the temporary flow pattern changes associated with the Edney Creek and adjacent Quesnel Lake shoreline habitat rehabilitation work, sampling at some stations has been temporarily adjusted.

- Station EDC-01 is not being monitored, because there is no flow in this section
  of the creek (lower Edney Creek has been diverted into Hazeltine Creek
  upstream of the upper sedimentation pond).
- Station EDC-02 is not being monitored because there is no outflow into the lake from the Hazeltine/Edney outflow channel (water has been diverted out of a temporary channel from the lower sedimentation pond).
- 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 temporary outflow channel from the lower sedimentation pond into Quesnel Lake. These temporary stations are named QUL-54a, QUL-55a, and QUL-56a.
- Station HAC-01b at the outflow of the lower sedimentation pond has been moved to station HAC-01c at the temporary outflow from the lower sedimentation pond in the diversion channel.
- The continuous monitoring sonde at HAC-01b has been temporarily removed.

| 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 previous weekly reports, such as the May 7<sup>th</sup>, 2015 report, for a map of these sampling locations.

#### Water Quality Monitoring Results

Turbidity in Quesnel Lake resulting from the TSF dam failure has, based on our monitoring data, now attenuated to a value that may represent summer background. In addition, settled sediments are not expected to re-suspend with subsequent lake overturn, based on advice Tetra Tech EBA. Based on this information, MPMC does not expect sediments on the bottom of Quesnel Lake to contribute to lake turbidity.

Figure 1 shows a time series graph for this week of daily field turbidity readings in lower Hazeltine Creek upstream and downstream of the sedimentation ponds (stations HAC-09 and HAC-01b, respectively), and in Edney Creek downstream of the confluence with Hazeltine Creek (station EDC-02). Figure 2 shows turbidity levels at these sites over a longer time period to provide context for this week's data.

|                                 | Figure 3 shows a turbidity and temperature profile from this week at site QUL-55 (a near field site at the mouth of Hazeltine Creek).  Figure 4 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 site in the sampling program.   |
| Other<br>Monitoring<br>Programs | Following completion of the Post-Event Impact Assessment Report, MPMC has moved on to the next phase monitoring. Golder Associates Ltd. commenced a field program this week for the detailed site investigation and human health and ecological risk assessment of areas impacted by the TSF dam failure. This monitoring will include sampling and analysis of soil chemistry, soil invertebrates, vegetation metal uptake, terrestrial habitat, groundwater chemistry, and fish tissue chemistry. |
|                                 | A group of researchers from the United Kingdom who have experience studying the response and recovery of river systems following mine tailings dam breaches in other parts of the world are at the Mount Polley Mine site this week and will be conducting research on the TSF dam failure.   |

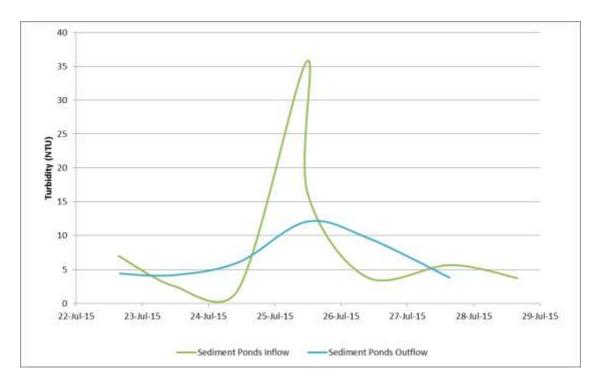


Figure 1. Time series graph for July  $22^{nd} - 28^{th}$  showing turbidity levels at monitoring locations in Hazeltine and Edney Creeks

Note: Edney Creek has temporarily been diverted into Hazeltine Creek, upstream of the sedimentation ponds, and outflow from the lower sedimentation pond diverted to Quesnel Lake in a temporary channel to allow Edney Creek channel and adjacent shoreline improvements for fish habitat

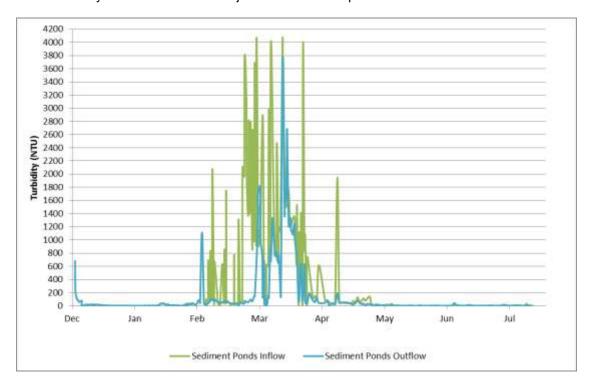


Figure 2. Time series graph for December 12<sup>th</sup>, 2014 – July 28<sup>th</sup>, 2015 showing turbidity levels at monitoring locations in Hazeltine Creek

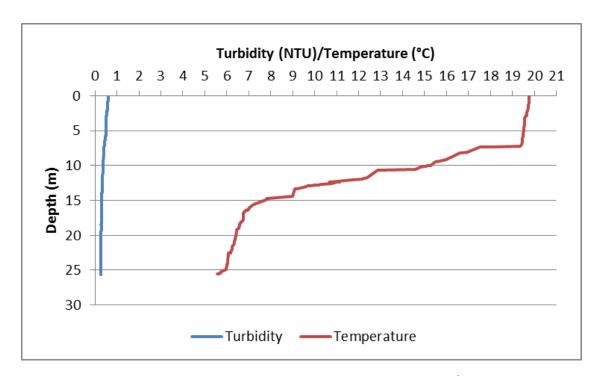


Figure 3. Turbidity and temperature profiles at station QUL-55 on July 22<sup>nd</sup>

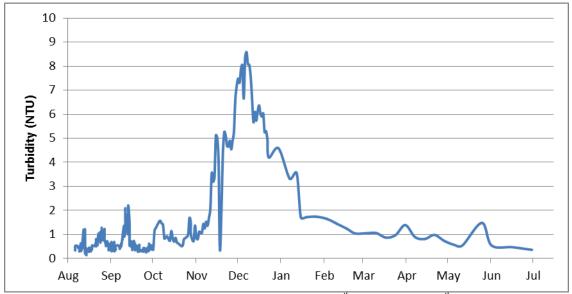


Figure 4. Turbidity time series at station QUR-1 (August 6<sup>th</sup>, 2014 – July 13<sup>th</sup>, 2015)