



Appendix IR1-09-A

May 2017 Field Visit Report

Red Mountain Underground Gold Project
IDM Mining Ltd. Responses to
Canadian Environmental Assessment Information Request #1

Memorandum

Date: May 25, 2017

Project #: 160021 – Red Mountain
Gold

To: Max Brownhill, Brownhill Consulting Services Ltd.

From: Irene Mencke, Palmer Environmental Consulting Group Inc.

cc: Rick Palmer, May Mason, Palmer Environmental Consulting Group Inc.

Re: Red Mountain Field Visit, May 15-18, 2017
Field Report

1. Field Visit Summary

A field visit to the Red Mountain Project site was conducted from May 15-18, 2017. The objectives of the field visit were to:

- Assess fish habitat where the proposed Access Road encroaches on Bitter Creek,
- visit road watercourse crossings with mapped gradient less than 20%, to assess fish bearing status,
- assess fish bearing status of unnamed tributary to Bitter Creek that will be lost under the TMF, and;
- provide DFO representative (Ian Bergsma) with an overview of the fish habitat within the project's study area, and specifically along the proposed Access Road.

The field crew for this trip were:

- Rick Palmer (PECG)
- Ian Bergsma (DFO)
- Irene Mencke (PECG)
- Brett MacKinnon (PECG)

Rick Palmer and Ian Bergsma were on site for one day (May 16) to conduct reconnaissance-level assessment at road encroachment areas along Bitter Creek. Irene Mencke and Brett MacKinnon conducted fish habitat assessments from May 16-17, 2017, at road encroachment areas, road crossing sites, and the unnamed tributary to Bitter Creek that will be lost under the TMF.



Table 1 summarizes the locations visited and work completed on each day of the field trip.

Table 1. Field work conducted from May 15-18, 2017, Red Mountain Gold Project

Day/Date	Summary of work completed
Monday (15 th)	<ul style="list-style-type: none"> • Field Crew travelled to Stewart.
Tuesday (16 th)	<p>The crew visited the following locations in the morning and early afternoon:</p> <ul style="list-style-type: none"> • Overflight from Bear River, upstream to the camp on Goldslide Creek • Bitter Creek at road encroachment areas, and nearby road crossings • Roosevelt Creek (air and on ground) at road crossing • Bitter Creek unnamed tributary under proposed TMF (air only) <p>After assessing the unnamed tributary from the air, Irene and Brett were dropped at a nearby wetland, hiked to the tributary and completed:</p> <ul style="list-style-type: none"> • Stream gradient assessment along the section in which fish passage barriers identified from the air • Fish habitat assessment downstream of the barrier <p>Rick and Ian visited the following locations while Irene and Brett were at the unnamed tributary:</p> <ul style="list-style-type: none"> • Hartley Gulch (air only) at road crossing • Cambria Creek (air only) at road crossing • Rio Blanco Creek (air only) <p>Rick and Ian returned to Stewart at end of day, Irene and Brett stayed at the Red Mountain camp.</p>
Wednesday (17 th)	<p>Rick and Ian travelled back to Vancouver (Rick), and Prince Rupert (Ian)</p> <p>Brett and Irene conducted fish habitat/crossing assessments at road encroachment areas and crossings in the Bitter Creek watershed.</p>
Thursday (18 th)	<ul style="list-style-type: none"> • Assessments at crossings along the lower section of the road (accessed from Highway 37) • Travelled back to Vancouver.

2. Field Methods

The access road alignment follows Bitter Creek along its right bank (north side). The “right bank” and “left bank” of Bitter Creek, when mentioned below, refer the right and left banks when facing downstream. The assessment of the road encroachment areas consisted of an helicopter fly-over of the Bitter Creek watershed to identify and survey the road encroachment areas along Bitter Creek.

Following the fly-over, reconnaissance-level assessment was conducted on the ground at the road encroachment areas to determine the likelihood of impacts to fish and fish habitat in Bitter Creek. A full fish habitat assessment was completed at the site of a proposed realignment of Bitter Creek (road station 4+550 m to 4+840 m). Fish habitat characterization followed the Resources Inventory Standards Committee

(RISC) Fish and Fish Habitat Inventory: Site Card Field Guide (Version 2.0, April 2008) and in the Fish Habitat Assessment Procedures guide for the British Columbia government (Johnston and Slaney, 1996).

In addition to Bitter Creek main channel road encroachment areas, 21 watercourse crossings within the Bitter Creek watershed were visited to confirm fish-bearing status. A gradient assessment of the unnamed tributary under the proposed TMF was also completed, this involved walking the creek along the section identified from the air as containing fish barriers, downstream to its confluence with Bitter Creek. The crew noted fish barriers (e.g. chutes, drops), and measured stream gradient and the height of drops. The crew completed a fish habitat assessment for the section of the tributary between the most downstream fish barrier and the confluence with Bitter Creek. Additionally, Roosevelt Creek and Rio Blanco Creek were assessed above the proposed crossing locations as potential reference sites for the Aquatic Effects Monitoring Program (AEMP).

3. Results

3.1 Bitter Creek Road Encroachment Areas

Encroachment of the Access Road into Bitter Creek occurs along the right (north) bank. Some of the encroachment areas are within confined sections of Bitter Creek, where the road is expected to be within the wetted area of the creek. The habitat of Bitter Creek within these areas is typically comprised of riffle and run habitat with some slower moving areas along the river edge (Figure 1 and Figure 2).

Other encroachment areas are within unconfined sections of Bitter Creek, consisting of floodplain terraces that are rarely wetted. The road is not expected to be within the wetted area of the creek along these sections. Channel morphology throughout these sections of Bitter Creek was altered in 2011 when an extreme flood event widened the channel, and scoured the banks. As such, the proposed road encroachment areas are setback from the annual high-water mark of Bitter Creek. This is evidenced by vegetation (shrubs and saplings) growing in the channel in these areas (Figure 3).

The site of the proposed channel realignment is within a confined section of Bitter Creek. This area contains pocket water habitat between boulders along the right bank which is suitable for juvenile rearing. The proposed works at this location include realignment of the Bitter Creek channel, construction of a road prism along the right bank (Figure 4 and Figure 4), and bank armouring. On river left at this location, a side channel provides additional rearing habitat, and gravel substrate was noted which may be suitable for spawning (Figure 6).

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Figure 1: Downstream view of road encroachment area in a confined section of Bitter Creek. Date taken: 17-May-2017.

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Figure 2: Upstream view at of road encroachment area in a confined section of Bitter Creek. The culvert inflow on river right, conveys a tributary watercourse (*i.e.* road crossing). Date taken: 16-May-2017.

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Figure 3: Downstream view of road encroachment area, showing annual high-water mark, and high-water mark from the 2011 flood. Date taken: 17-May-2017

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**Figure 4: View of upstream section of road encroachment area.
Date taken: 16-May-2017.**



**Figure 5: View of upstream section of road encroachment area.
Source: Onsite Engineering, Drawing # 1464-2-RIVERFILL- 002**

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Figure 6: Upstream view of side channel along river left, at creek realignment location. Date taken: 16-May-2017.

3.2 Road Watercourse Crossings

Based on a desktop gradient analysis, 21 watercourse crossings having gradient <20% (between the crossing location and Bitter Creek), were field surveyed to confirm the Non-Fishing Bearing status assigned to them. The fish bearing status remains unchanged for those crossings based on the field assessment, which found the crossings to be non-fish bearing based on steep gradient, lack of a visible channel or channel length < 100 m (non-classified drainage), or having no connection to Bitter Creek.

3.3 Potential Reference Sites

3.3.1 Roosevelt Creek

The crew flew up Roosevelt Creek from its confluence with Bitter Creek to its headwaters. The crew then landed near the confluence and hiked upstream to assess habitat conditions above the proposed crossing location, as a reference site in the Aquatic Effects Monitoring Program (AEMP). Habitat is suitable for fish, benthic invertebrates and water quality sampling, but flows at this time of the year would be too high. Monitoring would be in August, so flows should be suitable.

3.3.2 Rio Blanco Creek

The crew flew up Rio Blanco Creek from its confluence with Bitter Creek to its headwaters. This creek is very steep and conditions are not suitable for an AEMP reference site.

3.4 Unnamed Tributary under TMF

The unnamed tributary was determined to be non-fish bearing owing to a series of chutes and drops within a 200 m section immediately upstream of the confluence with Bitter Creek, which are shown in the figures below, from downstream to upstream (Figure 7, Figure 8 and Figure 9). The section of the tributary below the most downstream drop (close to Bitter Creek), is shallow and lacks channel definition where the creek fans before entering Bitter Creek (Figure 10 and Figure 11).

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**Figure 7: Chute on unnamed tributary, crew member's left index finger shows the 1 metre mark on the meter stick. Gradient was 46%.
Date taken: 16-May-2017.**

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Figure 8: Chute on unnamed tributary, crew member's left index finger shows the 1 metre mark on the meter stick. Date taken: 16-May-2017.

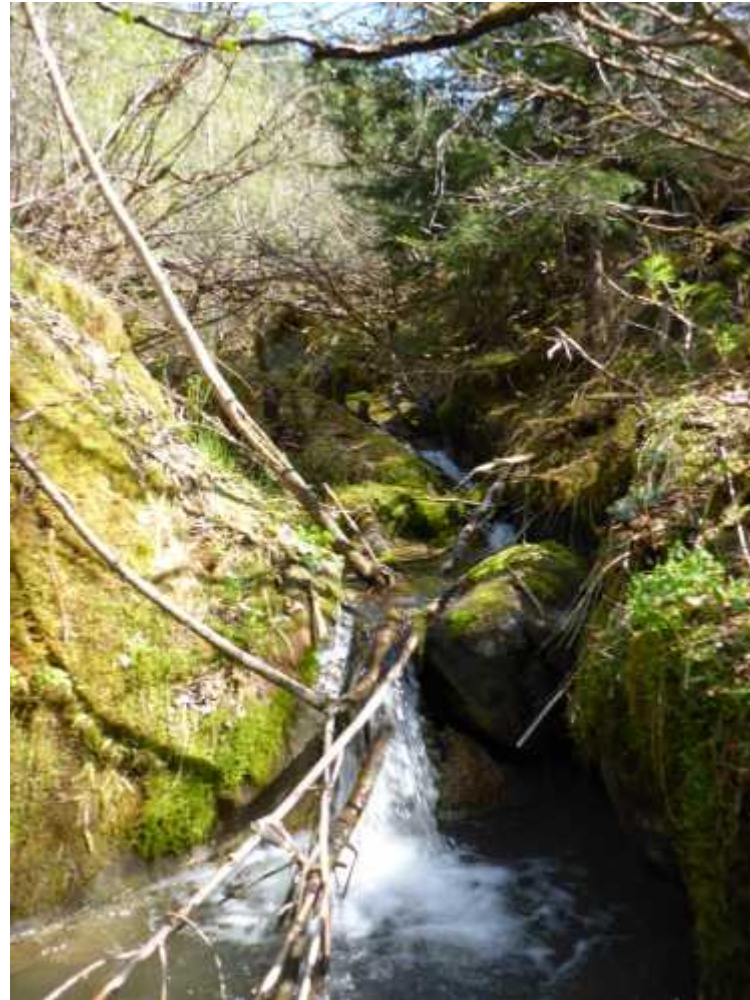
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**Figure 9: Drop on unnamed tributary, crew member's right index finger shows the 1 metre mark on the meter stick.
Date taken: 16-May-2017.**

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Figure 10: Upstream view of unnamed tributary close to confluence with Bitter Creek. Date taken: 16-May-2017.

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Figure 11: Unnamed tributary confluence with Bitter Creek. Date taken: 16-May-2017.