

2AM-MEL1631 Water Management Working Group (WMWG)

Date: August 26th, 2020

Attendees	
Name	Organization
Sergey Kuflevskiy	NWB
Luis Manzo	KivIA
Richard Nesbitt	KivIA (Consultant)
Anne Wilson	ECCC
David Zhong	CIRNAC
Atuat Shouldice	CIRNAC
Matt Gillman	AEM
Michel Groleau	AEM
Sara Savoie	AEM
John Faithful	AEM (consultant)



Teleconference Water Management Working Group

Monitoring Program Data Review

Type "A" Licence No: 2AM-1631

August 26th, 2020 1:00 pm – 3:00 pm EST

Teleconference Call-In Information: Phone: 1-877-668-4493; Meeting Number: 172 937 4603

1. Opening remarks
2. Presentation of the monitoring results
3. Closing remarks

1. Opening Remarks

Sergey Kufleskiy opened the second meeting of the Water Management Working Group (WMWG) and presented the agenda items for the meeting:

- Presenting of the monitoring results
- Tabulated data summary results
- Terms of References
- Publishing of monitoring results on the NWB registry

Before starting the presentation of the monitoring results, Sergey asked AEM to clarify why the tabulated summary results hadn't been provided to participants following submission of the monitoring laboratory analysis certificates August 21st 2020.

Matt Gillman apologized to the WMWG members on behalf of AEM and explained there was a misunderstanding due to recent changes in AEM's data management group. Matt assured participants tabulated data would be shared at least two days prior to the next WMWG.

Sergey asked Parties to confirm they were satisfied with the answer. Richard Nesbit mentioned KIA could provide additional comments after the meeting once they've had time to review the tabulated data. All participants reiterated their agreement with the timeframe for sharing the tabulated data prior to the next meetings.

Sergey than passed the floor to AEM to present the monitoring results.

2. Presentation of the monitoring results

John mentioned that AEM would be using a similar presentation structure that that used during the last meeting: the monitoring results would be presented, then Michel would conclude by presenting the proposed key messages. John inquired about the members preferences on how to proceed for the presentation and Anne answered she would rather the presentation go through every slide and have participants discuss the content slide by slide.

Slide 2

John reminded participants of the monitoring and testing AEM is conducting as part of the Water Licence Emergency Amendment, which is articulated around three core programs:

- The water quality monitoring program (effluent, mixing zone and receiving environment)
- The plume delineation study (effluent and receiving environment)
- The toxicity testing program (effluent, mixing zone and receiving environment)

Sergey asked members if they had any questions on these slides. David mentioned there was a typo in the mixing zone name station. Luis confirmed KIA had no comments and Anne mentioned she didn't find the toxicity data for Rainbow Trout in the OneDrive folder shared. Sara Savoie confirmed the results were in the OneDrive folder.

Sergey mentioned he had sent AEM a memo regarding the last version of the WQMOP that was submitted that should be revised to account for comments and commitments, and pointed out some adjustments should be made to the WQMOP tables presented in slide 2. Sara confirmed that message was well received and AEM is working on an updated WQMOP version.

Slide 3

John presented the monitoring station locations.

Slide 4

John presented the water chemistry data for the discharge.

John underlined the following key points:

- Discharge started June 5th and data is presented up to August 11th;
- Daily discharge rates roughly 15,000 m³ per day up to July 21st and then reduced to 4,000m³ per day to the 11th of August;
- Changes in season is reflected in the discharge's conductivity data.

Richard referred to a previous discussion about higher chloride in CP1 and concerns that additional chloride would be mobilized through freshet even though there would be dilution through the overall snow content.

Matt and Michel didn't recall the specific discussion Richard was referring to. John pointed out that the monitoring data would provide objective information to this effect.

Richard then mentioned KIA had raised concerns that despite higher discharge criteria for TDS, AEM would try to keep the TDS levels at a lower concentration if possible. Richard asked how treatment capacity had been performing in the last year and how this performance is reflected in measured conductivity.

Michel mentioned that improvements have been seen overall loading of TDS in CP1, as part of AEM's waste management strategy. With the start of mining of open pits, the balance of waste coming from open pit and waste of underground have increased which impacts the overall water quality. Furthermore, it was a pretty dry year, so there was less runoff from site.

Richard mentioned that during some discussions related to the emergency amendment application, the question of additional treatment to reduce TDS within water discharged from CP1 was brought up and asked if there is any linkage between the treatment systems.

Michel mentioned that there are some ponds with higher concentration of TDS, such as CP5, and that when elevated TDS levels are observed, the RO is run, but that with lower precipitation observed on site it wasn't necessary to trigger the RO as it wouldn't have made a significant difference.

Matt mentioned that AEM has the RO on site to lower the TDS levels in CP5 prior to moving the water in CP1, it's been the strategy for the past few years, and there has been no operational issues with the RO, it's been performing well but this year with the lower precipitation values AEM hasn't had to start it. Matt mentioned that this year CP5 hasn't been moved to CP1 when CP5 water quality is above 3,500 ppm and right now levels are above that threshold. The pond (CP5) was dewatered when TDS levels were low and since then it's been filling slowly and TDS levels have been increasing. Before upcoming transfers of CP5 to CP1, the RO would be treating that water to lower the TDS levels. Regarding CP5, during freshet, in order to maintain the pond as per the maintenance operating manual, AEM did move water from CP5 to CP1, but only when the TDS was below 3,500 ppm.

Richard confirmed this is what he remembers coming out of the discussions he was referring to and was happy to hear the process was still the same.

David asked how much water is currently in CP1.

Matt answered that there is approximately 250,000 m³ in CP1 currently, and that there is still water in CP3 and CP4, so collectively 25,000 m³ from ponds will be dewatered for the site winterization process and maintain pond to a minimum, as per the approved designs. When those ponds are dewatered, CP1 volume will be around 280,000 m³ and 10,000 m³ in CP5, 1,000 m³ in CP6, so an average on site of about 290,000 m³ of surface contact water.

David asked if all the water will be discharged before the freeze up.

Matt answered that yes, typically dewatering takes place through site from September on and that last year was an exception due to TDS levels in CP1. Matt reminded participants that the intent of AEM is to use some of that water in process plant and paste plant, and the treated effluent from the EWTP is being transferred to process plant, so not that all of that water will go to Meliadine Lake.

Sergey required clarification regarding the SWTP.

Matt answered that the SWTP has not been working due to operational issues and is not part of the long-term saline water management plan. Matt clarified that the fact the SWTP is not working has no impact on water quality in CP1 and confirmed there was no transfer of treated saline water to CP1 as a result of the SWTP not functioning.

Matt clarified that saline water is not transferred to CP1, and that containment ponds are there to catch surface runoff. The saline water from site originates from groundwater below the permafrost and the SWTP is in place to reduce the volume of saline water stored in saline ponds around site which are segregated from the CP ponds, therefore the lack of use of SWTP does not impact CP1 water quality.

Michel mentioned that regarding groundwater management, the groundwater management plan describes short-, medium- and long-term strategies for management of groundwater on site, which relies on the Waterline Application currently in front of the NIRB.

Sergey asked if there was enough space left in SP4 to accumulate the water for this year since SWTP is not working. Michel confirmed the capacity of SP4 is sufficient and proposed to get back to the monitoring data presentation.

Slide 5

John presented the same key indicator data (specific conductivity, TDS calculated, TDS measured and chloride) represented by each of the edge of mixing zone, the mid-field, and the reference stations.



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John mentioned there was no surprise in the data, attenuation could be seen for each of the parameters when we move from edge of the mixing zone to the reference area and that there are a lot more similarity between mid-field and reference station, which provides indication of how water quality is being characterized between ice and open water conditions, particularly as discharge is occurring.

David asked why there was so few data for MEL-13. Matt answered that the tabulated data is up to date as of August 4th 2020.

Slide 6

John presented the water column profiles collected, again some attenuation can be seen from edge of the mixing zone to the reference area. This data can be used to try to discern plume which seems to be dispersed.

David asked; where's the plume. John answered that the fact there is no discernable traits indicates that the plume being dispersed effectively through water column and that this comment will be further addressed in the 2020 annual report and plume delineation study.

Slide 7

John presented the specific conductivity data from remote logging and explained how the datalogger is deployed through the water column.

John confirms that the datalogger have been redeployed and there will be another data set.

Anne mentions that the higher numbers being upstream of the diffuser seems contrary to the current understanding of current direction.

John answered that the plume delineation study supports this data and that he can't speak directly to that.

Slide 8

John explained that the plume delineation was conducted, July 21st and August 13th and that data was being reviewed. Preliminary results show the plume rapidly being assimilated within receiving environment.

Slide 9

John showed conductivity data collected from each of these stations during the two periods, maximum field conductivity in the water column and specific data through the water column.



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The results show well mixed conditions, almost homogenous throughout the water column. In July there is a bit more discernment around the plume in the 50 m zone in eastern side of diffuser, which is consistent with the data presented earlier.

Anne underlined that the trend under ice conditions seems different than in August.

David asked if there was chloride data. John answered that not for these data yet, AEM just started to get the plume delineation together and will have better look at it. For a subset of these stations, specific water quality characterization will be available

Michel points out that because the data is in line and consistent so far with previous plume delineation study, it should be accounted for with the interpretation data and that the diffuser is working well. Furthermore that during ice cover there's more of a trend, but that during the summer it's a well mixed system; it's the second time we see a well diffused plume.

Slide 10

John reminded participants of the toxicity testing program which includes weekly acute toxicity tests and monthly chronic toxicity tests.

Slide 11

John presented a summary of the acute toxicity results. 0 mortalities were observed, the discharge is not toxic.

Slide 12

John reminded participants of the site-specific test design for chronic toxicity and the importance to control for the low hardness conditions as discussed during previous WMWG meeting, to select references, and to set up test design to accommodate validity of the test.

Slide 13

John reminded participants of the evaluation criteria discussed during the first WMWG meeting.

Slide 14-24

John presented chronic toxicity testing results. Preliminary results do not suggest adverse effects in mid-field and edge of the mixing zone station relative to the reference area.

Slide 27

Michel presented proposed key messages to participants. After discussion, the following changes were made.

Bullet number	Initial Key Message Presented in the Power Point	Proposed Rewording Following Comments from Parties
1	The monitoring data shows that harmful chemicals are not being released into Meliadine Lake.	Constituents in the effluent are not being released at levels which are harmful in Meliadine Lake.
2	The monitoring data confirms that the diffuser is working as planned and that water being released is not affecting the overall lake water quality.	The monitoring data confirms that the diffuser is working as planned and that the water being released is not harmful to Meliadine Lake.
3	Our testing shows that water quality, fish, and other aquatic life in Meliadine Lake are safe.	<i>Content merged with bullet 4</i>
4	The release of the water is going as planned and testing shows that harmful effects on the environment are not occurring.	The release of the water is going as planned and testing and continuous monitoring shows that harmful effects on the environment, fish and other aquatic life are not occurring.
5	Discharge volumes are lower than planned, as precipitation has been lower than average this year.	<i>No changes proposed</i>
6	Agnico Eagle is working on an alternative strategy for discharging CP1 water into Meliadine Lake, which consists of recirculating CP1 water into the Process Plant.	Agnico Eagle is working on alternative strategies for discharging CP1 water into Meliadine Lake, one of which consists of recirculating CP1 water into the Process Plant.
7	Meliadine Lake is the source of freshwater for the camp and we have not observed changes in the drinking water quality at the camp.	<i>No changes proposed</i>

3. Closing Remarks

Sergey asked participants what data can be uploaded to the NWB registry as per the WMWG Terms of Reference.

Michel mentioned that the data from the first WMWG would be good as it has been reviewed and circulated, which participants agreed to.



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Sergey mentioned that there was some back in forth between CIRNAC and AEM on availability of the data and asked CIRNAC to confirm if the provided data was sufficient or if more data was needed.

David and Atuat agreed that provided data was sufficient.

Michel asks participants to clarify if everyone is still in agreement with releasing the data in one batch 2 days before the next meeting, in the data framework agreed format mentioned in the terms of reference which participants agreed to.

Sergey asks KIA and CIRNAC about the signature of the Terms of Reference. Luis mentions the document is with KIA legal counsel and David mentions CIRNAC already signed it.

The meeting concluded at 16h45ET.