

9 January 2013

Central Valley Regional Water Quality Control Board
Attn: Gene Davis
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Rancho Cordova, CA 95670

COMMENTS ON NOTICE OF FILING OF DRAFT ENVIRONMENTAL DOCUMENTS CONCERNING AN AMENDMENT TO THE WATER QUALITY CONTROL PLAN TO PROVIDE A REGULATORY FRAMEWORK FOR THE CLOSURE OF MINING WASTE MANAGEMENT UNITS AT THE ROYAL MOUNTAIN KING MINE (RMKM) SITE, CALAVERAS COUNTY

This letter and the attached documents are to address the "*Draft Environmental Documents Concerning an Amendment to the Water Quality Control Plan to Provide a Regulatory Framework for the Closure of Mining Waste Management Units at the Royal Mountain King Mine Site, Calaveras County*" (Draft Document). This Draft Document has many statements that cannot be supported by the data or science, is in non-compliance with the laws and regulations of the State of California, will cause further degradation of Waters of the State and U.S., and the implementation plan that is presently being implemented is failing and will continue to fail under this proposed Basin Plan Amendment and degrade surface water, and because of these issues it was impossible to evaluate the Environmental Factors Checklist. Also, the proposed Amendment and Draft Document does not recognize the interconnection between groundwater and surface water and how the pollution from one medium can impact the other. Neither the Draft Document nor Meridian Gold (now Yamana Gold) has complied with State Water Resources Control Board Order WQO 2004-0007 (SWRCB Order). This Draft Document also does not recognize the difference between natural occurring total dissolved solids (TDS) and the increased TDS concentrations caused by mining, mainly by increasing the sulfate concentrations. The attached Draft Order has highlighted text with associated comments that cover in more detail my response to individual statements in the Draft Order. The comments below are a synopsis of the Draft Document shortcomings and will be followed by a conclusion with a potential solution that is in compliance with SWRCB Order:

Comment 1 - Most of the area defined for de-designation in the Draft Document and shown in Figure 5 of that document is not supported by the data. In the Draft Document statements are made that support the proposed de-designation area which has no factual or scientific support. For example in the Draft Document Section 2.1.2.2 it states, "*Though data are not available to definitively delineate all groundwater pockets with TDS levels greater than 3,000 mg/L, such pockets likely exist.*" In Figure 5 of the Draft Document, it shows five monitoring wells surrounding the Flotation Tailing Reservoir (FTR - the farthest north waste management unit). The FTR is a lined facility that is not addressed in the evaluation done by SWRCB Order because of the liner that is in compliance with California Code of Regulations Title 27. None of the monitoring wells surrounding this mine waste unit even approaches the 3,000 mg/L TDS concentration. In fact four of the monitoring wells (FPZ-3, FPZ-4, FPZ-5 and FPZ-6) that are directly east and west of the unit have TDS ranging from 270 to 460 mg/L and the down

gradient monitoring well, which acts also as the compliance well for FTR (GWM-2), has TDS concentration of 860 mg/L. If you evaluate the information provided in Figure 5 no monitoring well (18 wells) on the northern half of RMK has a TDS concentration of 3000 mg/L and in fact 17 monitoring wells are around 1000 mg/L TDS or lower with the lowest being 270 mg/L TDS. Therefore, much of the language in the staff report should be changed to be consistent with the data and science. Language such as *“Though data are not available to definitively delineate all groundwater pockets with TDS levels greater than 3,000 mg/L, such pockets likely exist.”* should be removed. Additional language similar to the above language is highlighted in the attached PDF Staff Report.

Comment 2 – In the Draft Report mining related water quality impacts should be defined versus natural high TDS. Without evaluating natural versus mine impacted groundwater it is hard to make a decision whether the mining companies should remediate the impacts outside the naturally high TDS groundwater or should other regulatory measures should be applied. Therefore, stiff diagrams, tri-linear plots and changes in concentrations should be used to identify areas degraded by mining and added to the Draft Document. Much of the evaluation has been done and is in Regional Board files. Also, USEPA (EPA/600/R-99/007) report *“Characterization of Mine Leachates and the Development of a Ground-Water Monitoring Strategy for Mine Sites”* should be used as guidance in evaluating degradation of groundwater and surface water from RMKM.

Comment 3 – Since this proposed Basin Plan Amendment and the definition of the de-designation area is not based on the site data, the Draft Report should be rewritten to clearly present that the de-designation based on the location of the mining waste units not monitoring data. All conjecture on where the pollution maybe should be removed as suggested in Comment 1. When an earlier Draft Report was presented, attempting to base its conclusion on the data and science, it was sent out for peer review to Dr. Steven Gorelick. Dr. Gorelick review clearly stated and illustrated in his 26 November 2012 memo that only a small area of the site met the de-designation criteria for MUN and AGR. Those areas included the natural high TDS area west of the fault zone and an area that includes the northern two thirds of Gold Knoll Overburden Disposal Site including area surrounding GWM 12 and 21. Therefore, as stated above, excluding the area Dr. Gorelick defined as meeting the criteria for de-designation, the Draft Report should state all other areas proposed for de-designation is not based on any of the monitoring data but because mining units exist in these areas.

Comment 4 - The Draft Report in Section 1.2.5 states, *“Meridian has submitted information to show that the current groundwater management strategy is sufficient to contain impacts associated with Meridian’s mining activities within the proposed de-designation area, ...”* This one statement is the Draft Document main justification why this proposed Basin Plan Amendment is acceptable. Based on this statement all mining groundwater pollution will be contained within the present groundwater plume boundary and all impacted surface water (containing mine leachate) will be placed into Skyrocket Pit Lake and discharged under a NPDES permit. This would be great if this was true. Meridian has presented several models with extremely optimistic scenarios of amount of water entering Skyrocket Pit Lake and the amount leaving (water balance) and they all

have failed. The problem is too much water is entering Skyrocket Pit Lake to discharge enough to lower the Pit Lake under the NPDES dilution model. Leachate and groundwater entering the pit lake in dry years cannot be discharged under NPDES permit because there is not enough dilution and in wet year the discharge to pit lake are high when the discharge under the NPDES permit is permitted. Also, during the summer month discharge continue to the pit lake when no NPDES permit discharge can occur. Therefore, the lowering of the pit lake as required in RMKM WDRs has failed and containment of groundwater discharger has failed.

This lack of containment is illustrated by flows from both Love Spring adjacent to the FTR Overburden Disposal Site and spring flows into Turtle Pond, which both flow into Littlejohns Creek Diversion Channel and into Littlejohn Creek downstream. The Basin Plan amendment does not address this, it states that Skyrocket Pit Lake should be lowered to what is feasible, not to a level that would protect surface water from uncontrolled discharge of leachate to Littlejohn Creek Diversion and then to Littlejohn Creek. Both SWRCB Order and Dr. Gorelick report addresses this surface water issue. The SWRCB Order understood that Title 27 address both ground water and surface water, the discharge of mine waste leachate was occurring to both surface water and groundwater, and stated to reclassify the mining waste to Group C you would have “...to amend the Basin Plan to de-designate beneficial uses of surface water and groundwater in the immediate vicinity of RMKM,...” Dr. Gorelick states the following concerning surface water:

1) MUN and AGR de-designations of the site have the potential to affect the discharge of contaminated groundwater to surface waters. Scientifically, groundwater de-designations should not be viewed in isolation, given groundwater interactions with surface waters. Should the de-designations proceed, what are the impacts of these de-designations on offsite groundwater discharge and subsequent discharge of groundwater to surface waters?

The Draft Document should address all mine related pollution to surface water and groundwater. Groundwater should not be considered to be contained until all surface water discharges from springs containing mine waste leachate is addressed.

Comment 5 – The proposed Basin Plan amendment does not comply with SWRCB Order. First, it has to be recognized that the mine waste discharges at RMKM are to both surface water and groundwater, and second before reclassification of the mine waste from Group B to C the mine waste needs to become a turbidity only threat to water quality or less. The proposed Basin Plan amendment does not recognize the surface water issue and the uncontrolled discharges of leachate to surface water at springs (for example Love Spring and Turtle Pond) adjacent to mine waste units. The SWRCB Order clearly recognizes the water quality problem at this site as both a surface water and groundwater problem and SWRCB solutions are based on solving both surface water and groundwater discharges. For example the SWRCB Order states in Section III.B. due to “...large-scale changes to the geology of the RMKM area due to mining operations have resulted in increased discharges of water during the dry season and increased concentrations of inorganic compounds in surface and ground water,”

and "... *adverse effect on surface water and groundwater quality downgradient from specified RMKM facilities.* There are many other statement SWRCB Order that clearly state that this is a surface water and groundwater problem and the proposed Basin Plan Amendment does not address the surface water.

The SWRCB Order clearly understands that Title 27 regulations apply both to surface water and groundwater, while the Draft Document and proposed Basin Amendment language does not. To reclassify a mine waste unit from Group B to Group C the only threat to water quality can be turbidity and no discharge from a Title 27 unit can pose a threat to water quality. Therefore, the de-designation of the groundwater only would still not allow the Regional Board to reclassify the mine waste from Group B to Group C. The SWRCB Order in Section III.E. understanding the regulations stated "...*amend the Basin Plan to de-designate beneficial uses of surface water and groundwater...*" Because the proposed Basin Plan Amendment in Draft Document only de-designates the groundwater and not the surface water it is not consistent with the SWRCB Order.

The Draft Document and the proposed Basin Plan Amendment does not describe or appear to understand at Skyrocket Pit Lake that the water levels in the lake has mounded the groundwater, that there are water balance issues, and there are discharges from the Skyrocket Pit Lake through seeps and springs to surface water. SWRCB Order in their findings, conclusions and in the Order Section understood this interrelationship between the water levels in Skyrocket Pit Lake and the interaction of that water with groundwater and surface water. For example in Section III.D. SWRCB Order states, "*Impounding water in Skyrocket Pit results in creating a mound of poorer quality groundwater that emerges as seeps and springs in the downgradient area. Potential water quality problems would be reduced by developing a drainage system that does not impound surface flow at Skyrocket Pit, but allows the water to flow to downstream wetland areas designed to reduce pollutant concentration through phytoremediation or other natural attenuation processes.*" In this statement to resolve the issues at the Pit Lake the Discharger should discontinue discharges to the Skyrocket Pit Lake (dealing with water balance issues), stop impounding water in Skyrocket Pit Lake (which the present NPDES permit can potentially reduce the storage of poor quality water), and by doing this it would resolve the mounding issues and hopefully eliminate the seeps and springs from the Pit Lake. The propose Basin Plan Amendment again does not comply with SWRCB Order because it does not deal with the mounding in the Pit Lake by only requiring that "*The strategy is to maintain the lowest practicable level of water in Skyrocket Pit Lake and prevent any measurably significant degradation of current water quality in groundwater downgradient of the MUN and AGR de-designation area shown in Figure II-2.*" The language should be at least changed to state that Skyrocket Pit Lake shall be maintained as groundwater sink, which would likely prevent seeps and springs. This language change is still not consistent with SWRCB Order to treat discharges from other mine waste units before they discharged to surface water. Again the Draft Document and proposed Basin Plan Amendment does not comply SWRCB Order because they do not deal with the surface water issues.

The Draft Document and the proposed Basin Plan Amendment does not comply with the Order Section (Section V.) of the SWRCB Order. In the State Board Order they contemplate three possible regulatory scenarios for closure: compliance with Title 27 using an engineered alternative to comply with the prescriptive standard; Amend the Basin Plan to de-designate beneficial uses of surface water and groundwater; or establish groundwater containment zone as a partial regulatory solution. It is clear from the language in SWRCB Order Section IV. Conclusion that compliance with Title 27 with an engineered alternative is preferred based on the following statement: *“Development of an alternative closure proposal based on development of expanded wetlands and riparian zones is likely to provide better water quality protection than would result from installation of clay covers, and may also allow for reclassification of the overburden disposal sites as Group C wastes. (Cal. Code Regs., tit. 27, § 22480, subd. (c) and (d).) In addition, California Code of Regulations, title 27, section 20080(b) authorizes approval of engineered alternatives to the normally applicable prescriptive standards in instances where certain requirements are met. Thus, even if wastes at particular sites remain classified as Group B waste, the regulations may allow for alternative approaches to control of those wastes.”* In SWRCB Order Section IV. Conclusion it states the other two alternatives (Basin Plan Amendment and containment zone) are partial solution by stating that *“Other alternative approaches that may be an appropriate part of long-term resolution of water quality problems in the RMKM area include de-designation of beneficial uses and establishment of a groundwater containment zone as discussed in Section III.E., above.”*

The other consideration SWRCB Order for the Basin Plan amendment partial solution is that as discussed in Section III.E. is that both surface water and groundwater should be de-designated. To further emphasis that surface water must also be included in any Basin Plan Amendment to reclassify the mine waste as Group C mining waste the SWRCB Order quotes the Clean Water Act (surface water regulations). The proposed Basin Plan Amendment does not comply SWRCB Order because it is not a comprehensive solution and it only proposes to designated groundwater beneficial uses.

Comment 6 – The Draft Document discussion on conformance with law and regulation appear to be in error. This is probably due to the scientific and technical inaccuracies in the Draft Document. It appears SWRB Resolution 68-16 is not being complied with because the Draft Document and proposed Basin Plan Amendment ignores several springs containing mining waste that are directly downgradient of several mine waste units. These springs are degrading surface water. Most of the area proposed for de-designation is below 3,000 mg/L of TDS based on the data. Per SWRCB Resolution 88-63 the areas with TDS concentration below 3,000 mg/L should have the benefit use designation of MUN.

Comment 7 - Neither the Regional Board staff or Meridian has complied with SWRCB Order. The SWRCB Order is clear that enhanced wetlands are needed to deal with the water issues at this site. Meridian has not prepared or submitted a plan to the Regional Board for development of expanded and enhanced wetland. However in mid to late 2013 they did submit some results from a bench scale study and pilot study. The

Regional Board spent a lot of time on a Basin Plan amendment that does not comply with SWRCB Order by proposing only de-designation of groundwater and does not improve water quality. It is time to prevent further discharges of high TDS, sulfate and metal degrade water to surface water.

Possible Solution that Complies with SWRCB Order

The solution is to follow the SWRCB Order and the preferred solution per the Findings in that Order. The following steps should be completed to comply with the SWRCB Order:

1. Have Meridian prepare and submit a plan to the Regional Board for development of engineered wetlands downgradient of RMKM mining waste units in order to promote remediation of elevated levels of TDS, sulfate, and heavy metals. The plan would size the units such that discharges from the wetlands could be appropriately discharged directly to surface water, discharged into groundwater infiltration galleries or land applied. Meridian has completed a wetlands bench scale study and a pilot scale test that shows extreme promise in reducing TDS and sulfate, and removing the metals of concern. Also, Regional Board staff sent Roux Associates, Inc. an email with data from RMKM that contained constituent of concern concentrations and flow data from FTR LCRS, GK-ODS, WODS-2 and WODS-5 (flows that discharged into Skyrocket Pit Lake). Roux Associated, Inc. believes the discharges could be treated to the appropriate water quality objective (see attached email). The plan shall be developed under the direction of a licensed professional engineer or geologist with assistance from other professionals with experience in development of wetland and riparian areas for water treatment purposes.
2. Regional Board staff would review and comment on the Plan. Meridian and Board staff will work together to resolve any issues. If agreement cannot be reached, a professor will be hired (selection would have concurrence of both parties) with expertise in wetland remedial technology to resolve any issues.
3. Upon concurrence on the wetland Plan the discharger would submit a Report of Waste Discharge that would include at a minimum the following:
 - a. Attached Final Wetland Plan
 - b. A Closure Plan for RMKM per Title 27
 - c. Engineered alternative analysis for using wetlands rather than the prescriptive standard of Title 27. This analysis would comply with Title 27 Section 20080(b).
 - d. A characterization of the discharge from wetlands would be done to determine if discharge would be classified as Group C mining waste per Title 27 Section 22480.
 - e. Locations of the discharge points from the wetlands to surface water
 - f. A water balance for Skyrocket Pit Lake that would show that with the present NPDES permit the lake level can be reduced to a level that would create a groundwater sink.

4. Following review and consideration of Meridian's Report of Waste Discharge that includes the establishment of engineered wetland, the Regional Board shall revise the mine closure WDRs established in Closure WDR Order No. 5-01-040 based on consideration of information in Report of Waste Discharge and other relevant evidence.

Other Considerations

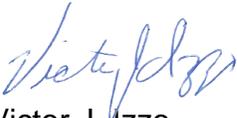
Responsible Party Searches (RPS) has been done at Jamestown Mine, Sulphur Creek and other mine sites to bring all responsible parties to the table. This probably should be done at RMKM to provide all the needed resources to finally close this site. Meridian Resources was the original mining company (1989) at this site in recent history. Meridian Resources was a wholly owned subsidiary of Burlington Resources which was owned by Burlington Northern. Meridian was sold to FMC and became wholly own subsidiary of that company and was renamed Meridian Gold. When Burlington Northern and FMC owned Meridian is when most of the mining was done. FMC spun off Meridian Gold as its own company and provide some liability coverage of approximately 13 million. Meridian Gold has since them merged into Yamana Gold. Yamana Gold now retains the liability coverage as shown in the attached Form 40-F form page 202. Yamana Gold should be placed on the present WDRs by means of name change. Meridian Gold was properly named on the present WDRs per the State Board Order and since they merged into Yamana Gold. The same justification to name Yamana Gold should apply. All of the companies mentioned above have the resources to remediate this site.

In conclusion, Central Valley Regional Board should reject this Draft Document for several reasons:

1. The technical information and interpretations made are not based on the data or science. In fact the evaluation of groundwater data in Draft Document is contrary to the data.
2. The Draft Document and proposed Basin Plan Amendment does not comply with SWRCB Order.
3. The proposed Basin Plan Amendment will allow RMKM to reclassify the mining waste to Group C requiring no further remedial action at the mine site. This will continue to allow Meridian to have uncontrolled discharges to surface water.
4. The proposed Basin Plan Amendment does not comply with the laws and regulations of the State of California

The present mining regulations (Title 27) have sufficient flexibility to allow Meridian to propose practical solutions to the remedial problems, and to protect surface water and contain the groundwater. The larger question is why does Meridian receive a pass on the mining regulations and why would other mine site not request the same benefits after they pollute the groundwater and surface water.

Because of the extent of my comments and knowledge of the site I would like to request twenty minutes to present my review findings at the Region Board hearing. If you should have any questions, do not hesitate to email me at vjizzo@yahoo.com.



Victor J. Izzo
Concern Citizen

Attached: Draft Staff Report with Comments
Email from Roux Inc.
Yamana Gold Form 40-F