

Basin Plan Amendment

Groundwater Regulatory Framework

Royal Mountain King Mine

Calaveras County

Sue McConnell

Gene Davis

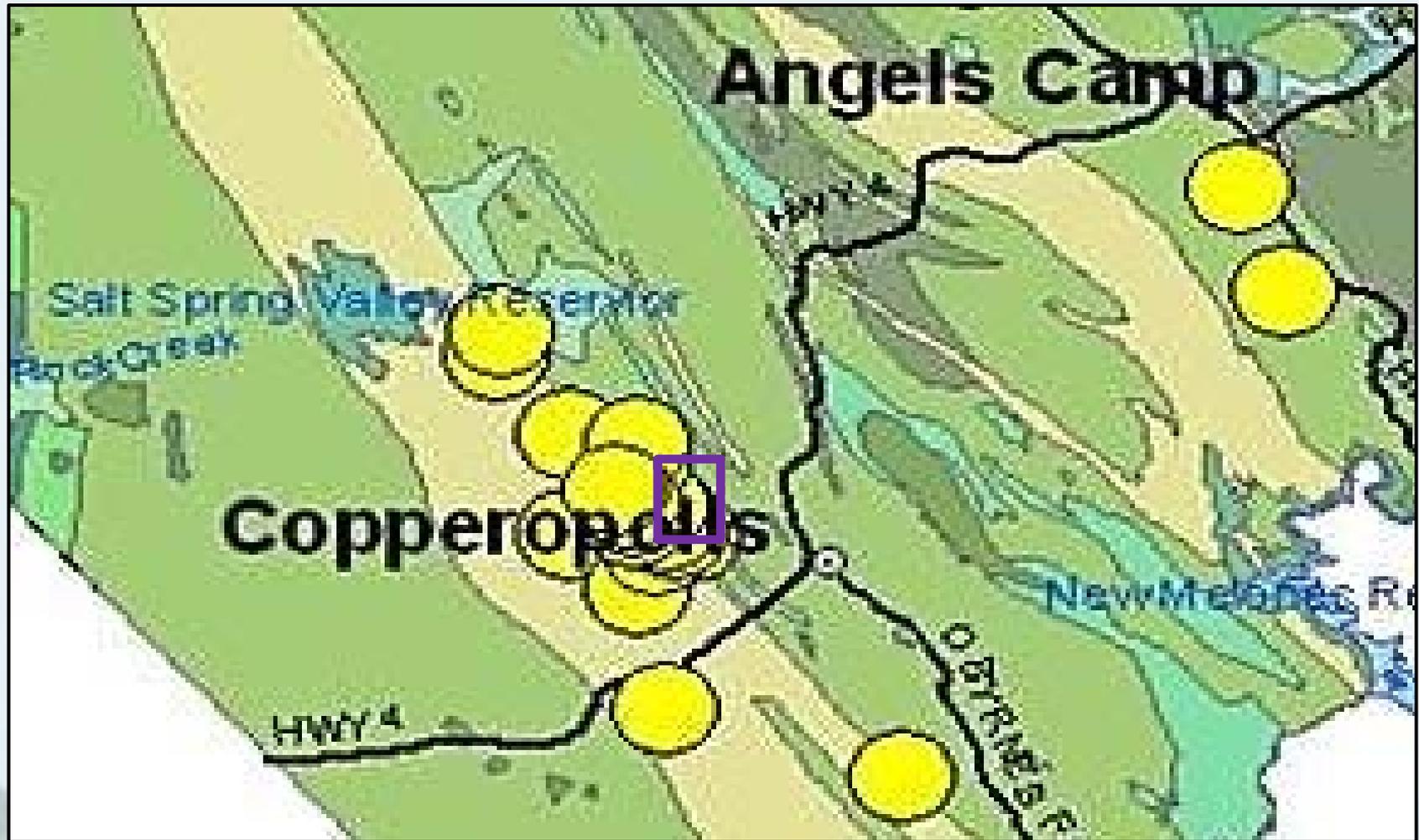


Royal Mountain King Mine Site

- Physical setting
- Regulatory History
- Public and Scientific Review
- Basin Plan Amendment
- Comments and Responses
- Late Revision
- Recommendation



Royal Mountain King Mine Site



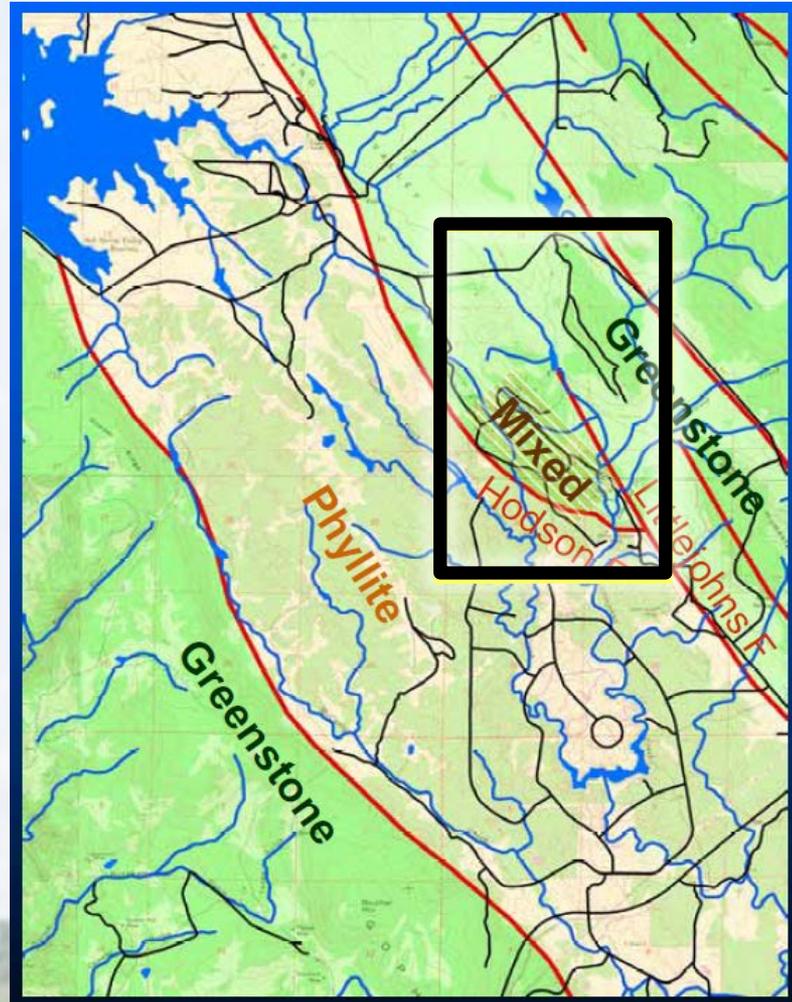
 = Salt Spring (Map from Calaveras County Water District)

Salt Deposits in Salt Spring Valley



Royal Mountain King Mine Site

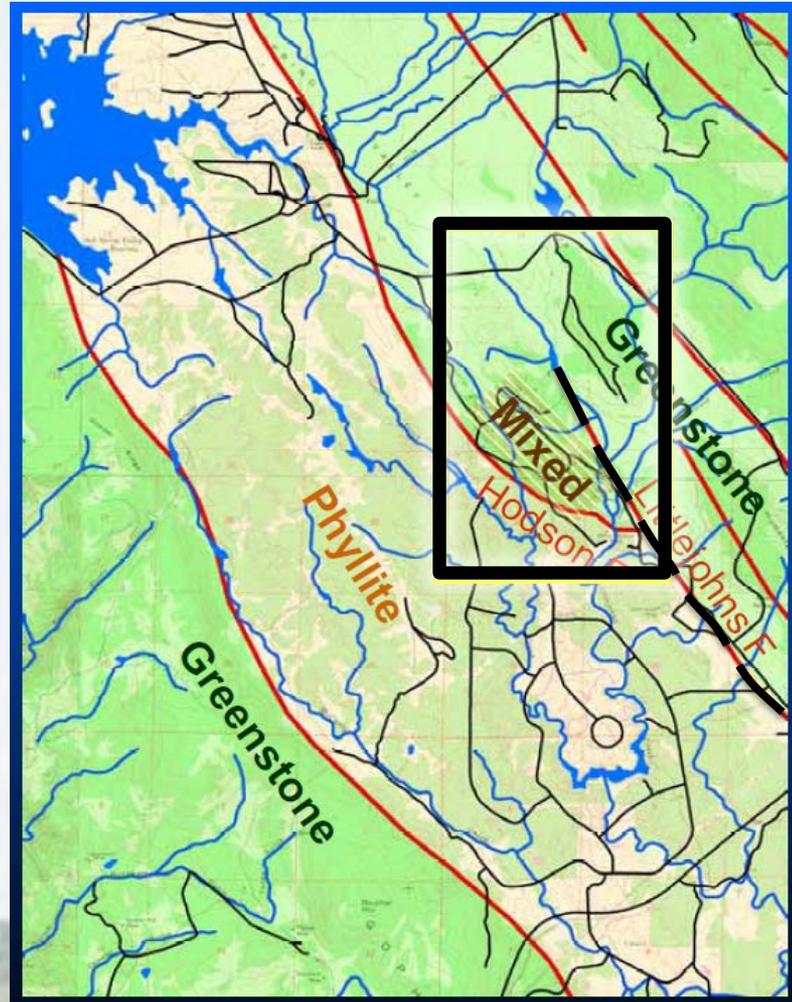
Geologic Map
with faults and
rock types



Royal Mountain King Mine Site

Geologic Map
with faults and
rock types

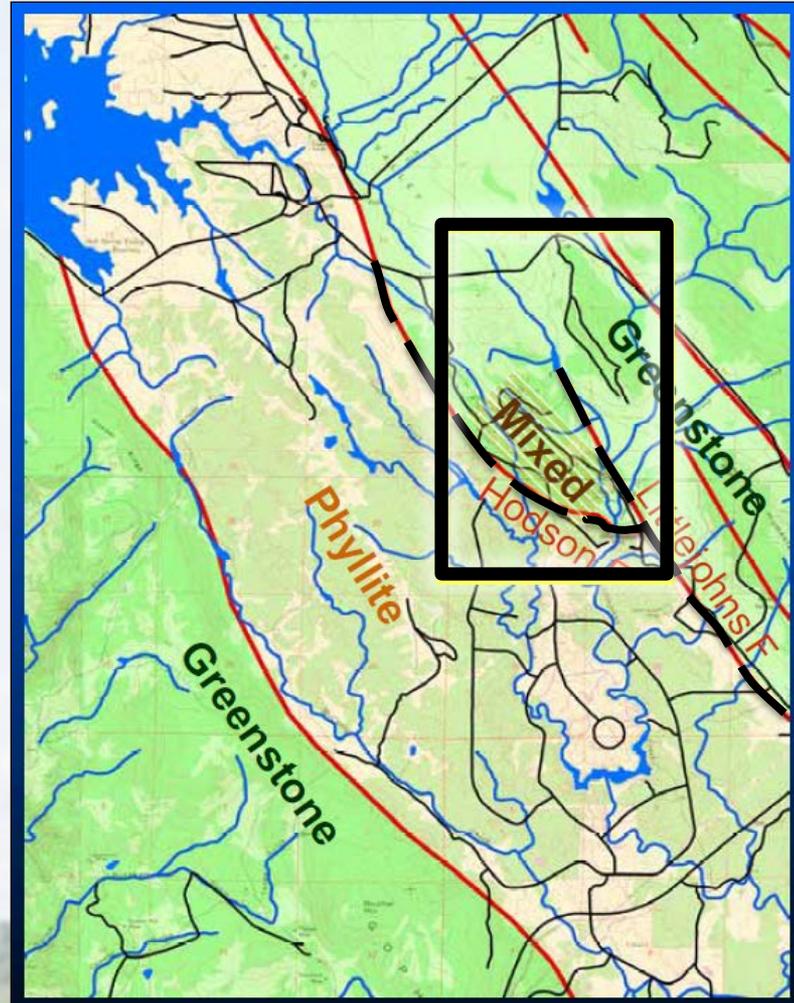
Littlejohns Fault - east



Royal Mountain King Mine Site

Geologic Map
with faults and
rock types

Littlejohns Fault - east
Hodson Fault - west



Royal Mountain King Mine Site

Geologic Map
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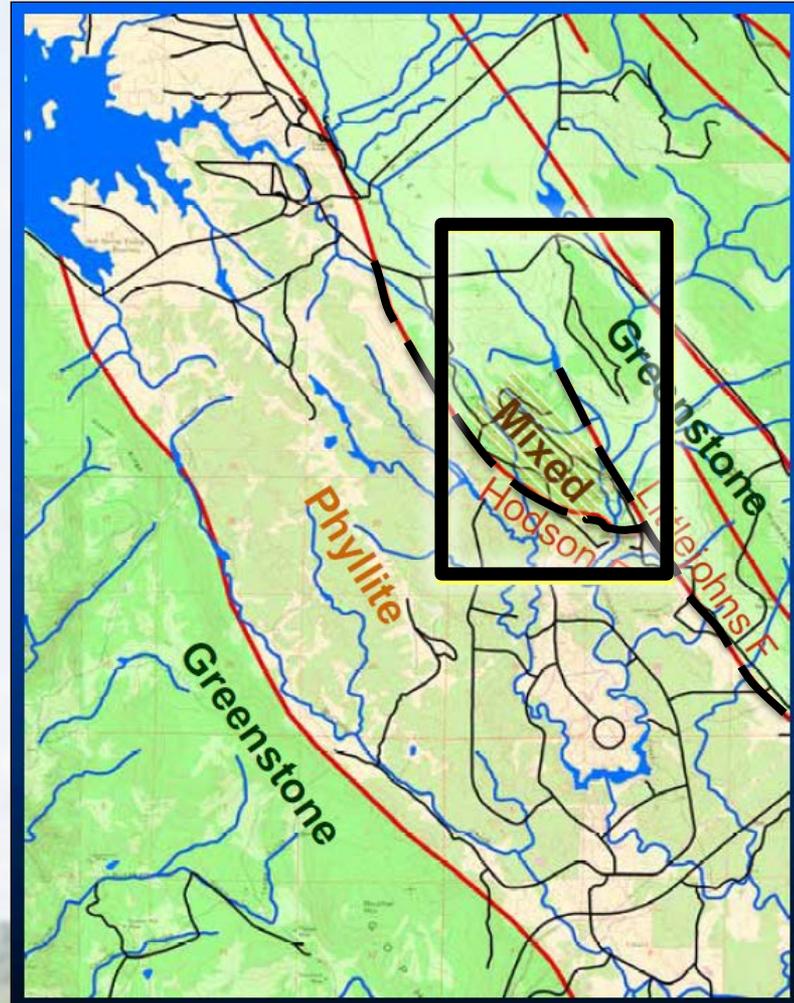
Littlejohns Fault - east
Hodson Fault – west

Greenstone

- Good water quality

Phyllite

- Poorer water quality

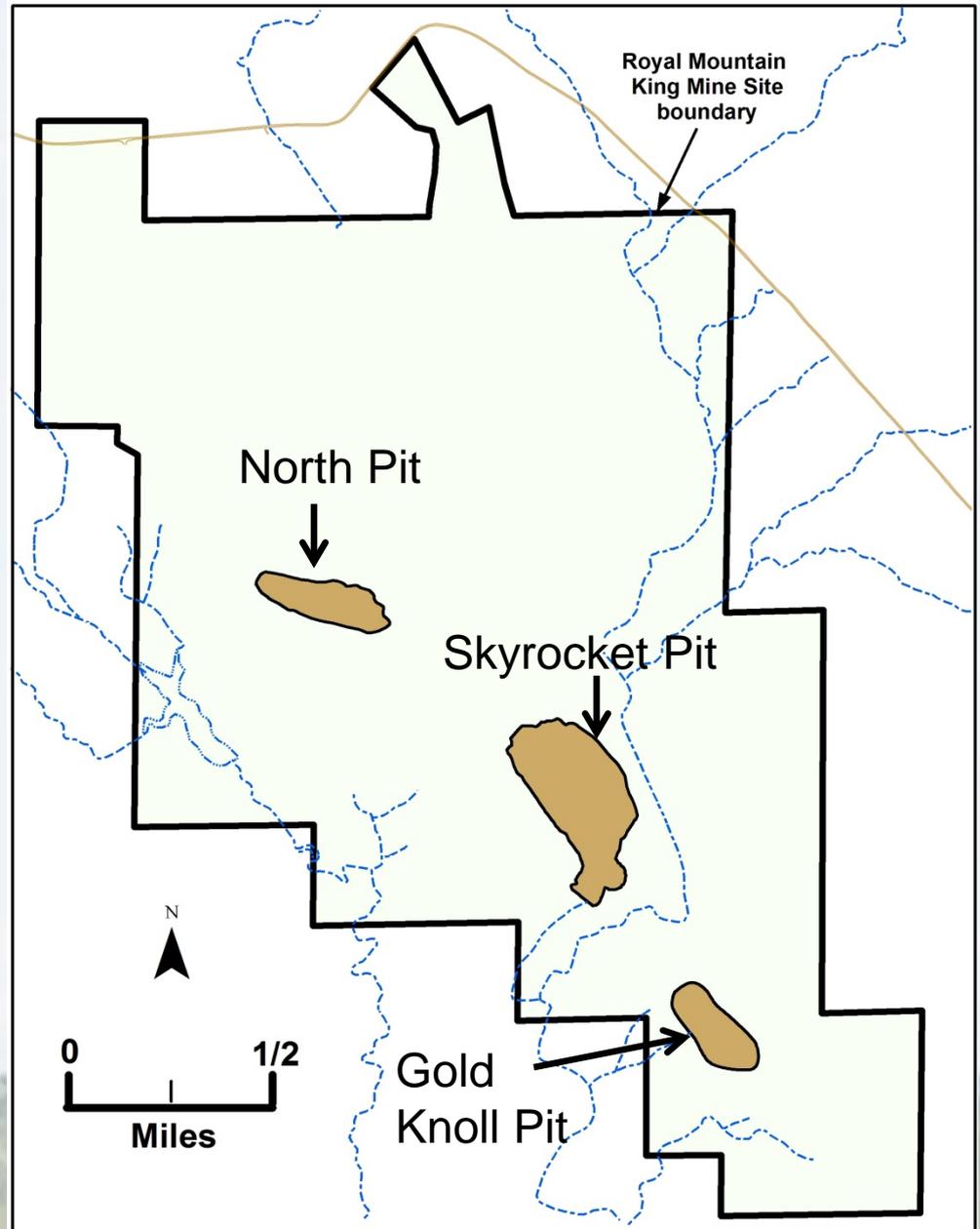




RMKM Site

Mine Pits

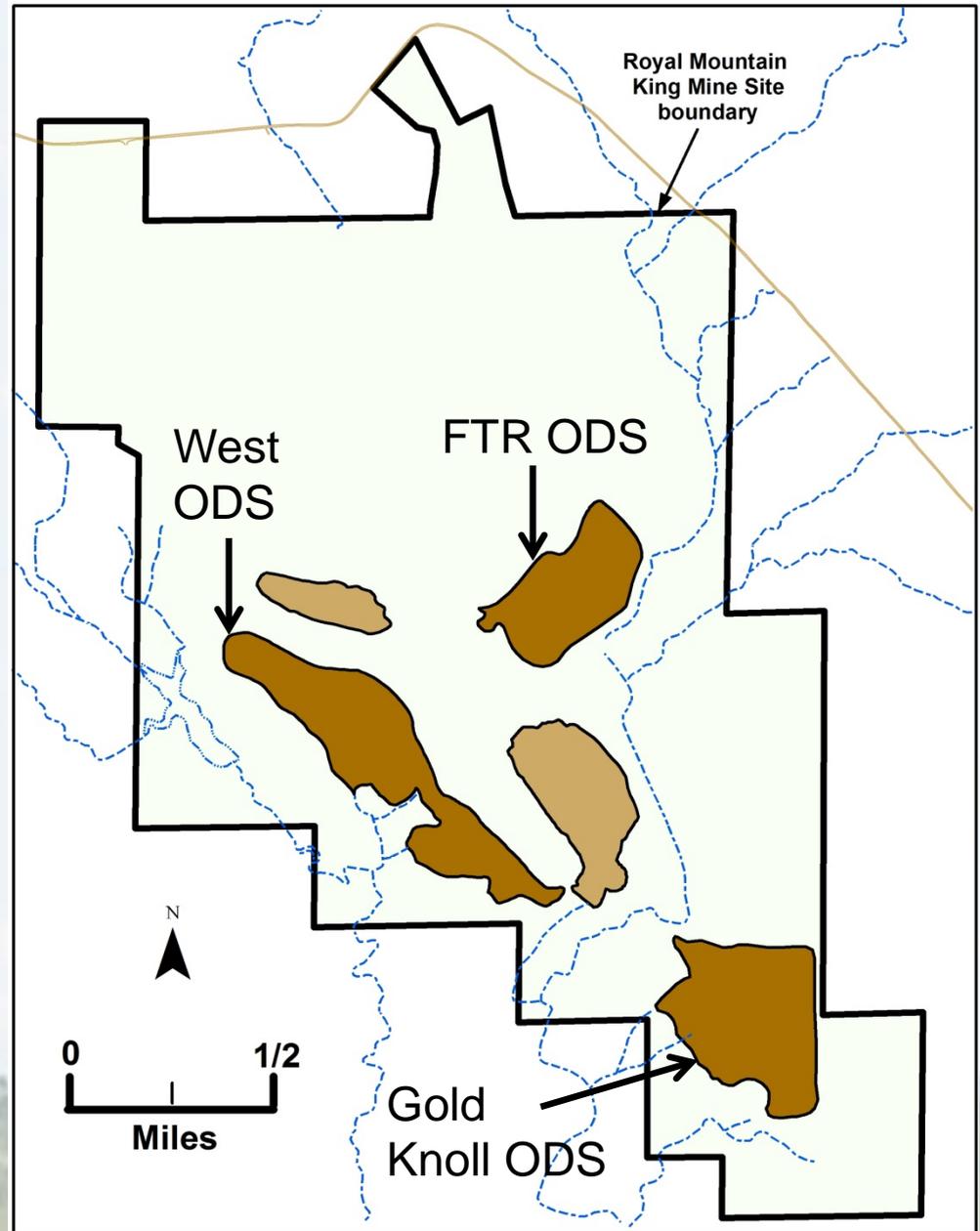
- North Pit
- Skyrocket Pit
- Gold Knoll Pit



RMKM Site

Overburden Disposal Sites (ODS)

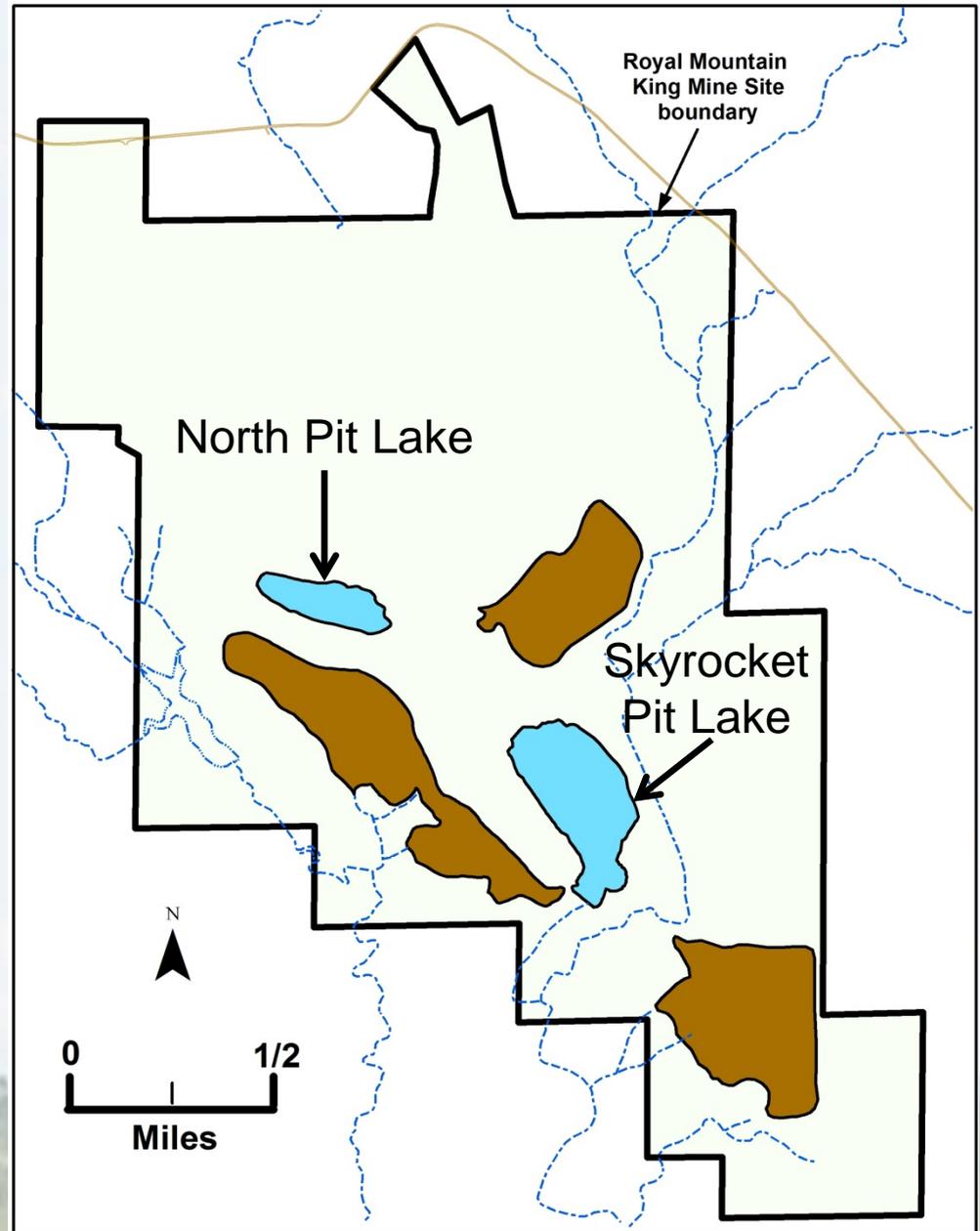
- FTR ODS
- West ODS
- Gold Knoll ODS



RMKM Site

Pit Lakes

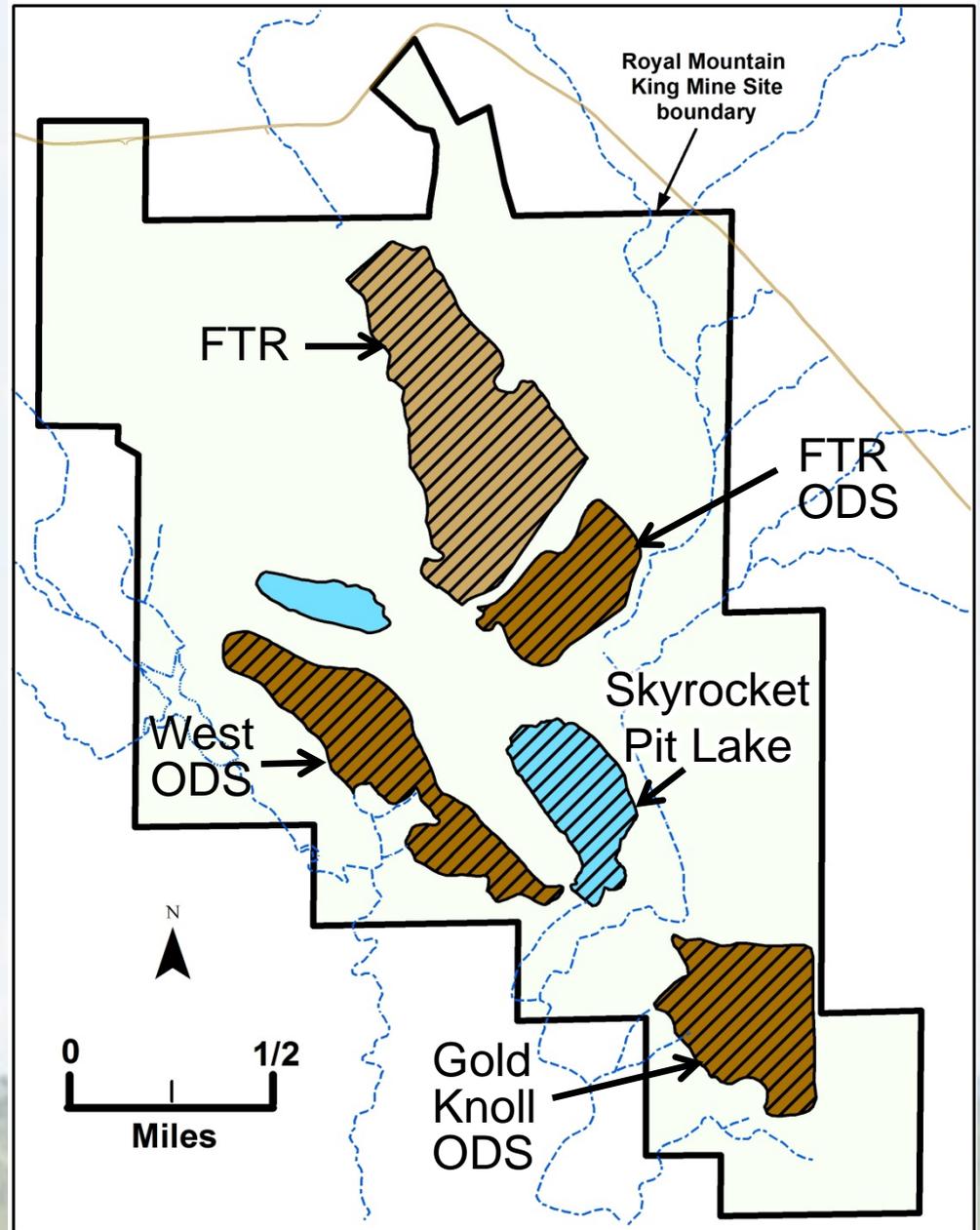
- North
- Skyrocket



RMKM Site

Waste Management Units (WMUs)

- FTR
- FTR ODS
- West ODS
- Skyrocket Pit Lake
- Gold Knoll ODS





Regulatory History

- Regulated with WDRs since 1988
- Mining from 1989 to 1994
- More Stringent Orders in 2001/2003
- 2004 State Board Remand Order
- 2007 NPDES Permit, Updated 2013
- 2008 New Closure WDRs
- 2010 Contract with Meridian

Mining Waste Classification

- Group B: could violate objectives
- Group C: turbidity concern only
- 1988 WDRs – Group C Waste
- New Orders in 2001 and 2003
- Changed Classification from C to B

State Board Remand Order

- Groundwater impacted by mining but can be poor naturally
- Liner and Cover – Very costly and provide limited benefit
- Alternative Approach
 - Containment Zone
 - Beneficial Use De-designation

Public and Scientific Review

- 2011 – Two Scoping Meetings
- 2012 – Initial Amendment/Report
- 2012 – Scientific Peer Review
- 2013 – State Board Member Briefings
- 2013 – Public Review
- 2014 – Board Hearing

Sources of Drinking Water Policy

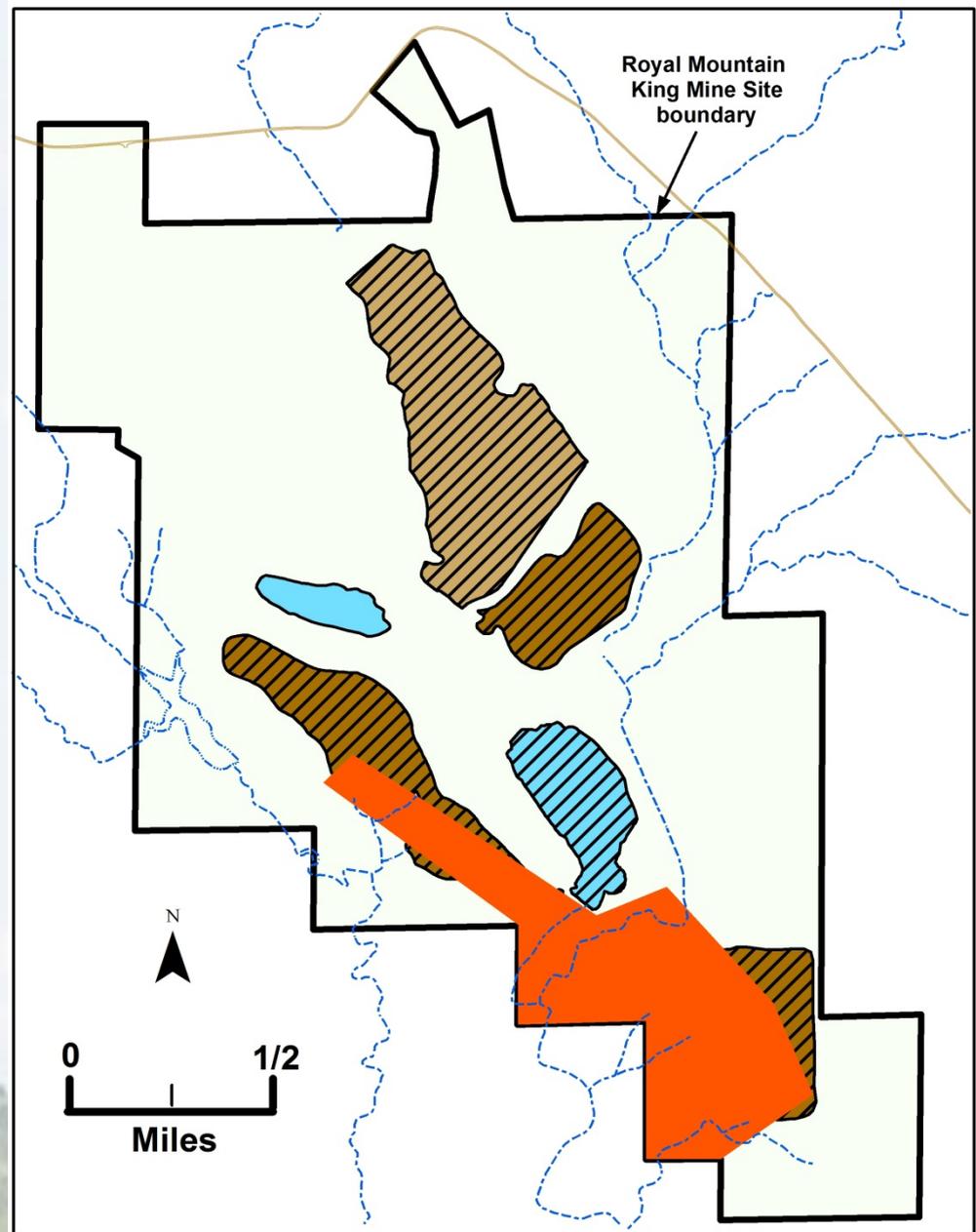
- All waters are designated MUN
- Groundwater exceptions:
 - Total Dissolved Solids exceed 3,000 mg/L
 - Contamination cannot be reasonably treated
 - Yield less than 200 gallons per day
- Site-specific exception

Basin Plan Amendment

- Groundwater Management Strategy
 - Maintain lowest practicable water level in Skyrocket Pit
 - Prevent groundwater degradation downgradient of de-designation area
 - Pump saline leachate from ODSs and FTR to Skyrocket Pit Lake
- MUN and AGR De-designation
- IND and PRO Variance

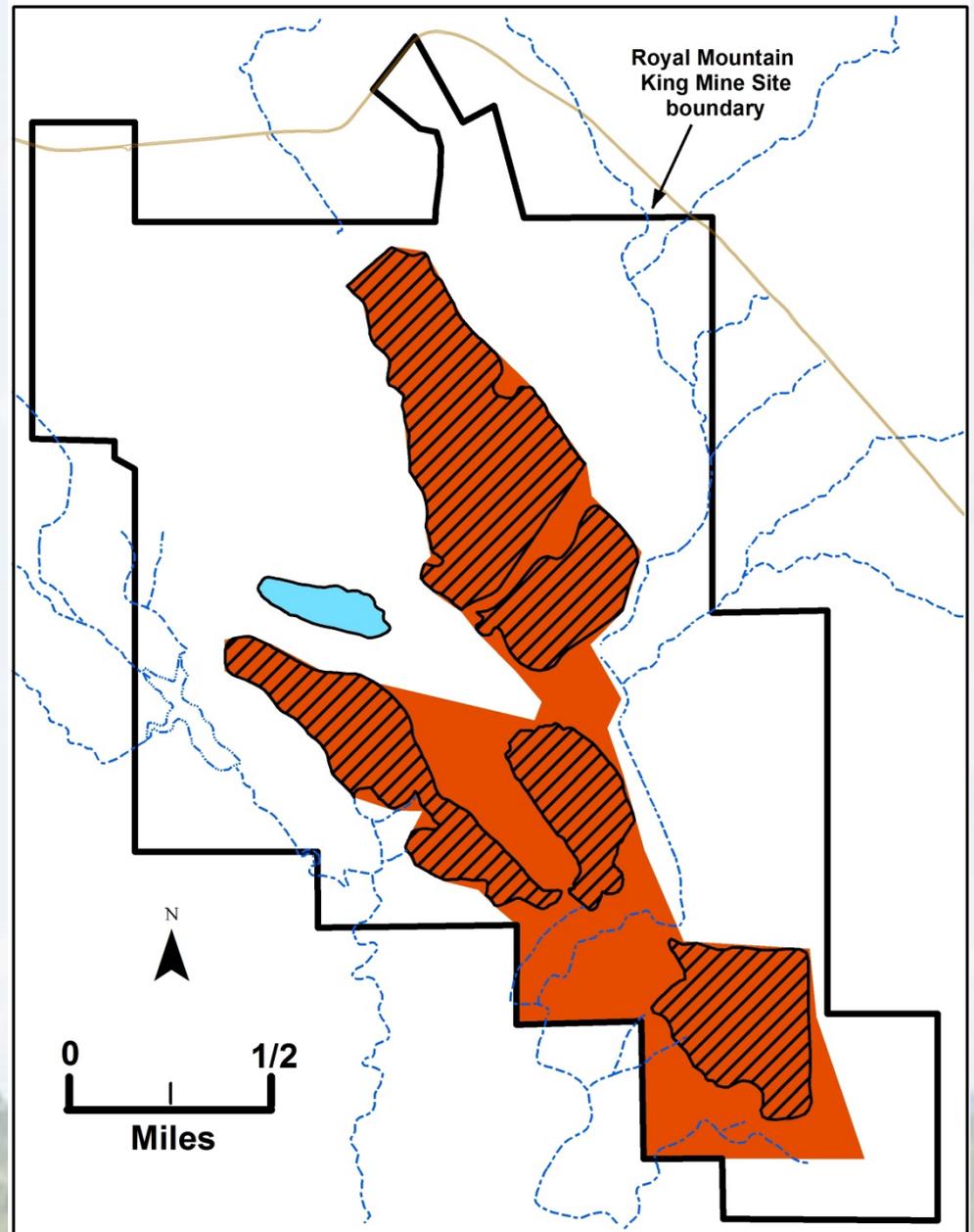
RMKM Site

Area with
TDS above
3,000 mg/L



RMKM Site

Area proposed
for MUN/AGR
de-designation
and IND/PRO
variance



Mr. Izzo's Comments

- Sources of Drinking Water Policy
- Groundwater Characteristics
- Surface Water Discharges
- Anti-degradation Policy
- State Board Remand Order

Sources of Drinking Water Policy

- Only use Exception Criterion: TDS > 3,000 mg/L

De-designation based solely on TDS criterion does not comply with Remand Order

- TDS Criterion
- Area beneath and immediately downgradient of WMUs
 - Potential poor quality groundwater underlying some WMUs
 - No past or current MUN and AGR use
 - Unlikely future MUN and AGR use

Groundwater Characteristics

- Differentiate between mining-related impacts and naturally poor-quality groundwater

Additional differentiation not needed for Amendment

- Remand Order recognized mining-related impacts and limited benefits of groundwater treatment
- Additional differentiation not needed to prevent impacts to groundwater from spreading

Surface Water Discharges

- Need to address potential surface water impacts and investigate use of wetlands

Amendment for groundwater beneficial use

- One part of overall closure strategy
- Protect existing uses and prevent impacts to groundwater from spreading
- Surface water will be addressed in Closure WDRs and NPDES Permit; wetlands remain an option

Anti-degradation Policy

- Not complying with Policy because not addressing springs with mining waste

Consistent with Anti-degradation Policy

- Amendment addresses groundwater
- Potential surface water impacts will be addressed in WDRs and NPDES permit

State Board Remand Order

- Surface water discharges, wetlands, preferred alternative
- Amendment complies with Order
 - Groundwater Beneficial Use
 - Revised Closure WDRs and NPDES Permit
 - No preferred alternative in Remand Order

Late Revision

Staff Report (page 27)

“Poor-quality groundwater, whether naturally occurring or degraded due to contact with waste rock materials in the FTR, the FTR ODS and portions of the West ODS, will continue to flow towards Skyrocket Pit Lake as long as Meridian maintains target water levels within Skyrocket Pit **in conformity with the Basin Plan.**”

Adopt Basin Plan Amendment



Questions?