MEETING SUMMARY
TECHNICAL REVIEW TEAM
GRASSY MOUNTAIN GOLD MINE PROJECT

November 28, 2018
9:00 am (Pacific) Time
Teleconference/Public Access at DOGAMI Albany Office

Attendance:

Committee Members

- Randy Jones, Oregon Department of Geology and Mineral Industries (DOGAMI)
- Bob Brinkmann, DOGAMI
- Andrea Bowen, Bureau of Land Management (BLM)
- Jonathan Westfall, BLM
- Trevor Watson, Oregon Department of Fish and Wildlife (ODFW)
- Phil Milburn, ODFW
- Joy Vaughan, ODFW
- Heidi Williams, Department of Environmental Quality (DEQ)
- Doug Welch, DEQ
- John Dadoly, DEQ
- Bob Schwartz DEQ
- Larry Knudsen, DEQ
- Phil Marcy, Oregon Water Resources Department (WRD)
- Jackie Cupples, US Fish & Wildlife Service (USFWS)
- Shauna Everett, USFWS

Others in Attendance

- Adam Bonin, Cardno
- Alison Uno, Cardno
- Nancy Wolverson, Calico Resources
- Mike Murray, HDR Engineering
- Dan Morse, Oregon Natural Desert Association (ONDA)
- Mike Niehuser, Scarsdale Equities
- Janet Gillaspie, Environmental Strategies

Randy Jones, DOGAMI, chaired the meeting. He stated that the meeting was being tape recorded to maintain a record under the Oregon Public Meetings Law. The meeting was also projected on the AT&T web access. Public access was also provided at the DOGAMI Albany Offices.

He said a meeting summary would be prepared and posted to the DOGAMI website.

The group introduced themselves.

Jones asked the Technical Review Team (TRT) members if there were additional items to add to the agenda; there were none. Jones said that the TRT review of the supplemental geotechnical drilling work plan submitted on 11/4/18 would be added to the agenda. This is a quick turnaround request.

Preliminary Approval of Environmental Evaluations and Socioeconomic Analysis Scope of Work
Jones requested Dr. Adam Bonin with Cardno review the draft outlines of the Environmental Evaluation and Socioeconomic Analysis Scope of Work. Jones indicated these outlines are preliminary since the *Consolidated Application* has not been received.

Bonin used a presentation that is posted on the DOGAMI website at https://www.oregongeology.org/mlrr/chemicalprocess_Calico-GrassyMtn.htm.

Environmental Evaluation
The final scopes of work will need to be approved by the TRT at the appropriate time.

Cardno provides technical assistance to DOGAMI and the TRT, will assist in identifying alternatives, and will prepare the Environmental Evaluation and Socioeconomic Analysis.

Jones said that the State would prepare an Environmental Evaluation, and the BLM would prepare an Environmental Impact Statement (EIS), under the National Environmental Protection Act (NEPA). HDR Engineering will prepare the EIS on the Calico Grassy Mountain project.

There are specific Oregon regulations that guide the development of the Environmental Evaluation, said Bonin.

The scope will be determined with input from DOGAMI, the Project Coordinating Committee, the Technical Review Team, and the public.

Main components include:

- Introduction
- Project Description and Alternatives
- Impact Analysis
- Cumulative Impact Analysis
- Mitigation
- References
- Technical Appendices
    - Cyanide Chemistry
    - Credible Accidents

Socioeconomic Analysis
This report will generally include:

- Introduction
- Demographic and Economic Baseline Profile
- Impacts and Mitigation Measures
- References

Bonin said that stakeholder interviews have been conducted by Barney & Worth. The interviews included local officials, legislators, community leaders, officials in the area, and conservation and natural resources protection organizations.

Key environmental issues raised included:

- Water quality and quantity
- Cyanide management and technology
- Impacts to wildlife
- Wildfire and air quality risks
- Mine restoration and long-term monitoring

Key socioeconomic issues raised included:

- Project implications for local government services
- Direct and indirect economic benefits and affects
- Transportation and worker housing
- Potential for 'boom and bust'
- Emergency operations and response (all kinds)

Bonin stated that the information from the stakeholder interviews would now be integrated into the report outlines.

Jones asked if there were TRT questions.

Bob Schwarz, DEQ, asked about the alternatives analysis and if it would evaluate different locations for the tailings storage facility. Bonin said that it was unclear what the timing would be for that evaluation. Discussions on the location of the tailings disposal facility are ongoing, he said. Jones reminded the TRT that Calico will submit an alternatives analysis as part of the *Consolidated Application*, and that additional information from Calico will be forthcoming.

The Environmental Evaluation will include an alternatives analysis and will include a review of the site planning decisions.

Larry Knudsen, DEQ, added that it is a scale or scoping exercise. For many mine components, at the pre-permitting stage, the regulatory agency will need to determine if the proposed element is 'practicable' and view it on an individual basis. The project, as a whole, will then be analyzed in the alternatives analysis, in a more programmatic level (such as processing the ore offsite, using an open pit or shaft mine, and similar concepts.)

Jones asked the TRT for an interim, preliminary approval of the proposed scope of work, by TRT Member agency:

- DEQ – Pendleton office approves; Schwarz and Knudsen agreed
- ODFW – Vaughan had no additional comments or suggestions; Watson & Milburn agree
- WRD – Phil Marcy had no additional comments or suggestions
- DOGAMI – Bob Brinkmann had no additional comments or suggestions

Jones asked BLM and HDR (Mike Murray) for their thoughts. Westfall said the outline looked reasonable to Bowen and him; Murray concurred.

Review of Calico/Golder Associates Pre-Feasibility Design Tailings Storage Facility Report

Jones said that work on the design of the tailings storage facility is underway. Calico provided an updated report on the tailings storage facility in August 2018. This August 2018 report included additional geotechnical information.

Tetra Tech has reviewed the draft design and prepared a technical memorandum for the TRT and the Tailings Storage Facility Subcommittee.

A planned Tailings Storage Facility Subcommittee meeting, initially scheduled for 11/27/18, was cancelled. Jones said that Calico is scheduling a series of one-on-one meetings with regulatory agencies, and these technical meetings will provide additional information.

Jones said the public views should also be incorporated into the review of the tailings storage facility proposed design.

He asked Bonin to provide an overview of the Tetra Tech review, conducted by Chris Lewis and his team at Tetra Tech. The key issues in the technical memo (dated 11/14/18) are:

- No significant regulatory compliance issues, but some items for follow up include absence of a leak detection and recovery system under the tailings disposal facility
- Surface life of tailings disposal facility is relatively short
- Financial assurance and preliminary costs of closure and mitigation are needed

Bonin stressed that these initial conclusions are based on draft design and could be altered with additional technical details.

Knudsen continued to discuss the DEQ issues related to the tailings disposal facility. DEQ is planning to start the Calico regulatory issues meetings the second week in December and anticipates good discussions on a range of issues related to the tailings storage facility, including location and other engineering issues. Knudsen said that DEQ would report back on the meetings outcomes.

Jones said that testing and design work is ongoing at the proposed mine. He said that the Tailings Facility Subcommittee would continue to work in developing a recommendation to the full TRT.

Cyanide Risks for Safety, Environment, and Wildlife

Bonin made a presentation on cyanide risks for safety, environment, and wildlife. A copy of the presentation is posted on the DOGAMI website at https://www.oregongeology.org/mlrr/chemicalprocess_Calico-GrassyMtn.htm.

Cyanide is used in gold mining to recover the gold. Gold is insoluble so must be separated from other minerals through chemical means. Cyanide has been used in gold mining for over 100 years.

The International Cyanide Management Code (ICMC) is a voluntary initiative to promote safe management and use of cyanide in gold mining. The Code evolves as better practices emerge. For those firms certified, there is an on-going, third-party audit to maintain certification. There are a set of ICMC principals and standards that inform the Code.

Jones said that Calico is not yet prepared to share its cyanide management plans. These plans will be informed by the Calico Geochemistry baseline report. Calico will provide additional information to the TRT in the future, he said.

Currently, over 1.1 million metric tons of cyanide are produced annually in the world, with Asia-Pacific as the leading producer. About 6% of cyanide produced is used in gold and silver processing. The cyanide is delivered to the mine site in either briquettes or liquid form.

One of the largest US cyanide producers is located in Nevada and provides training to customers in driver training, along with laboratory testing. The firm is ICMC certified.

Cyanide delivery system options include:

- Solid-to-liquid system in ISO container units,
- Liquid tanker, or
- Bag/Box

Bonin outlined the issues associated with safety and emergency response including:

- Emergency responders must use supplied air
- For fires, there must be an evaluation up to within a ½ mile of the fire due to inhalation risks
- Waste streams from fires can be dangerous
- Proper Personal Protection Equipment (PPE) is important for responders and decontamination workers

The Federal Motor Carrier Safety Administration provides regulatory overview, including routine, random inspections and reporting on compliance/non-compliance and accident review.

Bonin reviewed a few notable cyanide – related accidents in the US. Emergency response plans are generally developed by the mine operator, and they coordinate closely with local first responders and others in law enforcement.

Residual Cyanide Fate and Transport

After the gold processing, cyanide is detoxified and discharged to a tailings storage facility. The cyanide remaining is measured as Weak Acid Dissociable (WAD) cyanide. The ICMC standard is 50 milligrams per liter; the Oregon regulatory standard is 30 mg/l (corrected during the meeting discussion).

Another pollutant is hydrogen cyanide (HCN) in the tailings disposal pond. This is degraded by UV light.

Overall cyanide fate varies by the media, including:

- Soil – loss due to volatilization and biodegradation
- Air – HCN is a gas with a slow degradation rate
- Surface Water – volatilization
- Groundwater – may persist in groundwater; biodegradation is limited

Considering the form of cyanide is critical, said Bonin. The key receptors for risk at the Calico Grassy Mountain project are human health risk (workers, regulatory staff, trespassers). The major route of human exposure is ingestion, inhalation, and absorption.

The federal Environmental Protection Agency (EPA) has set a Maximum Contaminant Level (MCL) for cyanide of 0.2 mg/L in drinking water.

Free cyanide is most toxic to aquatic organisms (most sensitive), birds, and mammals.

Bonin continued to discuss risk reduction strategies, including decreasing the WAD cyanide concentration to the lowest levels possible through detoxification and use of natural processes. Other protective mechanisms include:

- Proper Personal Protection Equipment (PPE)
- Routine site monitoring for cyanide concentrations, and robust emergency planning and response systems
- Prevent food web system from developing in the supernatant pond
- Reduce tailings storage facility open water area
- Reduce attractiveness of the surrounding landscape
- Wetland mitigation sites

- Wildlife exclusion
- Wildlife deterrents
- Wildlife monitoring systems

Heidi Williams, DEQ, asked about the 33 mg/l WAD cyanide standard referenced; Knudsen responded that that standard is included in the DEQ regulations at Oregon Administrative Rules 340-43-0130(1). The 33 mg/l is in error; the correct standard is 30 mg/l. Knudsen added that using the 'best available practicable technology' is also required.

Milburn asked about the cyanide level of concern for birds. Bonin responded that the data is difficult to determine since dead birds are quickly eaten by nearby predators. Milburn asked for additional literature review resources for fish and wildlife experts on the TRT.

Public Comments
Jones opened the meeting for public comments.

Dan Morse with ONDA commented on several items:

1. Regarding the Environmental Evaluation, he was surprised to see acid rock drainage not listed as a specific area of concern
2. Regarding the ICMC, he is confused since neither Calico or Paramount are listed as members of the ICMC, and it seems to be a rigorous process to be certified and has associated fees. He requested clarification about how the ICMC would be adhered to, the certification process, and how the fees would be incorporated in the Socioeconomic analysis.
3. Regarding socioeconomics, an 'average wage' of around $80,000 per job has been used in previous presentations regarding the Calico-Grassy Mountain mine. The US national data shows around $60,000 per job. Additional information is needed about where the 'average wage' number for the project was generated, and if it had been further reviewed and sourced well with a robust citation.
4. Related to the Environmental Evaluation and Socioeconomic Analysis, ONDA is focused on the issue of cumulative effects on the environment, and reasonably expected future actions. Calico/Paramount has recently acquired additional areas and mineral reserves around the Grassy Mountain project, with the apparent attempt to bring those resources into the overall Calico project. He urged the Project Coordinating Committee (PCC) and TRT to focus on this issue of the additional mineral resources into the Grassy Mountain project and the impact on the overall size/scope of the project.

Review of Calico Supplemental Geotechnical Work Plan
Jones said that Calico had filed a supplemental geotechnical work plan, dated 11/14/18.

Jones asked each agency if they approved the work plan:
- DOGAMI – Brinkmann had no questions and affirmed approval.
- ODFW – Vaughan had no comments. Watson and Milburn had no comments or concerns.
- WRD – Marcy moved to approve; no concerns.
- DEQ – John Dadoly clarified this is for four (4) geotechnical holes in the area of the mine portal; agreed.

Other Issues and Concerns

Jones asked TRT members if they had additional issues or concerns. There were none. Jones reminded the permitting agencies participating in the TRT that they should anticipate a call from Calico or DOGAMI to schedule one-on-one meetings on permitting issues.

Necessary Follow up and Next Steps

Janet Gillaspie with Environmental Strategies, summarized the necessary follow up and next steps:

- Post the Cardno presentations to the DOGAMI website; Cardno will correct the Oregon standard for WAD cyanide
- Cardno will compile its literature review of the wildlife impacts of cyanide exposure. DOGAMI will work with Cardno and the Wildlife Subcommittee to share that information in an efficient manner.

Jones indicated that next TRT meeting is set for December 19, 2018; Jones suggested that the meeting would only be held if there were adequate agenda items that needed discussion. **Please note 12/19/18 TRT meeting has since been cancelled.*

Subcommittee meetings, including the Wildlife Subcommittee, will meet as there is additional information to discuss. Same for the Water Resources and Geochemistry Subcommittees, Jones said.

Jones adjourned the meeting at 10:34 am.