

Meeting #27  
**November 12, 2014**  
**MEETING SUMMARY**

**Meeting Attendees**

*Community Working Group members present:*

Nancy Vogler – LOST Trail  
Fred Gaudet – Arizona Trail Association alternate  
Rick Cartier – Superior Chamber of Commerce alternate  
Pamela Rabago – Superior Chamber of Commerce  
Pam Bennett – Queen Valley Homeowners Association  
Roy Chavez - Concerned Citizens and Retired Miners  
Bill Vogler – Superior Copper Alliance  
Bruce Wittig – Queen Valley Fire Department  
Cecil Fendley – Queen Valley Water Board  
Michael Lira – Central Arizona College  
Anthony Huerta – Town of Superior  
Mark Nipp – Town of Superior  
Neal Jensen – Cobre Valley Regional Medical Center

*Community Working Group members not present:*

Jeff Bunkelmann – Central Arizona College  
Evelyn Vargas – Cobre Valley Medical Center  
Dominic Perea – Superior Junior-Senior High School  
Steven Byrd – Superior Junior-Senior High School  
Mark Siegwarth – Boyce Thompson Arboretum  
Kiki Peralta – Superior Rotary Club  
Nina Crowder – Superior Rotary Club alternate  
Patrick O'Donnell – Superior Unified School District #15  
George Martin – JF Ranch  
Lynn Martin – JF Ranch  
JoAnn Besich – Superior Optimist Club  
Matt Nelson – Arizona Trail Association

*Resolution Copper Company:*

Jim Schenck – Manager for Communities & Social Performance  
Vicky Peacey - Senior Manager of Approvals, Communities & Environment  
Frank Deal – Tailings Manager  
Ian Edgar – studies manager  
Casey McKeon – environmental permitting  
Kami Ballard – environmental permitting  
Melissa Rabago – community advisor

*Facilitator – Godec, Randall & Associates (GRA)*

John Godec  
Debra Duerr

*Public Guests:*

Hank Gutierrez – interested superior resident  
Bruce VanDenBoom - interested Superior resident  
Jacquie Smith – Arizona Water Company

## **Introductions & Housekeeping**

John Godec asked the group to introduce themselves, since there are several new members who have not met each other. He showed a list of future meeting topics in which the group has expressed interest. He noted that, in response to the group's desire to learn more about the San Carlos Apache Community, the last meeting was a field trip to their cultural center. One of the topics that has been mentioned recently is accidents involving tailings impoundments and spills, which Resolution has agreed to talk about tonight. Water quality and quantity has also been a continuing concern of the group; the facilitator is working with several independent water experts, other than regulators or the company, to visit with the group and to provide objective information and perspectives.

## **Tailings Spills, Safety & Resolution's Approach**

Presenters: Vicky Peacey & Frank Deal, Resolution Copper Company

Vicky Peacey said that the Resolution team here tonight is prepared to discuss tailings releases, leach piles, and other mining issues that have been continually discussed in the community. She observed that it has been stated, and that there is a perception among many people in and around the community, that the tailings will be "a giant toxic waste pile the size of Picketpost Mountain". Peacey noted that the tailings pile will indeed be very large in area, but it won't be as high as Picketpost Mountain, topping out at about 500 feet tall. She clarified that tailings are not hazardous waste, as defined by the federal guidelines, but they do contain trace quantities of heavy metals. These need to be contained so they don't leach into the groundwater and surrounding environment. While these can cause harm to groundwater if mishandled, the tailings facility will be designed and engineered to manage and contain these materials. There will be groundwater monitoring wells surrounding the tailings site to test water to make sure regulated constituents do not exceed Clean Water Act safe drinking water standards. She offered to provide the group with copies of regulations that apply to the tailings.

The group's questions included the following:

- Isn't it true that these trace elements are found in the natural environment?
  - Yes, that's true. Peacey noted that, for example, the standards for arsenic were recently lowered, so that constituent is something that is monitored closely. She said that Resolution does not want to make things worse.
- Will Resolution's precautions eliminate the potential for groundwater pollution?
  - That is certainly the objective. To get a permit, Resolution must demonstrate that releases will meet adopted limits, and then the operations must be monitored during production to ensure this continues to be the case.
  - Frank Deal explained that the underlying Schist at the tailings site is not easily susceptible to drainage. The downstream side of the facility will have dams engineered for complete containment of materials. He said that 85% of tailings are, basically, clay. The high sulfide materials would be placed at the inside of the pile to minimize seepage. Grout curtains - trenches filled with concrete – will also be built

to control seepage; these will be constructed around the facility. Downward seepage is controlled through very tight bedrock. The seepage collection system contains any releases and pumps it back up for recycling for other mining uses.

- The relatively small amount of high sulfide tailings are managed so they are not exposed to oxygen and water at the same time. Seepage is controlled by geological conditions. We can't eliminate seepage, but it will be collected and recycled; any releases to the environment will be monitored and addressed if needed.
- Couldn't there be a tailings dam break in a very wet season?
  - This facility will be designed to withstand the 'Probable Maximum Precipitation' (PMP) event, which is larger than a 100-year storm. The existing and historic tailings in Superior were not designed to meet any regulations since these did not exist at the time (1850s) the Magma mine was active. Regulations are different today.
  - A group member noted that the spill in 1993 was the result of a washout in an extreme rain event in which the tailings pond contents were released through the town. The amount of the release was enough to bring the EPA (Environmental Protection Agency) to Superior, and there are still effects of that today.

Frank Deal provided a description of four recent breaches at facilities in North America. These were at Mount Polly, Buena Vista de Cobre, Bingham Canyon, and Pinto Valley. He mentioned that he, personally, has worked at three of these facilities. In researching these issues, Deal found that only two dams have failed from natural causes; the others have all failed due to poor operating practices and not following design criteria.

Mount Polly is in British Columbia. There was an embankment breach where the dam collapsed, spilling 17 million tons of tailings and water that caused extensive damage to the streambed and surrounding area. This was supposed to be a 'zero-discharge' facility, so mining industry experts are wondering why there was so much water involved. The facility was recently expanded (which the original engineer did not agree with). A team of independent experts was assembled immediately to analyze what happened and monitor water quality. The water supply for 300 people downstream was shut off for several months while tests were being conducted. Peacey speculated that was because the TDS (total dissolved solids) standards were exceeded. Luckily, the pH was very low and there were few metals in the water released. A result of the spill is that the mine has been shut down indefinitely, and it is the major source of employment in the region. Cleanup costs will be about \$500 million. There is speculation that the owners may not be able to afford to spend this, while the value of the mine to the area is probably several billion dollars.

The group asked:

- If there is too much water, how does the tailings design address that?
  - Everything above the site needs to be diverted or contained prior to facility operation.
- How many tons were being produced there?
  - 60,000 per day, similar to Pinto Valley
- Do you need a bond for reclamation before you can operate?

- Yes, in the United States. We don't know about in Canada.
- A group member made the point that if the tailings had been toxic they would have had much higher cleanup costs, and the remaining tailings deposited in the streams would not be able to be reseeded.

The Cananea, Mexico process pond breach occurred just over the border close to Superior, releasing copper sulfate and acid. This occurred because of a failure of an underflow line on a leach pond. Deal suggested that this was a function of poor operating choices. There will be no leachate pond in the Resolution project, so this situation could not occur.

The Resolution Copper Company Bingham Canyon slide in Utah in April 2013 was in the pit, where ground movement caused the slopes to fail. The mine was evacuated and temporarily closed. It was back in operation in about two weeks. In this case, the potential risk was known before mining, and the company was able to predict it. Since the Superior mine will not be an open pit mine, this situation wouldn't happen here.

The BHP Pinto Creek accident occurred in 1997. An old tailings facility had been decommissioned, and BHP decided to use the site for an additional lift when mining resumed. Although the design was for five lifts, the embankment broke down during the second lift, releasing 300,000 cubic yards of tailings into Pinto Creek to travel ½ mile both upstream and downstream. This also caused concern for water quality in Roosevelt Lake's drinking water supply. Consequently, the mine shut down and 600 people were laid off because there was no affordable alternative site for disposal, and the company spent \$35 million to clean up the creek.

Deal summarized a study that looked at tailings dam failures in the last 100 years. Tailings dam failures peaked between the 1960s and 1980s, dropping to about 10 to 20 per decade globally in the last 20 years. The majority of these occur during operation, not after they are closed. Peacey said this is mainly because of water buildups during operations, which are drained off after closure.

Deal said that today we know how to design these facilities, and repeated that most failures happen as a result of operation decisions and errors. Physical design factors considered include adequate capacity, earthquake potential, physical properties of the site, and others. The root causes of tailings failures include static liquefaction, seismic liquefaction, overtopping, slope and foundation instability, seepage and piping, and chemical material modification. Human factors to avoid are lack of a monitoring and review strategy, failure to use the observational method to refine design, reliance on key personnel (personal knowledge) rather than transferrable 'systems', and lack of independent 3<sup>rd</sup>-party assessment. Deal emphasized that designs must be followed, and adjusted if conditions or performance warrant it. Operations must be monitored based on conditions, technical advancements, regulation changes, and community and peer review.

Some of the regulatory standards and guidelines that must be followed in Arizona include BADCT (best available demonstrated control technology), aquifer protection permits, and requirements of the federal Clean Air Act and Clean Water Act, and National Environmental Policy Act (NEPA). Requirements apply to tailings chemistry, groundwater quality, risks, stability, mitigation, technical requirements, financial assurances, and others.

In summary, a holistic approach should be taken from design through closure. Consequences of risks must be carefully considered. Review programs should be undertaken by peers and experts. There needs to be regulatory review by agencies, and changes in design if conditions or control requirements change; there can be no compromise about this. Regulatory agencies can shut down operations and facilities at any time for infractions. Peacey suggested that this might be an area where community monitoring could be developed using independent experts, if desired.

Group questions and comments were:

- Is there an agency responsible for monitoring these facilities?
  - Yes, there are several including the federal Environmental Protection Agency, Bureau of Land Management, old Atomic Energy Commission, Mine Safety and Health Administration, and the Arizona State Mine Inspector's Office and others.
  - Peacey offered to provide the group with copies of major significant regulations.
- Are there fines or penalties for non-compliance?
  - Yes; for example, EPA can impose fines for damages to water resources, on top of cleanup costs. Severe penalties can even result in prison penalties.
- A member noted that there have been examples of mining companies choosing to continue to pay penalties rather than fixing problems.
- What minerals are left in the tailings from processing and concentrating the ore? Are they more easily released from tailings than from the ore?
  - Acid mine drainage occurs after the ore has been processed, when minerals are exposed to oxygen as well as water. This needs to be managed in tailings by segregating the sulfides and minimizing contact with oxygen and water. Keeping the tailings saturated prevents exposure to oxygen (oxidation, rusting). There are two separate tailings piles, one inside the other, one containing mainly clay and the other with the higher sulfide content; only the sulfide tailings need intensive management for leaching.
- What is toxic in the tailings, or perceived to be?
  - Arsenic and other metals. They are not concentrated, and do not occur in higher quantities than before being mined. It is the sulfides that are of concern because of exposure to water and oxygen.
- Will there be a mitigation plan? The aquifer is shallow, so small amounts of releases could be harmful.
  - This is what the collection system is designed to prevent. There are alert wells below the dam, before the monitor wells. Compliance is measured at the boundary of the

- 'discharge impact area', generally at the edge of the collection system. There can still be discharges into groundwater directly below the tailings pile.
- Queen Valley's biggest concern is groundwater quality because this is a shallow aquifer, and it is used as drinking water supply for Queen Valley. In a worst-case scenario, there needs to be a mitigation plan in place – does Resolution have one?
    - Yes, we do contingency and response planning all the time. Additionally, this issue will be extensively explored during the NEPA process, and there will be continuous regulatory oversight during the life of the mine.
  - Can the State Land parcel in Superstition Vistas be re-visited for tailings disposal in light of the recent election and different state elected leaders and possible policies?
    - Possibly. Resolution has not discussed this issue yet.
  - Bill Vogler described some of the monitoring and assessment measures that are being taken at the Holden Mine, based on his visit. He asked how this compares to what Resolution is planning.
    - Similar measures, as appropriate, will be taken here.
  - Mr. Chavez pointed out that this project will be much larger than any of those talked about at this meeting, so impacts will be similar in scale. While the mining companies can create good designs, you can't account for Mother Nature.

### **Public Comments**

A visitor thanked the group for this discussion, which was very informative. He thinks the community has similar questions to the ones discussed tonight. He suggested that the Arizona Water Company be invited to provide a history of water in Superior. He also said he appreciates the participation of the Retired Miners group and their insights.

### **Final CWG Comments and Future Meeting Planning**

Godec asked the group if they'd like to do a site visit to the tailings area in December. Several mentioned that hunting season occurs into December, so it was decided to try to do this in January. It would be helpful if members of the group who are familiar with the area could assist in selecting important locations (viewpoints) from which to look at the proposed tailing site. Peacey will prepare a map of the area for the group to use on a field trip.

#### ***Next Meeting:***

*5:30 PM*

*Wednesday, December 10, 2014*

*Superior Chamber of Commerce*

*165 W. Main Street*

*Superior AZ*