



South32 Continued Exploration and Permitting

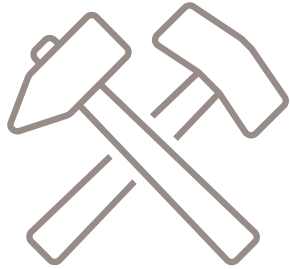
Santa Cruz County Board of Supervisors & Town of Patagonia

July 21 & 22, 2020

- **Introductions**
- **South32 Project Update**
- **Water and Permitting**
 - Exploration
 - Overview of hydrogeology & studies
 - Biodiversity, surface hydrology, treatment plant technology
- **Summary and Questions**
 - Next steps – permitting and planned engagements

Project Update

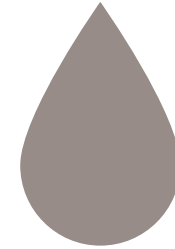




We are restarting development
of the exploration decline



Why do we need an Exploration
Decline and why so deep?



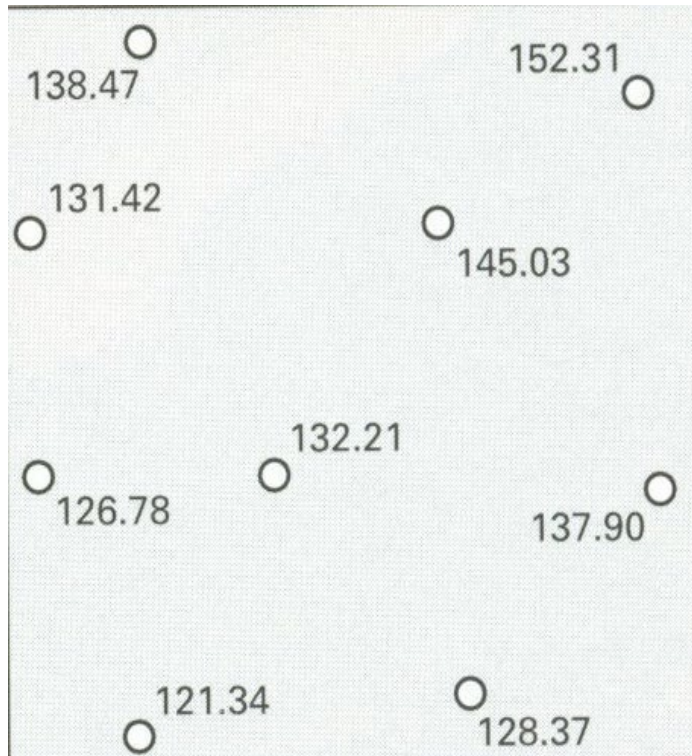
Why do we need to remove
water for exploration?

Hermosa hydrogeological investigations

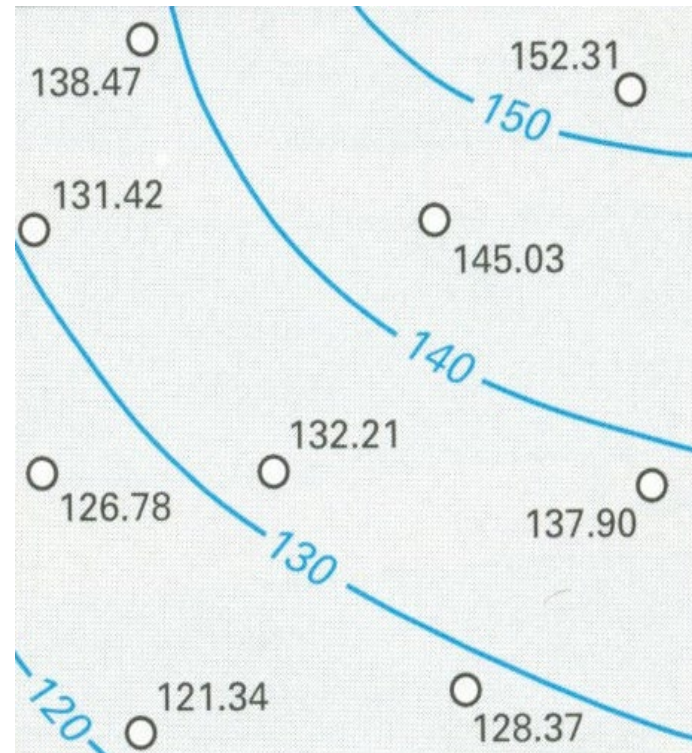


Groundwater flow (macro scale)

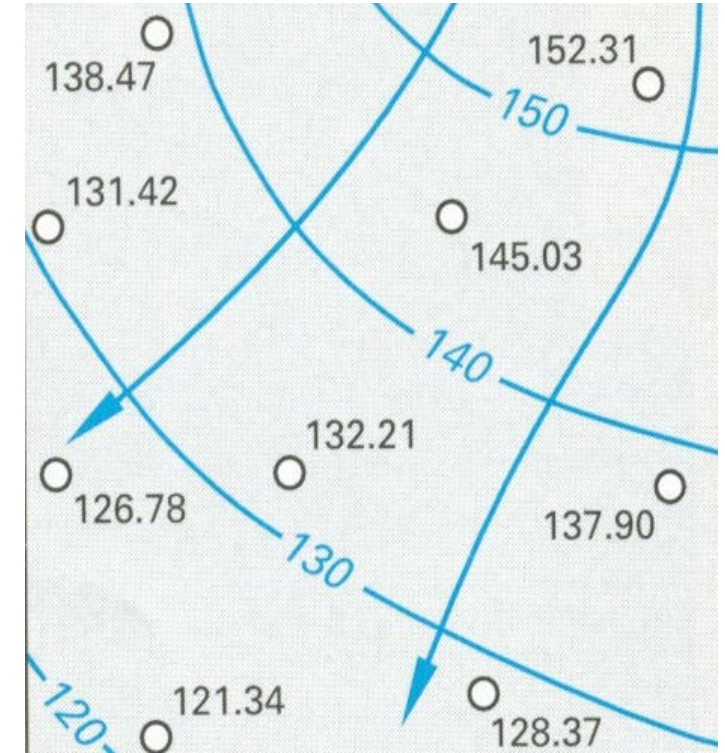
Water Level Elevations



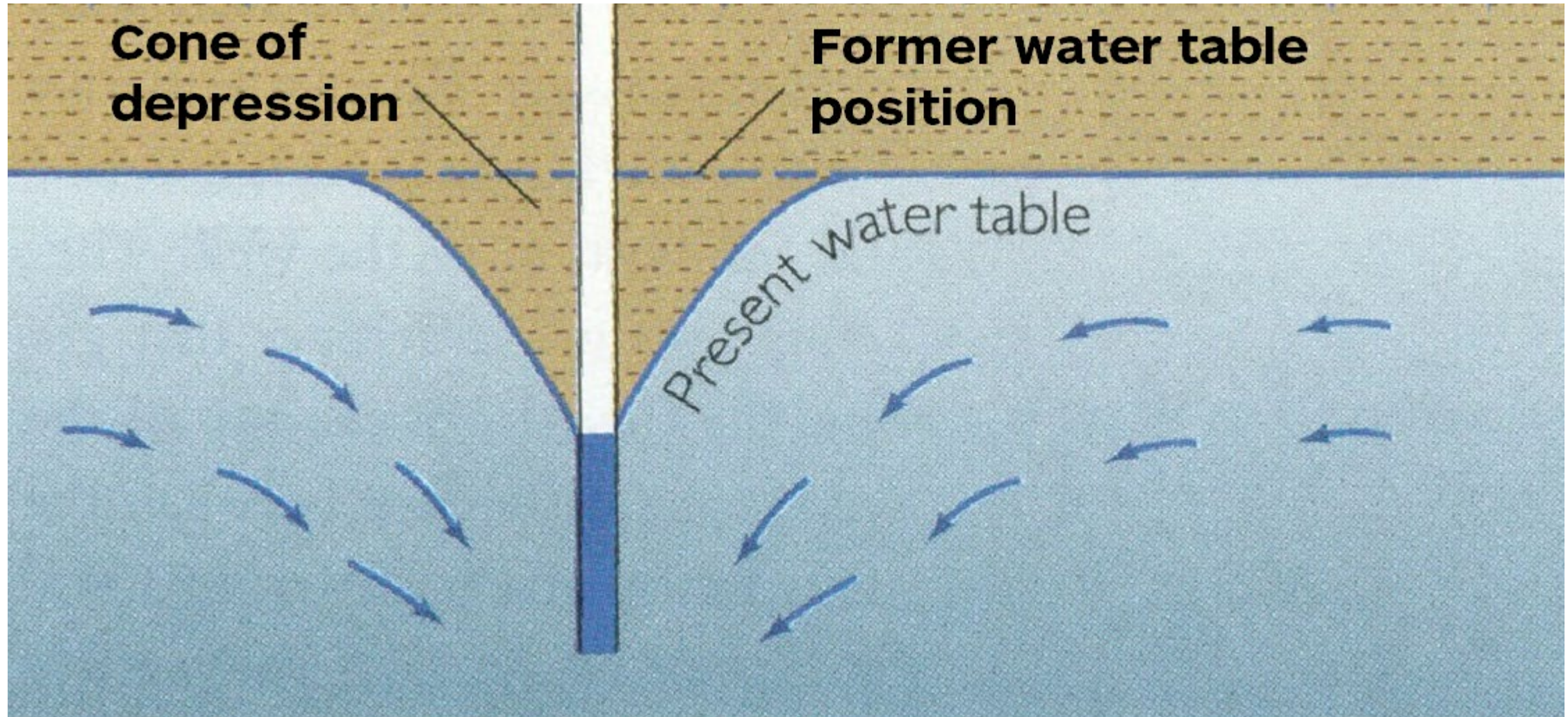
Contoured Water Levels



Groundwater Flow Directions

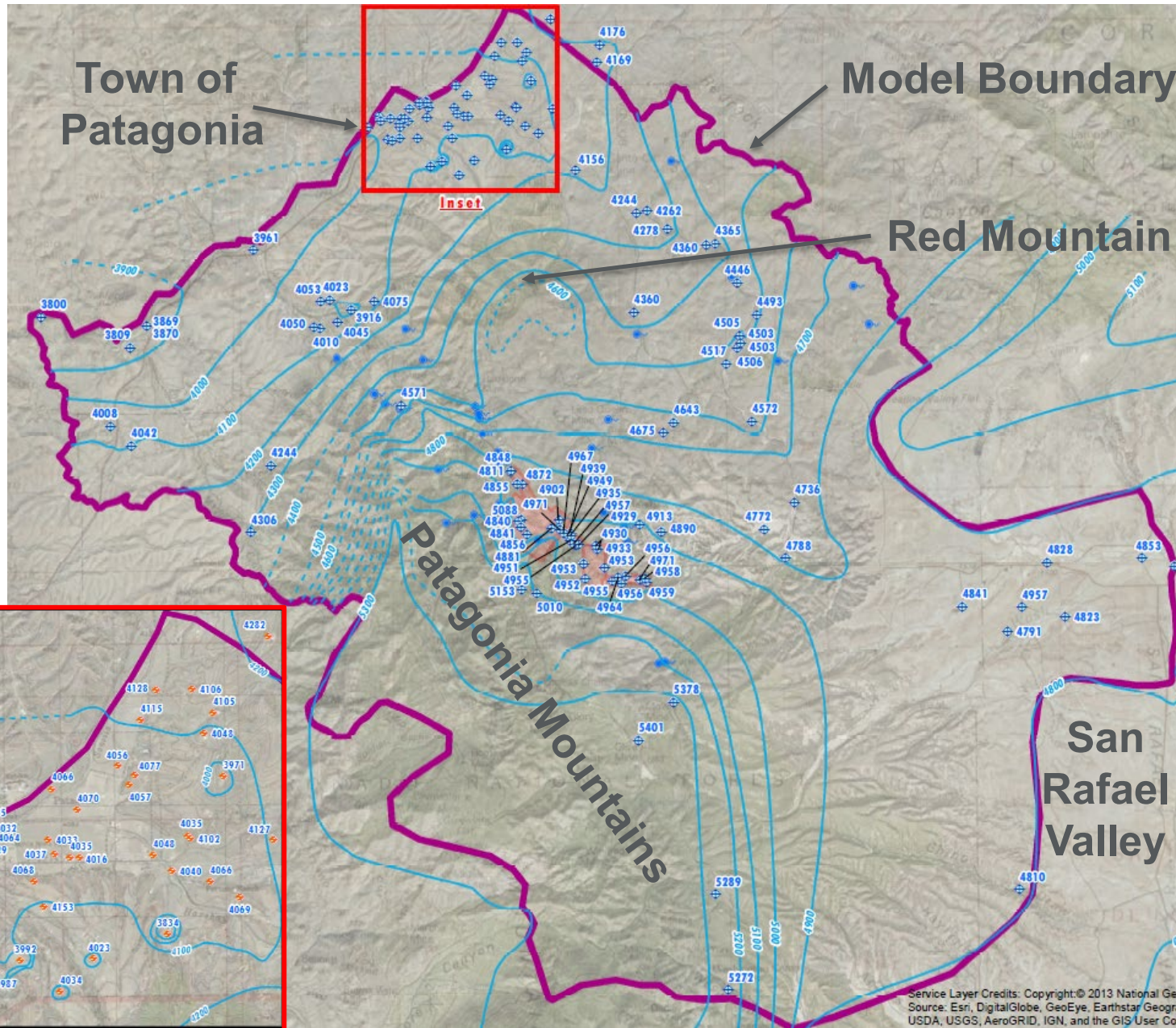


Groundwater pumping



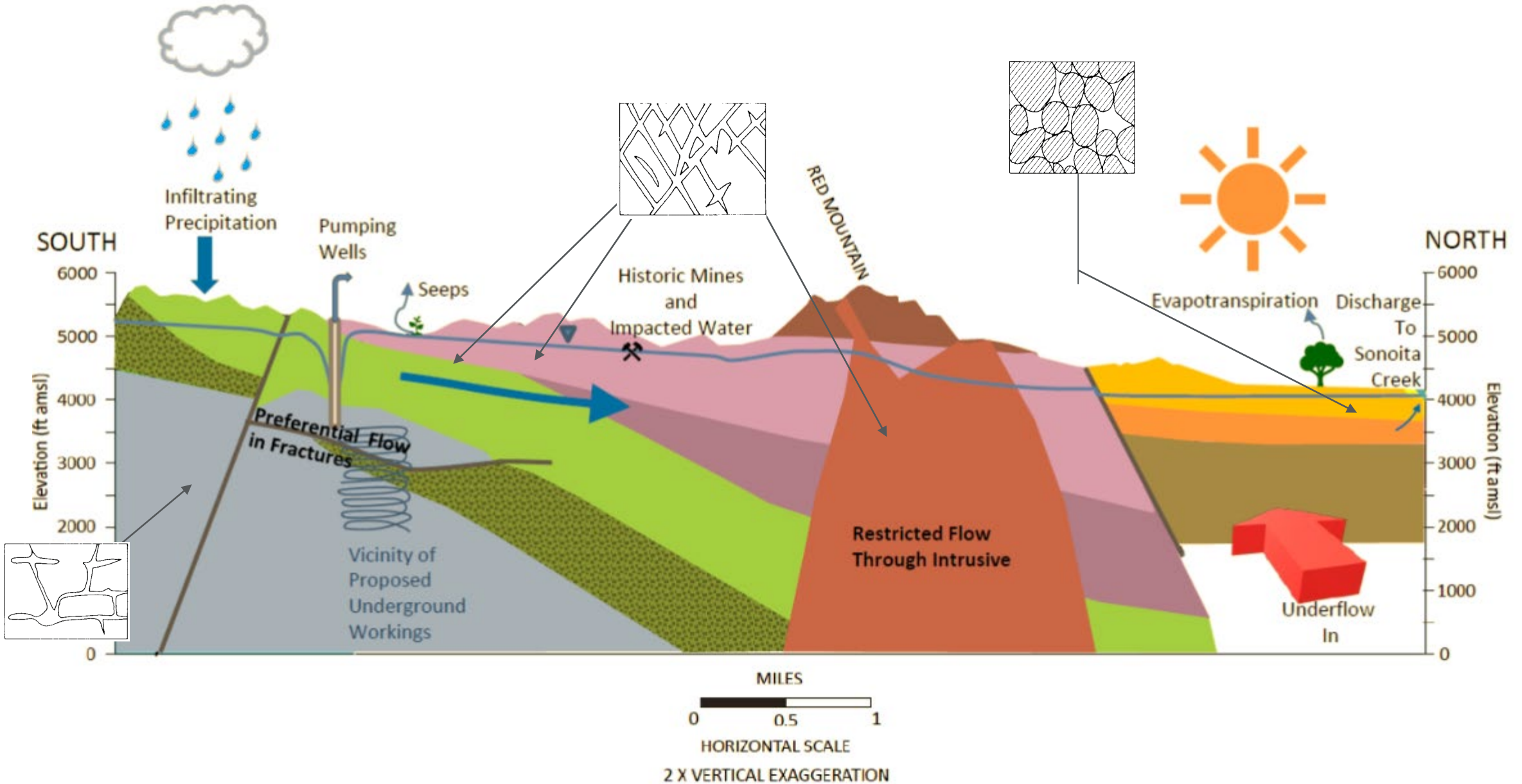
(Press and Siever, 1994)

Groundwater measurements and model boundaries

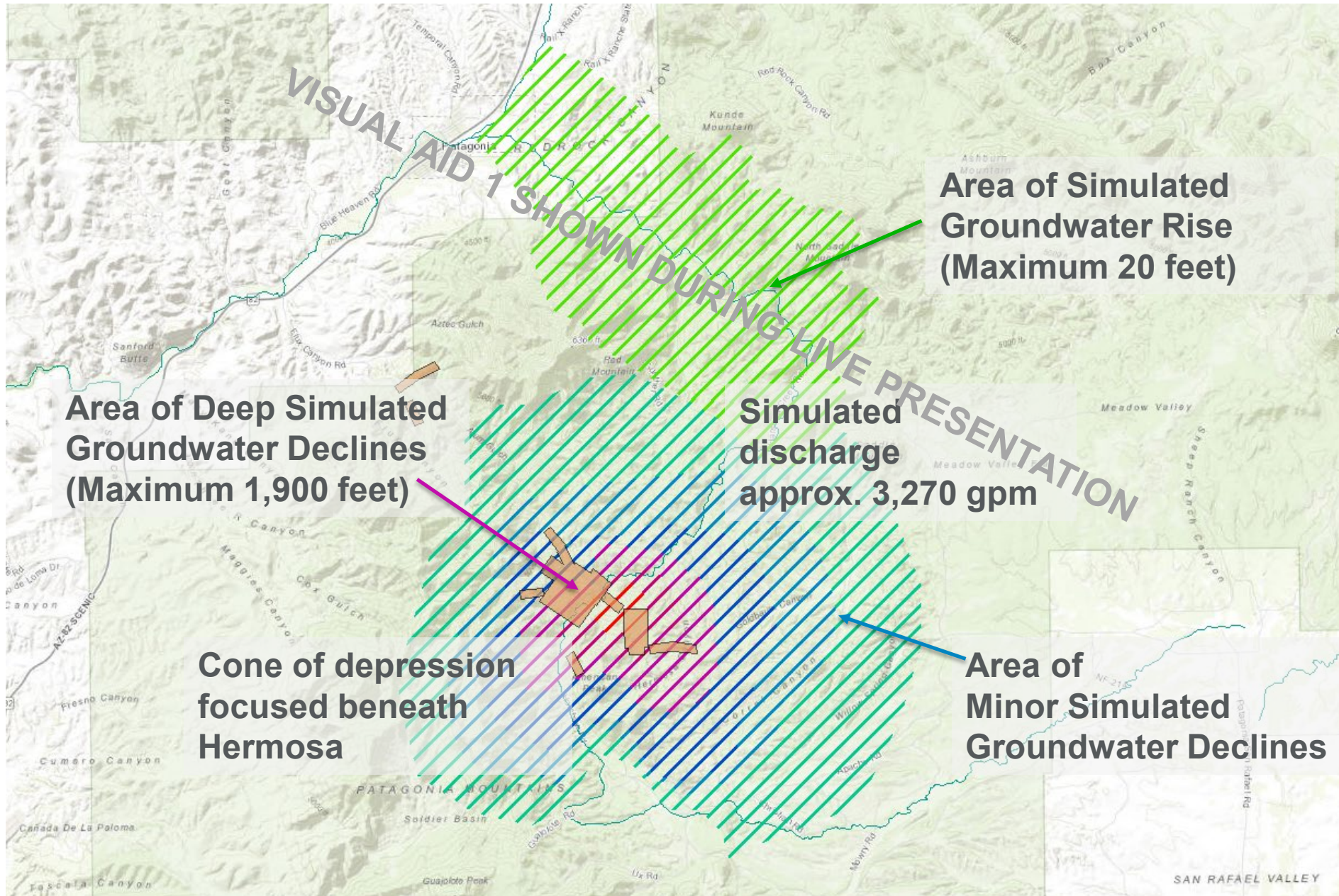


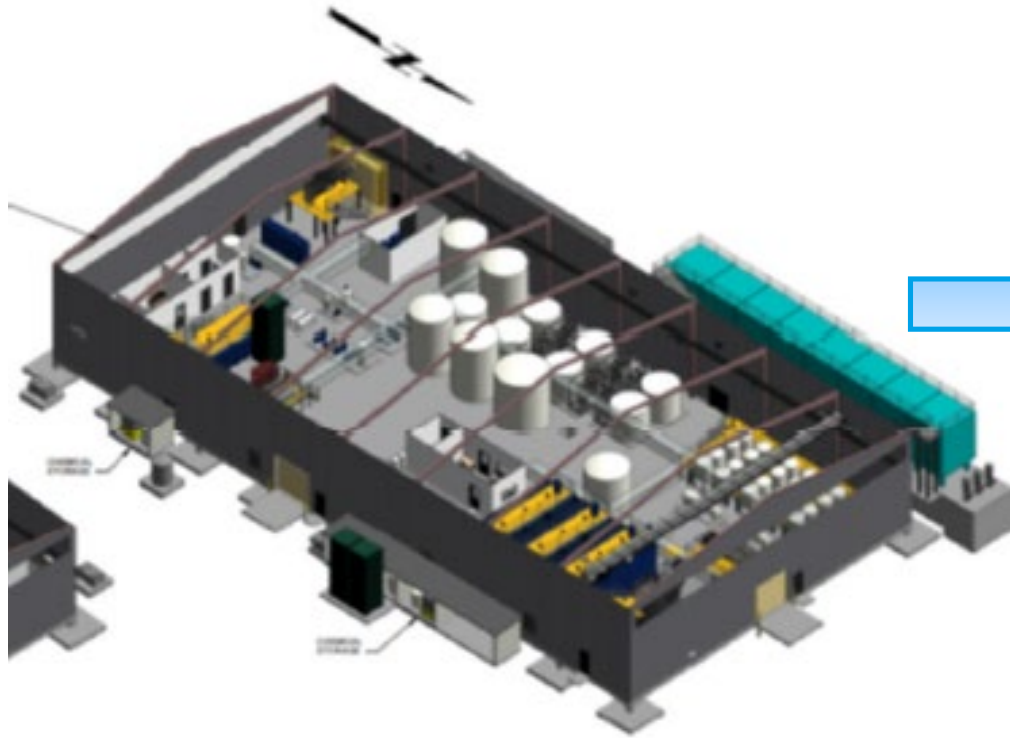
- Measured water levels indicate flow from Patagonia Mts. toward Sonoita Creek
- Groundwater is recharged at high elevations and moves towards the surrounding valleys.
- Springs have been assumed to be connected to the primary groundwater flow system
- Regions of water level data gaps on public lands surrounding Hermosa property

Conceptual geologic and groundwater flow model

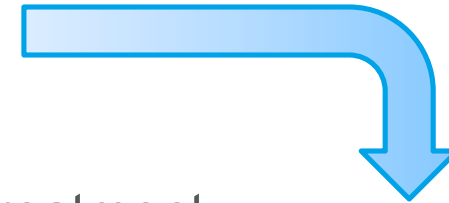
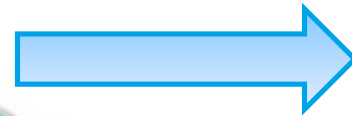


Preliminary impact simulation for advanced dewatering





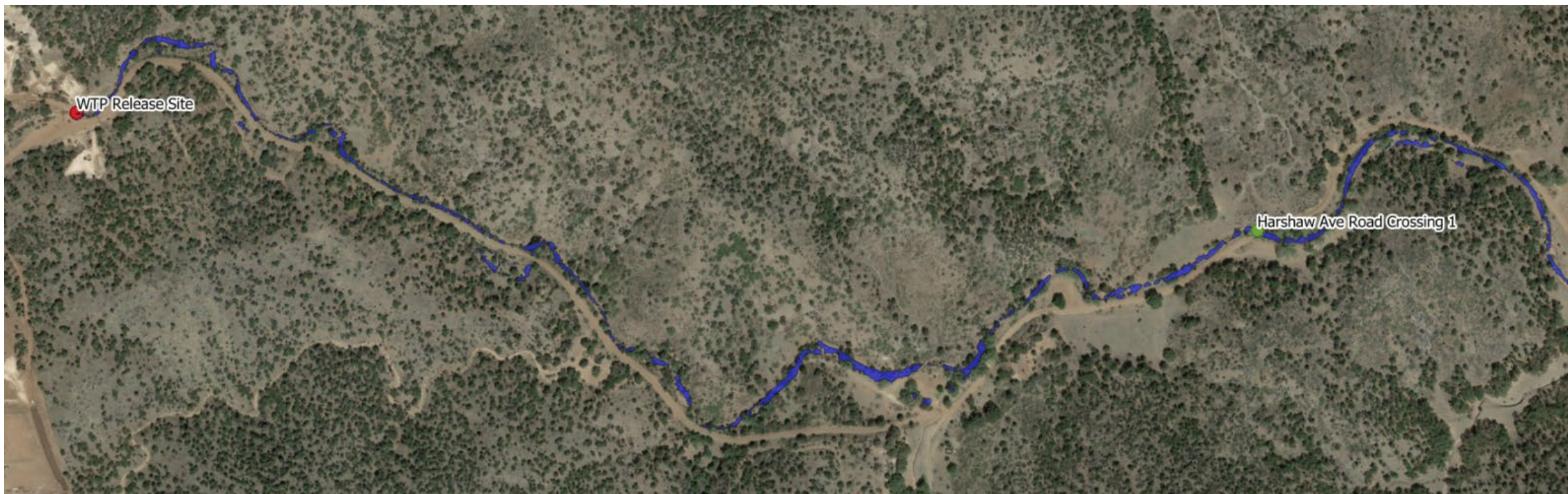
(Conceptual model)



State of the art treatment technology to meet the most stringent water quality standards



Harshaw Creek | Existing Analysis



- Riparian vegetation
- Aquatic resources
- Channel morphology
- Floodplain analysis
- Harshaw Creek road crossings
- Climate change impacts
- Monitoring and additional study

Wildlife flora and fauna surveys



Conclusions

We need to pump water in order to progress exploration at Hermosa and access the ore body, treat the water and then discharge into Harshaw Creek.

Ongoing studies indicate limited impacts including:

- Negligible change in the geomorphology (structure of the channel and flood plain) of Harshaw Creek
- Limited impacts to seeps and springs
- Limited biological impacts
- No adverse effects on Town's water supply

We are continuing to analyze potential longer-term effects.

We are implementing a well monitoring program for neighboring well owners.

Email [**hermosacommunity@south32.net**](mailto:hermosacommunity@south32.net)

Permit application submission

- Agency public process
- Aquifer Protection Permit (APP)
- Arizona Pollutant Discharge Elimination System (AZPDES) Permit

Continued South32 engagement

- Open house planned for September 2020
- Opportunities for technical discussion and questions