

TECHNICAL MEMORANDUM

DATE: September 14, 2018 **PROJECT #:** 605.8501

TO: Vicky Peacey, Resolution Copper

FROM: Chris Gregory and Tim Bayley

PROJECT: Proposed Skunk Camp Tailing Storage Facility

SUBJECT: TSF Alternative 6 – Skunk Camp: Life of Mine and Post-Closure Seepage Transport Modeling

Introduction

The draft environmental impact statement for the proposed Resolution Copper mine includes the following tailings storage facility (TSF) alternatives:

- Alternative 2: Near West Modified Proposed Action (Modified Centerline Embankment – “Wet”)
- Alternative 3: Near West Modified Proposed Action (High-density Thickened NPAG Scavenger Tailings and Segregated PAG Pyrite Tailings Cell – “Dry”)
- Alternative 4: Silver King Filtered
- Alternative 5: Peg Leg
- Alternative 6: Skunk Camp

At the request of Resolution Copper (RC), Montgomery & Associates (M&A) has prepared this technical memorandum to document groundwater transport modeling and results for TSF Alternative 6—Skunk Camp. The purpose of the model is to provide a tool to compare the relative impacts of seepage (rate, transit time, and quality) among the different TSF alternatives. All TSF alternatives can comply with groundwater and surface water standards, but the degree of seepage management needed among alternatives would vary (minimal/simple to extensive/complex).

The model was developed using the Contaminant Transport (CT) Module of the GoldSim simulation platform (version 12.0). The results include time series estimates of chemical constituent concentrations in groundwater immediately downstream of the TSF footprint in Dripping Spring Wash, as well as in the surface water mixing zone located at the

confluence of Dripping Spring Wash and the Gila River. The model period spans 245 years, which includes the 41-year planned Life of Mine (LOM) and an additional 204 years following closure.

It is important to note that the GoldSim model overestimates seepage because it is based on steady-state conditions at the full TSF buildout, and assumes minimum tailings seepage controls and TSF design elements necessary for geotechnical stability (M&A, 2018b). Thus, water quality predictions from the model are considered to be conservatively high. In reality, seepage is transient and builds over the LOM. Additional seepage collection controls will be incorporated into the final TSF design to comply with regulatory requirements. The TSF alternatives are located at four different sites and incorporate differing technologies, but for the purpose of comparing the alternatives, only the minimum seepage controls required for geotechnical stability were incorporated.

The GoldSim modeling provides a basis for comparison among the alternatives, but is not typically used or adequate for water quality permitting. The TSF will be required to obtain an aquifer protection permit from the Arizona Department of Environmental Quality. By regulation, every permitted facility must utilize Best Available Demonstrated Control Technology (BADCT) and demonstrate that Aquifer Water Quality Standards (AWQS) and surface water quality standards will not be exceeded at the point of compliance as a result of discharge from the facility. These requirements have not been addressed by the GoldSim model but will be incorporated into final design, construction and operation of the TSF.

This memorandum comprises the following sections:

- Conceptual Model
- GoldSim Seepage Transport Model
- Results
- Discussion and Conclusions

Conceptual Model

Site Description

The proposed Skunk Camp TSF alternative is located approximately 14 miles southeast of Superior and approximately 5 miles east-northeast of the Ray Mine in Pinal and Gila Counties, Arizona. The site is located in the Dripping Spring Wash basin, and is accessible from Arizona Highway 77. The elevation of the TSF foundation varies from approximately 3,600 feet above mean sea level (amsl) at the northwestern border to approximately 3,100 feet amsl in the southeast. The Skunk Camp study area and proposed TSF footprint are shown on **Figure 1**.

Geology

A geologic map of the Skunk Camp area that shows the proposed TSF footprint for Alternative 6 is shown on **Figure 2**. The principal geologic units within the study area, from oldest to youngest, include: older Precambrian Pinal Schist (Xp); older and younger Precambrian intrusive rocks (Xg, YXg, and Yg); younger Precambrian diabase (Yd); younger Precambrian Apache Group sedimentary rocks (Ya); Paleozoic sedimentary rocks (Pz); Cretaceous intrusive and volcanic rocks (Ki and Kv); Laramide intrusive rocks (TKg); Apache Leap Tuff (Tal); younger Tertiary volcanic rocks (Tvy); Gila Group conglomerate and sandstone (Tcg and Tss); Quaternary / Tertiary talus, colluvium, and landslide deposits (QTls); and Quaternary deposits including older alluvium (Qoa), active stream channel alluvium and low terraces (Qal), and disturbed surficial deposits (d) (Spencer and others, 1998; and Richard, 1998).

Surface Water Flows

The main drainage within the basin is Dripping Spring Wash. The primary tributaries include Stone Cabin and Skunk Camp Washes which each have numerous unnamed tributaries. The stream channels within the proposed TSF footprint are ephemeral. Water flowing through the basin ultimately discharges into the Gila River.

Seven springs were located outside of the proposed TSF footprint during reconnaissance investigations in the Skunk Camp area. Descriptions and photographs of the springs are provided in the site reconnaissance report (M&A, 2018a).

In order to model mixing of water in Dripping Spring Wash and the Gila River, the median flow rate of the Gila River at the confluence with Dripping Spring Wash was estimated using flow rate measurements from U.S. Geological Survey (USGS) Gaging Station 9469500 – Coolidge Dam, located 18 miles upstream from the confluence, and from USGS Gaging Station 9474000 – Kelvin, located 25 miles downstream from the confluence. Daily flow rates were compiled for the 50-year period beginning January 1, 1968 and ending January 1, 2018. Median flow rates were calculated from daily measurements at both stations and are given in the table below. The median flow rate of the Gila River at the confluence with Dripping Spring Wash was estimated as a spatially weighted average based on distance from each station, and average flow contributions of Dripping Spring Wash into the Gila River.

Gila River Location	Median Flow	
	(cfs ¹)	(af/yr ²)
USGS Station 9469500 – Coolidge Dam	252	182,400
USGS Station 9474000 – Kelvin	303	219,400
Dripping Spring Wash Outlet ³	231	197,100

¹ cfs = cubic feet per second

² af/yr = acre-feet per year

³ median flow interpolated from USGS station data

Groundwater Flow

The major aquifers in the Skunk Camp study area include active stream channel alluvium and Gila conglomerate. The active stream channel alluvium (mostly sand and silt) is the principal water-producing unit (ADWR, 2009). Because these alluvial channels are the primary conduits for groundwater flow, the Skunk Camp seepage transport model only considers groundwater transport through the active stream channel alluvium.

The direction of groundwater movement is from northwest to southeast. The lateral hydraulic gradient, estimated from water levels in available wells, ranges from approximately 0.021 to 0.024 feet per foot along Dripping Spring Wash (M&A, 2018a). All seepage generated from the proposed TSF is expected to be directed into Dripping Spring Wash and to flow southeast before discharging into the Gila River.

Tailings Storage Facility - Alternative 6

The proposed Skunk Camp TSF includes two cycloned sand embankments that separately store the scavenger tailings and pyrite tailings. Uncycloned scavenger tailings and cyclone overflow would be stored behind the main embankment. The pyrite tailings would be subaqueously deposited behind a second embankment, upstream from the main embankment and scavenger tailings. The pyrite tailings cell would include engineered, low-permeability layers to minimize seepage and maintain a water cover to prevent oxidation of the pyrite tailings. A more complete description of the Alternative 6 tailings design is described by Klohn Crippen Berger (KCB, 2018).

GoldSim Seepage Transport Model

Contaminant Transport Module

The CT Module extension of GoldSim is a mass transport model, not a flow model. As such, it does not directly solve for the movement of water through the modeled environmental system (GoldSim, 2017). The CT Module relies on user-specified flow rates for all flows into and out of aquifers, and therefore the velocity at which water moves through the media depends on the flow rates and volume of the available pore space in the aquifer pathways.

The CT Module has been used to develop an advection-dispersion mass flux model with mixing of inflow and outflow components to estimate the transport of chemical constituents through time. Mechanical dispersion of the constituents occurs as a function of the porosity and tortuosity of the aquifer, and the dispersivity values specified in the model. The dispersivity values assigned to aquifer element pathways were estimated as 10% of aquifer subdomain length based on Gelhar and others (1992).

Model Domain

The model domain is defined by a series of five alluvial aquifer subdomains, as shown on **Figure 3**. Seepage from the TSF enters the uppermost subdomain within Dripping Spring Wash immediately downstream of the TSF footprint. Water flowing through the uppermost aquifer subdomain, Dripping Spring 1, continues sequentially through four additional downgradient subdomains before reaching the last subdomain in the wash, Dripping Spring 5. Discharge from Dripping Spring 5 and from the subdomain representing flow from the Gila River combine in a final model subdomain, where constituent concentrations are monitored through time. All water flow from Dripping Spring Wash and the Gila River terminates in a sink pathway cell within the final model subdomain.

The five alluvial aquifer subdomains have unique geometries; the areas, lengths, and average widths were estimated based on polygon areas for the alluvium using ArcGIS. Cross-sectional areas and saturated thicknesses of the aquifer subdomains were estimated based on Darcy's Law. Calculations were made using the average flow rate through the subdomains, and an assumed hydraulic conductivity of 500 feet per day for Dripping Spring Wash alluvium, based on estimates developed for Near West tributaries (M&A, 2017). The dimensions of the aquifer subdomains used in the seepage transport model are given in **Table 1**.

Materials and Parameters

Water

The GoldSim CT Module requires properties for a reference fluid and the flow medium for models. The reference fluid was specified as water, with a diffusivity of 1E-9 meters squared per second. For the seepage transport model, the diffusivity reduction formula, relative diffusivities, and solubility input parameters did not apply as the media was fully saturated and the constituent concentrations did not approach solubility limits.

Alluvium

The medium in the model was native alluvium, with an assumed advective porosity of 0.15 and a dry (bulk) density of 2,000 kilograms per cubic meter based on reference estimates (Sharma, 1997). The tortuosity was estimated as the cube root of the porosity, with a value of 0.53 (GoldSim, 2017). No partition coefficients were specified as it was assumed that the transport of constituents was conservative (i.e. constituents do not sorb onto the alluvium).

Water Budget

Water enters the aquifer subdomains as recharge, groundwater underflow, and seepage from the TSF impoundment. Water exits the aquifer subdomains as groundwater evapotranspiration (GET), pumping withdrawals from local wells, as flow passing into the next downgradient aquifer subdomain, and as discharge to the Gila River.

Descriptions of aquifer inflows and outflows are presented below. Water budget components modeled during LOM and post-closure periods are given in **Tables 2 and 3**, respectively.

Inflows

Recharge

Recharge includes inflow from precipitation occurring within aquifer subbasins. Estimates of recharge for model subbasins were based on the average annual recharge for the Dripping Spring model domain, which encompasses all of the area that is upgradient of the lower reach of the Dripping Spring Wash. The method developed by Anderson and others (1992) was used to estimate recharge based on estimates of precipitation. Average annual precipitation was estimated using 30-year normal precipitation data (1980 – 2010) from the PRISM Model (PRISM Climate Group, 2017).

The total recharge for the Dripping Spring model domain was allocated to model subbasins based on the fractional area of each subbasin within the model domain. Once allocated,

recharge within each subbasin was then subdivided into focused recharge—identified simply as “recharge” within the model—and diffuse recharge classified as groundwater underflow in the model. The model assumed 75% of recharge to be focused recharge and 25% to be diffuse recharge based on estimates provided by Meixner and others (2016). Recharge estimates for the aquifer subdomains are given in **Tables 2 and 3**.

Groundwater Underflow

Groundwater underflow includes inflow to aquifer subdomains from the movement of groundwater originating from upstream portions of aquifer subbasins. As indicated in *Recharge* above, the seepage transport model assumed 25% of total recharge to be contributions to groundwater underflow. Estimates of groundwater underflows are shown in **Tables 2 and 3**.

TSF Seepage

The rates of TSF seepage entering Dripping Spring Wash were based on values reported in the design report for Skunk Camp (KCB, 2018). The TSF seepage estimates used in the model for LOM and post-closure are included in **Tables 2 and 3**, and are summarized below.

Aquifer Subdomain	Period	<i>TSF Alternative 6</i>	
		Seepage (af/yr ¹)	Seepage (gpm ²)
Dripping Spring 1	Life of Mine	661	410
	Post-Closure	258	160

¹ af/yr = acre-feet per year

² gpm = gallons per minute

Outflows

Groundwater Evapotranspiration

GET includes outflow from aquifer subdomains due to evaporation and transpiration. GET rates were estimated using the Normalized Difference Vegetation Index (NDVI) for satellite imagery datasets for the Skunk Camp study area. NDVI values range from 0 to 1.0, with higher values indicating the presence of healthy dense vegetation. Because Dripping Spring Wash is ephemeral, it is assumed that any actively photosynthesizing vegetation during dry periods of the year would get water needed for growth from groundwater sources.

A NDVI dataset from June 25, 2015, when cloud cover was absent, was evaluated to determine likely areas of GET, and the total annual rate of GET within the model domain was estimated. Annual GET rates for each aquifer subdomain were then calculated based on the fractional areas of each subdomain basin within the larger model domain. Estimates of GET for individual subdomains are shown in **Tables 2 and 3**.

Groundwater Withdrawals

Groundwater withdrawals by local well owners are not believed to be a significant component of the Dripping Spring Wash water budget. Review of Arizona Department of Water Resources well registry database indicates that there are approximately 107 exempt registered wells and 39 non-exempt registered wells which may represent a withdrawal rate of approximately 90 acre-feet per year (af/yr), if user rates of 0.5 af/yr and 1.0 af/yr are assumed for exempt and non-exempt wells, respectively. However, it is believed that most of the 90 af/yr returns to the groundwater system through septic tanks or is included in GET estimates; therefore, a separate water budget component for withdrawals was not included in the model.

Outflow to Downstream Aquifer Subdomain

After GET is removed from each aquifer subdomain, the remaining water flows into the next adjacent subdomain located immediately downstream. The flow direction between aquifer subdomains is indicated by blue arrows on **Figure 3**.

Outflow from upstream subdomains becomes inflow to the downstream subdomains. Water discharging from the last aquifer subdomain in Dripping Spring Wash mixes with the water in the Gila River before terminating in a sink pathway cell. The flow rate of water passing through the Gila River was based on the estimated median daily flow for the 50-year period of record from 1968 to 2018. Using the median flow rate of the Gila River instead of the average flow rate is a conservative approach, as the average flow is influenced by larger flow events while the median flow is not. The outflow values used for the model subdomains are given in **Tables 2 and 3**.

Timing of Seepage Transit from TSF to Model Domain

The Alternative 6 footprint directly overlies Dripping Spring Wash alluvium, and is adjacent to the Dripping Spring 1 subdomain. The time required for seepage leaving the tailings footprint to enter the model domain is minimal, and therefore no transit delay was incorporated into the model.

Chemical Constituents

A total of 30 chemical constituents were included in process circuit and embankment oxidation chemistry models developed for LOM and post-closure years (Enchemica, 2018 and Rio Tinto, 2018). All of the constituents were included in the seepage transport model. The constituents include common and trace metals, as well as bicarbonate, nitrate-N, sulfate and total dissolved solids, and are given in **Table 4**.

Concentration and Mass Flux of Constituents

The CT Module requires mass and flow inputs in order to simulate the movement of constituent mass through the model domain. Constituent concentrations can be monitored at discreet locations through time based on the amount of fluid (water) and constituent mass at the monitoring location.

In order to simplify the modeling approach, the seepage transport model for Alternative 6 assumed a mass flux of zero milligrams per day from all natural waters—i.e. meteoric precipitation and groundwater. In addition, zero mass flux was assigned to flow from the Gila River. The only mass flux included in the model was derived from tailings seepage, which was based on estimated seepage rates from the TSF engineering design (KCB, 2018) as well as the tailings chemistry models developed for LOM and post-closure years (Enchemica, 2018 and Rio Tinto, 2018).

Tailings seepage concentrations for LOM years were based on a tailings circuit predictive model for the TSF during mine operations (Enchemica, 2018). Tailings concentrations for post-closure years were based on a combination of the tailings circuit predictive model and base case embankment oxidation modeling (Rio Tinto, 2018) developed to simulate chemical weathering processes following mine closure and during draindown of tailings water. In order to calculate tailings concentrations during post-closure, the result of the process circuit model at the end of LOM (year 41) was multiplied by the estimated seepage rate in the tailings beach areas, and the chemistry of the embankment oxidation model (years 42 through 245) was multiplied by the estimated seepage rate in the tailings embankment areas; the products were added together to determine the daily mass input rate into the seepage transport model.

The seepage rates of the beach and embankment areas during post-closure were estimated by dividing the total post-closure tailings seepage rate (KCB, 2018) by the weighted averages of the beach and embankment areas multiplied by estimated recharge rates for each of the areas. The estimated recharge rates due to precipitation for the PAG, NPAG and embankment tailings areas during post-closure were estimated to be 1%, 2% and 7%, respectively.

The constituent concentrations of TSF seepage during the 245-year model period are given in **Table 4**. The mass flux of each constituent entering Dripping Spring Wash was calculated by multiplying the constituent concentrations shown in **Table 4** by the estimated seepage rates during LOM and post-closure (see *TSF Seepage*, and **Tables 2 and 3**).

Model Simulation Settings

The model was designed to simulate 245 years after the start of mining, which includes the 41 years of planned LOM and 204 additional years following closure. Basic time steps of 0.1 years (36.525 days) were used for model calculations, with reporting steps of 1 year. All aquifer subdomain elements were given the maximum number of cell divisions (100 cells) in order to minimize numerical dispersion in model calculations.

Conservative Assumptions

The modeling approach included conservative assumptions about the Gila River flow rate that may overestimate actual constituent concentrations or the number of years that constituent concentrations are above water quality standards. The estimated Gila River flow rate at the Dripping Spring Wash confluence is based on median flow conditions. Average flow includes periods of higher flow associated with rainfall events, which would be expected to further reduce TSF seepage concentrations observed at the Gila River. Predicted constituent concentrations provided in this memorandum should not be considered definitive, and contribute more value in relative (comparative) rather than absolute terms.

Results

Modeled Constituent Concentrations

Modeled constituent concentrations in groundwater immediately downstream of the TSF were monitored in the Dripping Spring 1 subdomain. The results—which show the contributions to solute concentrations from TSF seepage, and do not include background concentrations of local groundwater—are given in **Table 5**. Following mixing and transport in the model, constituent concentrations immediately downstream from the TSF decrease from tailings concentrations by approximately 50.5% during the LOM, and by approximately 72.3% during post-closure (**Tables 4 and 5**).

The modeled constituent concentrations at the Gila River, following mixing with discharge from the Dripping Spring Wash confluence, are provided in **Table 6**. Following transport and mixing in the model, constituent concentrations decrease from initial tailings

concentrations by approximately 99.8% during the LOM and 99.9% following closure (**Tables 4 and 6**).

Comparison to Water Quality Standards

Modeled concentrations are compared to promulgated water quality standards to provide an indication of potential chemical constituents of concern and to assess the relative performance of different TSF alternatives. Model results are useful indicators for comparative purposes, but are not considered definitive or final.

Water quality standards for the Dripping Spring 1 subdomain are the Arizona Department of Environmental Quality (ADEQ) Numeric Aquifer Water Quality Standards (AWQS) (ADEQ, 2016). Water quality standards for the Gila River reach near the confluence with Dripping Spring Wash are the ADEQ Numeric Surface Water Quality Standards for the aquatic and wildlife warm (A&Ww [chronic]) designation (ADEQ, 2016), which are the most restrictive standards that apply to the Gila River. Five of the modeled constituents—cadmium, copper, lead, nickel, and zinc—have surface water standards that are hardness dependent and were calculated by using the lowest available hardness value recorded at ADEQ site 21ARIZ-101652, located along the Gila River downstream from Dripping Spring Wash (220 milligrams per liter CaCO₃ on 5/21/2003). The regulatory standards for the chemical constituents are included for comparison with modeled values in **Tables 5 and 6**.

For Alternative 6, only selenium is predicted to be above AWQS at Dripping Spring 1 during part of the LOM (see values in bold italics in **Table 5**). None of the modeled constituent concentrations at the Gila River are predicted to be above applicable SWQS during modeled years (**Table 6**).

Discussion and Conclusions

The models provide a tool to compare the relative impacts of seepage (rate, transit time, and quality) among the different TSF alternatives. The model results indicate that after mixing with natural waters and accounting for GET, the concentrations of modeled constituents just downstream from the proposed tailings impoundment decrease from initial tailings concentrations by approximately 50.5% during LOM and 72.3% following closure. Modeled concentrations, which only account for mass flux contributions from tailings seepage, are predicted to remain below Arizona AWQS during the model period with the exception of selenium. By the time the seepage reaches the Gila River, total concentrations are predicted to decrease by approximately 99.8% during LOM and 99.9% following closure. Due to the significant dilution that occurs as water from the Dripping

Spring Wash mixes with the Gila River, no applicable SWQS at the Gila River are predicted to be exceeded.

The transport seepage models include conservative assumptions and are expected to overestimate actual constituent concentrations. In the case of Alternative 6, the estimated Gila River flow rate at the Dripping Spring Wash confluence is based on median flow conditions. Average flow conditions, which are influenced by periods of higher flow associated with rainfall events, would be expected to further reduce concentrations observed at the Gila River.

References

Anderson, T.W., G.W. Freethy, and P. Tucci, 1992, Geohydrology and Water Resources of Alluvial Basins in South-Central Arizona and Parts of Adjacent States: U.S. Geological Survey, Professional Paper 1406-B, 1992.

Arizona Department of Environmental Quality, 2016, Arizona Department of Environmental Quality – Water Quality Standards Supplement 16-4, Arizona Administrative Code: Title 18, Ch. 11, Dec. 31, 2016.

Arizona Department of Water Resources, 2009, Arizona Water Atlas, Volume 3, southeastern Arizona planning area, June 2009.

Enchemica, LLC, 2018, Alternative 6 – Skunk Camp Optimized: Prediction of Operational Tailings Circuit Solute Chemistry: Technical Memorandum Draft prepared for Resolution Copper Mining LLC, August 14, 2018.

Gelhar, L.W., Welty, C., and Rehfeldt, K.R., 1992, A critical review of data on field-scale dispersion in aquifers. Water Resources Research: 28(7), pp. 1955–1974, 1992.

GoldSim Technology Group LLC, 2017, User's Guide: GoldSim Contaminant Transport Module, Version 12.0, February 2017.

Klohn Crippen Berger Ltd. , 2018, Resolution Copper Project - DEIS Design for Alternative 6 – Skunk Camp: Technical Memorandum prepared for Resolution Copper Mining LLC, August, 2018.

Meixner, T., A. Manning, D. Stonestrom, D. Allen, H. Ajami, K. Blasch, A. Brookfeld, C. Castro, J. Clark, D. Gochis, A. Flint, K. Neff, R. Niraula, M. Rodell, B. Scanlon, K. Singha, and M. Walvoord, 2016, Implications of Projected Climate Change for Groundwater Recharge in the Western United States: Journal of Hydrology, vol. 534, pp. 124-138.

Montgomery & Associates, 2017, Hydrogeologic Test Well DS17-17 Aquifer Test:
Technical Memorandum prepared for Resolution Copper Mining LLC,
December 4, 2017.

_____, 2018a, Results of Site Reconnaissance: Technical Memorandum prepared for
Resolution Copper Mining LLC, July 20, 2018.

_____, 2018b, TSF Alternatives 2 and 3 Seepage Transport Modeling: Technical
Memorandum prepared for Resolution Copper Mining LLC, August 24, 2018.

PRISM Climate Group, September 2017, Oregon State
University: <http://prism.oregonstate.edu/explorer/>

Richard, S.M. (compiler), 1998, Geologic map of portions of the Globe 30' X 60'
quadrangle, Arizona: Arizona Geological Survey, digital map DI-13, Version 1.0,
1998.

Rio Tinto, 2018, Prediction of Tailings Seepage Water Chemistry Influenced by Tailings
Weathering Processes: Technical Memorandum Draft prepared for Resolution
Copper Mining LLC, July 29, 2018.

Sharma, P.V., 1997, Environmental and Engineering Geophysics: Cambridge University
Press, Cambridge, 1997.

Spencer, J.E., Richard, S.M., and Pearthree, P.A. (compilers), 1998, Geologic map of the
Mesa 30' x 60' quadrangle, east-central Arizona: Arizona Geological Survey,
digital map DI-11, Version 1.0, September 1998.

Table 1. Dimensions of Aquifer Subdomains

Aquifer Subdomain	Length (ft)	Area ^a (ft ²)	Average Width ^b (ft)	Saturated Thickness ^c (ft)	Cross Sectional Area ^c (ft ²)
Dripping Springs 1	15,400	15,977,900	1,040	11.0	11,500
Dripping Springs 2	11,200	23,192,700	2,070	7.2	14,900
Dripping Springs 3	10,000	20,060,700	2,010	10.5	21,100
Dripping Springs 4	12,200	26,001,800	2,130	15.4	32,900
Dripping Springs 5	17,200	27,462,500	1,600	28.2	45,100

Notes:

^a Calculated based on polygon area of each subdomain in ArcGIS

^b Calculated by dividing aquifer polygon area by width

^c Based on Darcy's Law using the average flow rate through the subdomain during Life of Mine

Table 2. Water Budget Components: Life of Mine

Aquifer Subdomain	INFLOW		OUTFLOW	
	Source	af/yr	Source	af/yr
Dripping Springs 1	Recharge	507	Groundwater Evapotranspiration (GET)	220
	Underflow	169	Discharge to Dripping Springs 2	1,117
	TSF Seepage during Life of Mine (LOM)	661		
Dripping Springs 2	Recharge	122	Groundwater Evapotranspiration (GET)	53
	Underflow	41	Discharge to Dripping Springs 3	1,226
	Discharge from Dripping Springs 1	1,117		
Dripping Springs 3	Recharge	73	Groundwater Evapotranspiration (GET)	32
	Underflow	24	Discharge to Dripping Springs 4	1,292
	Discharge from Dripping Springs 2	1,226		
Dripping Springs 4	Recharge	651	Groundwater Evapotranspiration (GET)	283
	Underflow	217	Discharge to Dripping Springs 5	1,877
	Discharge from Dripping Springs 3	1,292		
Dripping Springs 5	Recharge	327	Groundwater Evapotranspiration (GET)	142
	Underflow	109	Discharge to MIX	2,171
	Discharge from Dripping Springs 4	1,877		
Gila River			Discharge to MIX	197,100
MIX	Discharge from Dripping Springs 5	2,171		
	Discharge from Gila River	197,100	Terminal Sink	199,271

Notes:

1. TSF seepage estimate during Life of Mine based on DEIS engineering design report (KCB, 2018a,b)
2. af/yr = acre-feet per year

Table 3. Water Budget Components: Post-Closure

Aquifer Subdomain	INFLOW		OUTFLOW	
	Source	af/yr	Source	af/yr
Dripping Springs 1	Recharge	507	Groundwater Evapotranspiration (GET)	220
	Underflow	169	Discharge to Dripping Springs 2	714
	TSF Seepage during Post-Closure	258		
Dripping Springs 2	Recharge	122	Groundwater Evapotranspiration (GET)	53
	Underflow	41	Discharge to Dripping Springs 3	823
	Discharge from Dripping Springs 1	714		
Dripping Springs 3	Recharge	73	Groundwater Evapotranspiration (GET)	32
	Underflow	24	Discharge to Dripping Springs 4	889
	Discharge from Dripping Springs 2	823		
Dripping Springs 4	Recharge	651	Groundwater Evapotranspiration (GET)	283
	Underflow	217	Discharge to Dripping Springs 5	1,474
	Discharge from Dripping Springs 3	889		
Dripping Springs 5	Recharge	327	Groundwater Evapotranspiration (GET)	142
	Underflow	109	Discharge to MIX	1,768
	Discharge from Dripping Springs 4	1,474		
Gila River			Discharge to MIX	197,100
MIX	Discharge from Dripping Springs 5	1,768		
	Discharge from Gila River	197,100	Terminal Sink	198,868

Notes:

1. TSF seepage estimate during Post-Closure based on DEIS engineering design report (KCB, 2018a,b)
2. af/yr = acre-feet per year

Table 4. Tailings Seepage Concentrations - Alternative 6

Years since Mine Start	Al mg/L	Sb mg/L	As mg/L	Ba mg/L	Be mg/L	HCO3 mg/L	B mg/L	Cd mg/L	Ca mg/L	Cl mg/L	Cr mg/L	Co mg/L	Cu mg/L	F mg/L	Fe mg/L	Pb mg/L	Mg mg/L	Mn mg/L	Mo mg/L	Ni mg/L	NO3-N mg/L	K mg/L	Se mg/L	Si mg/L	Ag mg/L	Na mg/L	SO4 mg/L	Tl mg/L	Zn mg/L	TDS mg/L
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
1	0.45	0.0014	0.00166	0.017	0.000021	25	0.34	0.001	210	57	0.004	0.005	0.193	2.9	0.0017	0.0005	62	0.018	0.244	0.006	1.88	82	0.027	19.0	0.004	125	1001	0.0006	0.24	1575
2	0.69	0.0016	0.00100	0.017	0.000023	25	0.35	0.001	224	60	0.007	0.010	0.194	2.9	0.0017	0.0005	64	0.068	0.270	0.011	2.87	89	0.036	19.4	0.006	128	1043	0.0006	0.33	1644
3	0.81	0.0020	0.00046	0.017	0.000026	24	0.35	0.002	240	60	0.014	0.022	0.195	2.8	0.0017	0.0005	62	0.199	0.290	0.024	3.83	91	0.053	19.4	0.011	124	1069	0.0008	0.57	1686
4	0.82	0.0028	0.00025	0.017	0.000029	24	0.34	0.003	249	61	0.021	0.038	0.195	2.7	0.0017	0.0007	58	0.363	0.317	0.040	4.34	94	0.073	19.4	0.017	117	1063	0.0013	0.84	1683
5	0.83	0.0040	0.00014	0.017	0.000031	24	0.33	0.004	246	61	0.026	0.050	0.195	2.7	0.0017	0.0008	52	0.486	0.350	0.052	4.35	98	0.089	19.4	0.022	109	1019	0.0023	1.04	1626
6	0.81	0.0051	0.00008	0.017	0.000033	24	0.33	0.005	249	63	0.030	0.061	0.195	2.7	0.0017	0.0010	48	0.599	0.394	0.063	4.26	105	0.104	19.4	0.026	105	1009	0.0032	1.23	1619
7	0.80	0.0055	0.00006	0.017	0.000033	24	0.33	0.006	250	69	0.033	0.069	0.195	2.7	0.0017	0.0010	46	0.682	0.428	0.071	4.09	111	0.116	19.1	0.029	103	1002	0.0034	1.36	1622
8	0.83	0.0054	0.00004	0.017	0.000034	24	0.32	0.006	243	77	0.033	0.071	0.195	2.7	0.0017	0.0010	44	0.710	0.436	0.073	3.80	111	0.119	18.6	0.030	102	965	0.0033	1.39	1583
9	0.86	0.0052	0.00003	0.018	0.000034	24	0.31	0.006	237	83	0.034	0.072	0.195	2.7	0.0017	0.0010	43	0.725	0.439	0.074	3.59	111	0.120	18.1	0.030	102	938	0.0031	1.41	1554
10	0.88	0.0050	0.00003	0.018	0.000034	24	0.30	0.006	233	87	0.034	0.073	0.195	2.7	0.0017	0.0010	42	0.732	0.439	0.075	3.44	110	0.121	17.7	0.030	102	917	0.0029	1.41	1531
11	0.90	0.0049	0.00002	0.018	0.000034	24	0.30	0.006	230	91	0.034	0.073	0.195	2.7	0.0017	0.0010	42	0.736	0.438	0.075	3.33	110	0.122	17.4	0.031	102	902	0.0028	1.41	1514
12	0.92	0.0047	0.00002	0.018	0.000033	24	0.30	0.006	227	94	0.034	0.073	0.195	2.7	0.0017	0.0010	41	0.735	0.437	0.075	3.25	109	0.123	17.1	0.031	102	889	0.0026	1.41	1500
13	0.93	0.0046	0.00002	0.018	0.000033	25	0.30	0.006	224	96	0.034	0.073	0.195	2.8	0.0017	0.0010	41	0.732	0.435	0.075	3.19	108	0.124	16.8	0.030	103	878	0.0026	1.40	1489
14	0.95	0.0045	0.00002	0.018	0.000033	25	0.29	0.006	222	98	0.034	0.073	0.195	2.8	0.0017	0.0010	41	0.727	0.434	0.075	3.15	108	0.125	16.6	0.030	103	870	0.0025	1.39	1479
15	0.95	0.0045	0.00002	0.018	0.000032	25	0.29	0.006	222	100	0.034	0.074	0.195	2.8	0.0017	0.0010	41	0.732	0.438	0.076	3.14	108	0.127	16.6	0.031	104	870	0.0024	1.40	1483
16	0.94	0.0045	0.00001	0.018	0.000032	25	0.29	0.006	223	102	0.034	0.075	0.195	2.8	0.0017	0.0010	41	0.738	0.442	0.077	3.14	109	0.130	16.6	0.031	104	873	0.0024	1.41	1490
17	0.95	0.0045	0.00001	0.018	0.000032	25	0.29	0.006	222	102	0.034	0.075	0.195	2.8	0.0017	0.0010	40	0.735	0.440	0.077	3.10	109	0.130	16.4	0.031	104	866	0.0024	1.40	1481
18	0.96	0.0044	0.00001	0.018	0.000031	25	0.29	0.006	220	103	0.034	0.075	0.195	2.8	0.0017	0.0010	40	0.733	0.438	0.077	3.07	108	0.131	16.3	0.031	104	860	0.0023	1.40	1472
19	0.97	0.0044	0.00001	0.018	0.000031	25	0.29	0.006	219	103	0.034	0.075	0.195	2.8	0.0017	0.0010	40	0.731	0.437	0.077	3.03	108	0.131	16.2	0.031	103	854	0.0023	1.40	1465
20	0.97	0.0043	0.00001	0.018	0.000031	25	0.29	0.006	218	104	0.034	0.075	0.195	2.8	0.0017	0.0010	40	0.730	0.435	0.077	3.00	107	0.130	16.1	0.031	103	849	0.0023	1.40	1458
21	0.98	0.0043	0.00001	0.018	0.000032	25	0.29	0.006	216	104	0.034	0.074	0.194	2.8	0.0017	0.0010	40	0.727	0.433	0.076	2.98	106	0.130	15.9	0.031	103	843	0.0022	1.40	1450
22	1.00	0.0042	0.00001	0.018	0.000032	25	0.28	0.006	214	105	0.033	0.074	0.194	2.8	0.0017	0.0010	39	0.721	0.428	0.076	2.93	105</td								

Table 4. Tailings Seepage Concentrations - Alternative 6

Years since Mine Start	Al mg/L	Sb mg/L	As mg/L	Ba mg/L	Be mg/L	HCO3 mg/L	B mg/L	Cd mg/L	Ca mg/L	Cl mg/L	Cr mg/L	Co mg/L	Cu mg/L	F mg/L	Fe mg/L	Pb mg/L	Mg mg/L	Mn mg/L	Mo mg/L	Ni mg/L	NO3-N mg/L	K mg/L	Se mg/L	Si mg/L	Ag mg/L	Na mg/L	SO4 mg/L	Tl mg/L	Zn mg/L	TDS mg/L
67	0.82	0.0036	0.00030	0.016	0.000030	23	0.26	0.005	340	103	0.029	0.063	0.186	2.7	0.0015	0.0009	40	0.620	0.361	0.065	2.27	90	0.109	9.9	0.026	97	1114	0.0017	1.16	1817
68	0.82	0.0036	0.00031	0.016	0.000030	23	0.27	0.005	340	103	0.029	0.063	0.185	2.7	0.0015	0.0009	40	0.620	0.361	0.065	2.27	90	0.109	9.9	0.026	97	1114	0.0017	1.16	1817
69	0.82	0.0036	0.00032	0.016	0.000030	23	0.27	0.005	340	103	0.029	0.063	0.185	2.7	0.0015	0.0009	40	0.620	0.360	0.065	2.27	90	0.109	9.9	0.026	97	1114	0.0017	1.16	1817
70	0.82	0.0036	0.00033	0.016	0.000030	23	0.27	0.005	340	103	0.029	0.063	0.185	2.7	0.0015	0.0009	40	0.619	0.360	0.065	2.27	90	0.109	9.9	0.026	97	1115	0.0017	1.16	1817
71	0.82	0.0036	0.00034	0.016	0.000030	23	0.27	0.005	340	103	0.029	0.063	0.185	2.7	0.0015	0.0009	40	0.619	0.360	0.065	2.26	90	0.109	9.9	0.026	97	1115	0.0017	1.16	1817
72	0.82	0.0036	0.00035	0.016	0.000030	23	0.27	0.005	340	103	0.029	0.063	0.185	2.7	0.0015	0.0009	41	0.618	0.359	0.065	2.26	90	0.109	9.9	0.026	97	1115	0.0017	1.16	1817
73	0.82	0.0037	0.00037	0.016	0.000030	23	0.27	0.005	340	102	0.029	0.063	0.184	2.7	0.0015	0.0009	41	0.618	0.359	0.065	2.26	90	0.109	9.9	0.025	97	1115	0.0017	1.16	1817
74	0.82	0.0037	0.00038	0.016	0.000030	23	0.27	0.005	340	102	0.029	0.063	0.184	2.7	0.0015	0.0009	41	0.617	0.359	0.065	2.26	90	0.109	9.9	0.025	97	1116	0.0017	1.16	1817
75	0.82	0.0037	0.00039	0.016	0.000030	23	0.27	0.005	340	102	0.029	0.062	0.184	2.7	0.0015	0.0009	41	0.617	0.358	0.065	2.26	90	0.108	9.9	0.025	96	1116	0.0017	1.16	1817
76	0.82	0.0037	0.00040	0.016	0.000030	23	0.27	0.005	340	102	0.029	0.062	0.184	2.7	0.0015	0.0009	41	0.616	0.358	0.065	2.26	90	0.108	9.9	0.025	96	1116	0.0017	1.16	1817
77	0.82	0.0037	0.00041	0.016	0.000030	23	0.27	0.005	340	102	0.029	0.062	0.184	2.7	0.0015	0.0009	41	0.615	0.358	0.065	2.26	90	0.108	9.9	0.025	96	1116	0.0017	1.16	1817
78	0.82	0.0037	0.00042	0.016	0.000030	23	0.27	0.005	340	102	0.029	0.062	0.183	2.7	0.0015	0.0009	41	0.615	0.357	0.065	2.25	90	0.108	9.9	0.025	96	1117	0.0017	1.16	1817
79	0.82	0.0037	0.00044	0.016	0.000030	23	0.27	0.005	340	102	0.029	0.062	0.183	2.7	0.0015	0.0009	41	0.614	0.357	0.065	2.25	90	0.108	9.9	0.025	96	1117	0.0017	1.15	1817
80	0.82	0.0037	0.00045	0.016	0.000030	23	0.27	0.005	340	102	0.029	0.062	0.183	2.7	0.0015	0.0009	41	0.614	0.357	0.065	2.25	89	0.108	9.9	0.025	96	1117	0.0017	1.15	1817
81	0.82	0.0037	0.00046	0.016	0.000030	23	0.27	0.005	340	102	0.029	0.062	0.183	2.7	0.0015	0.0009	42	0.613	0.356	0.065	2.25	89	0.108	9.9	0.025	96	1117	0.0017	1.15	1817
82	0.82	0.0037	0.00047	0.016	0.000030	23	0.27	0.005	340	101	0.029	0.062	0.182	2.7	0.0015	0.0009	42	0.613	0.356	0.065	2.25	89	0.108	9.8	0.025	96	1118	0.0017	1.15	1817
83	0.82	0.0037	0.00049	0.016	0.000030	23	0.27	0.005	340	101	0.029	0.062	0.182	2.7	0.0015	0.0009	42	0.612	0.356	0.065	2.25	89	0.108	9.8	0.025	96	1118	0.0017	1.15	1817
84	0.82	0.0037	0.00050	0.016	0.000030	23	0.27	0.005	340	101	0.029	0.062	0.182	2.7	0.0015	0.0009	42	0.612	0.355	0.065	2.25	89	0.108	9.8	0.025	96	1118	0.0017	1.15	1817
85	0.82	0.0037	0.00051	0.016	0.000030	23	0.27	0.005	340	101	0.029	0.062	0.182	2.7	0.0015	0.0009	42	0.611	0.355	0.065	2.24	89	0.108	9.8	0.025	95	1119	0.0017	1.15	1818
86	0.82	0.0037	0.00053	0.016	0.000030	23	0.27	0.005	340	101	0.029	0.062	0.182	2.7	0.0015	0.0009	42	0.611	0.355	0.065	2.24	89	0.108	9.8	0.025	95	1119	0.0017	1.15	1818
87	0.82	0.0037	0.00054	0.016	0.000030	23	0.27	0.005	340	101	0.029	0.062	0.181	2.7	0.0015	0.0009	42	0.610	0.354	0.065	2.24	89	0.108	9.8	0.025	95	1119	0.0017	1.15	1818
88	0.82	0.0037	0.00055	0.016	0.000030	23	0.27	0.005	340	101	0.029	0.062	0.181	2.7	0.0015	0.0009	42	0.610	0.354	0.065	2.24	89	0.107	9.8	0.025	95	1119	0.0017	1.15	1818
89	0.82	0.0037	0.00057	0.016	0.000030	22	0.27	0.005	340	101	0.029	0.062	0.181	2.7	0.0015	0.0009	43	0.609	0.354	0.065	2.24	89	0.107	9.8	0.025	95	1120	0.0017	1.15	1818
90	0.82	0.0037	0.00058	0.016	0.000030	22	0.																							

Table 4. Tailings Seepage Concentrations - Alternative 6

Years since Mine Start	Al mg/L	Sb mg/L	As mg/L	Ba mg/L	Be mg/L	HCO3 mg/L	B mg/L	Cd mg/L	Ca mg/L	Cl mg/L	Cr mg/L	Co mg/L	Cu mg/L	F mg/L	Fe mg/L	Pb mg/L	Mg mg/L	Mn mg/L	Mo mg/L	Ni mg/L	NO3-N mg/L	K mg/L	Se mg/L	Si mg/L	Ag mg/L	Na mg/L	SO4 mg/L	Tl mg/L	Zn mg/L	TDS mg/L
133	0.81	0.0040	0.00115	0.015	0.000028	22	0.27	0.005	338	96	0.027	0.061	0.173	2.6	0.0014	0.0010	48	0.589	0.341	0.066	2.18	87	0.105	9.7	0.024	91	1135	0.0016	1.11	1826
134	0.81	0.0040	0.00117	0.015	0.000028	22	0.27	0.005	338	96	0.027	0.061	0.173	2.6	0.0014	0.0010	48	0.589	0.340	0.066	2.18	87	0.105	9.7	0.024	91	1135	0.0016	1.11	1826
135	0.81	0.0040	0.00118	0.015	0.000028	22	0.27	0.005	338	96	0.027	0.061	0.172	2.6	0.0014	0.0010	49	0.588	0.340	0.066	2.18	87	0.105	9.7	0.024	90	1136	0.0016	1.11	1826
136	0.81	0.0040	0.00120	0.015	0.000028	22	0.27	0.005	338	96	0.027	0.061	0.172	2.6	0.0014	0.0010	49	0.588	0.340	0.066	2.18	87	0.105	9.7	0.024	90	1136	0.0016	1.11	1827
137	0.81	0.0040	0.00121	0.015	0.000028	22	0.27	0.005	338	96	0.027	0.061	0.172	2.5	0.0014	0.0010	49	0.588	0.340	0.066	2.18	87	0.105	9.7	0.024	90	1136	0.0016	1.11	1827
138	0.81	0.0040	0.00123	0.015	0.000028	22	0.27	0.005	338	95	0.027	0.061	0.172	2.5	0.0014	0.0010	49	0.587	0.339	0.066	2.17	87	0.104	9.7	0.024	90	1137	0.0016	1.11	1827
139	0.81	0.0041	0.00124	0.015	0.000028	22	0.27	0.005	338	95	0.027	0.061	0.172	2.5	0.0014	0.0010	49	0.587	0.339	0.066	2.17	87	0.104	9.7	0.024	90	1137	0.0016	1.11	1827
140	0.81	0.0041	0.00126	0.015	0.000028	22	0.27	0.005	338	95	0.027	0.061	0.171	2.5	0.0014	0.0010	49	0.587	0.339	0.066	2.17	87	0.104	9.7	0.024	90	1138	0.0016	1.11	1828
141	0.81	0.0041	0.00128	0.015	0.000028	22	0.27	0.005	338	95	0.027	0.061	0.171	2.5	0.0014	0.0010	50	0.586	0.338	0.066	2.17	87	0.104	9.7	0.024	90	1138	0.0016	1.11	1828
142	0.81	0.0041	0.00129	0.015	0.000028	22	0.27	0.005	338	95	0.027	0.061	0.171	2.5	0.0014	0.0010	50	0.586	0.338	0.066	2.17	87	0.104	9.7	0.024	90	1139	0.0016	1.11	1829
143	0.81	0.0041	0.00131	0.015	0.000028	22	0.27	0.005	337	95	0.027	0.061	0.171	2.5	0.0014	0.0010	50	0.586	0.338	0.066	2.17	87	0.104	9.7	0.024	90	1139	0.0016	1.11	1829
144	0.81	0.0041	0.00132	0.015	0.000028	22	0.27	0.005	337	95	0.027	0.061	0.171	2.5	0.0014	0.0010	50	0.585	0.338	0.066	2.17	87	0.104	9.7	0.024	90	1140	0.0016	1.11	1829
145	0.81	0.0041	0.00134	0.015	0.000028	22	0.27	0.005	337	95	0.027	0.061	0.171	2.5	0.0014	0.0010	50	0.585	0.338	0.066	2.17	87	0.104	9.6	0.024	90	1140	0.0016	1.11	1830
146	0.81	0.0041	0.00136	0.015	0.000028	22	0.27	0.005	337	95	0.027	0.061	0.170	2.5	0.0014	0.0010	50	0.585	0.337	0.067	2.17	87	0.104	9.6	0.024	90	1141	0.0016	1.11	1830
147	0.81	0.0041	0.00137	0.015	0.000028	22	0.27	0.005	337	95	0.027	0.061	0.170	2.5	0.0014	0.0010	51	0.584	0.337	0.067	2.16	87	0.104	9.6	0.024	89	1141	0.0016	1.11	1831
148	0.81	0.0041	0.00139	0.015	0.000028	22	0.27	0.005	337	95	0.027	0.061	0.170	2.5	0.0014	0.0010	51	0.584	0.337	0.067	2.16	87	0.104	9.6	0.023	89	1142	0.0016	1.11	1831
149	0.81	0.0041	0.00141	0.015	0.000028	22	0.27	0.005	337	94	0.027	0.061	0.170	2.5	0.0014	0.0010	51	0.584	0.337	0.067	2.16	87	0.104	9.6	0.023	89	1142	0.0016	1.10	1831
150	0.81	0.0041	0.00142	0.015	0.000028	22	0.28	0.005	337	94	0.027	0.061	0.170	2.5	0.0014	0.0010	51	0.583	0.336	0.067	2.16	87	0.104	9.6	0.023	89	1143	0.0016	1.10	1832
151	0.81	0.0042	0.00144	0.015	0.000028	22	0.28	0.005	337	94	0.027	0.061	0.170	2.5	0.0014	0.0010	51	0.583	0.336	0.067	2.16	87	0.104	9.6	0.023	89	1143	0.0016	1.10	1832
152	0.81	0.0042	0.00145	0.015	0.000028	22	0.28	0.005	337	94	0.027	0.061	0.169	2.5	0.0014	0.0010	51	0.583	0.336	0.067	2.16	87	0.104	9.6	0.023	89	1144	0.0016	1.10	1833
153	0.81	0.0042	0.00147	0.015	0.000028	22	0.28	0.005	337	94	0.027	0.061	0.169	2.5	0.0014	0.0010	52	0.582	0.336	0.067	2.16	87	0.104	9.6	0.023	89	1144	0.0016	1.10	1833
154	0.81	0.0042	0.00149	0.015	0.000028	22	0.28	0.005	337	94	0.027	0.061	0.169	2.5	0.0014	0.0010	52	0.582	0.335	0.067	2.16	87	0.104	9.6	0.023	89	1145	0.0016	1.10	1834
155	0.81	0.0042	0.00151	0.015	0.000028	22	0.28	0.005	337	94	0.027	0.061	0.169	2.5	0.0014	0.0010	52	0.582	0.335	0.067	2.16	87	0.104	9.6	0.023	89	1146	0.0016	1.10	1834
156	0.81	0.0042	0.00153	0.015	0.000028	22	0																							

Table 4. Tailings Seepage Concentrations - Alternative 6

Years since Mine Start	Al mg/L	Sb mg/L	As mg/L	Ba mg/L	Be mg/L	HCO3 mg/L	B mg/L	Cd mg/L	Ca mg/L	Cl mg/L	Cr mg/L	Co mg/L	Cu mg/L	F mg/L	Fe mg/L	Pb mg/L	Mg mg/L	Mn mg/L	Mo mg/L	Ni mg/L	NO3-N mg/L	K mg/L	Se mg/L	Si mg/L	Ag mg/L	Na mg/L	SO4 mg/L	Tl mg/L	Zn mg/L	TDS mg/L
199	0.81	0.0046	0.00227	0.015	0.000027	22	0.29	0.005	335	90	0.026	0.062	0.162	2.4	0.0014	0.0011	60	0.567	0.325	0.069	2.11	86	0.102	9.5	0.022	85	1170	0.0015	1.08	1855
200	0.81	0.0046	0.00229	0.015	0.000027	22	0.29	0.005	335	90	0.026	0.062	0.161	2.4	0.0014	0.0011	60	0.566	0.325	0.069	2.11	86	0.102	9.5	0.022	85	1170	0.0015	1.08	1856
201	0.81	0.0046	0.00231	0.015	0.000027	22	0.29	0.005	334	89	0.025	0.062	0.161	2.4	0.0014	0.0011	61	0.566	0.324	0.069	2.10	86	0.102	9.5	0.022	85	1171	0.0015	1.08	1856
202	0.81	0.0046	0.00232	0.015	0.000027	22	0.29	0.005	334	89	0.025	0.062	0.161	2.4	0.0014	0.0011	61	0.566	0.324	0.069	2.10	86	0.102	9.5	0.022	85	1171	0.0015	1.08	1857
203	0.81	0.0046	0.00234	0.015	0.000027	22	0.29	0.005	334	89	0.025	0.062	0.161	2.4	0.0014	0.0011	61	0.565	0.324	0.069	2.10	86	0.102	9.5	0.022	85	1172	0.0015	1.08	1857
204	0.81	0.0047	0.00236	0.015	0.000027	22	0.29	0.005	334	89	0.025	0.062	0.161	2.4	0.0014	0.0011	61	0.565	0.324	0.069	2.10	86	0.102	9.5	0.022	84	1172	0.0015	1.08	1858
205	0.81	0.0047	0.00237	0.015	0.000027	22	0.29	0.005	334	89	0.025	0.062	0.160	2.4	0.0014	0.0011	61	0.565	0.323	0.069	2.10	86	0.102	9.5	0.022	84	1173	0.0015	1.08	1858
206	0.81	0.0047	0.00239	0.015	0.000027	22	0.29	0.005	334	89	0.025	0.062	0.160	2.4	0.0014	0.0011	61	0.564	0.323	0.069	2.10	86	0.102	9.5	0.022	84	1174	0.0015	1.08	1859
207	0.81	0.0047	0.00240	0.015	0.000027	22	0.29	0.005	334	89	0.025	0.062	0.160	2.4	0.0014	0.0011	62	0.564	0.323	0.069	2.10	86	0.102	9.5	0.022	84	1174	0.0015	1.08	1859
208	0.81	0.0047	0.00242	0.015	0.000027	22	0.29	0.005	334	89	0.025	0.062	0.160	2.4	0.0014	0.0011	62	0.564	0.323	0.069	2.10	86	0.102	9.5	0.022	84	1175	0.0015	1.08	1859
209	0.81	0.0047	0.00244	0.015	0.000026	22	0.29	0.005	334	89	0.025	0.062	0.160	2.4	0.0014	0.0011	62	0.563	0.323	0.069	2.10	86	0.102	9.5	0.022	84	1175	0.0015	1.08	1860
210	0.81	0.0047	0.00246	0.015	0.000026	22	0.29	0.005	334	89	0.025	0.062	0.160	2.4	0.0014	0.0011	62	0.563	0.322	0.070	2.09	86	0.102	9.5	0.022	84	1176	0.0015	1.08	1860
211	0.81	0.0047	0.00248	0.015	0.000026	22	0.29	0.005	334	89	0.025	0.062	0.159	2.4	0.0014	0.0011	62	0.563	0.322	0.070	2.09	86	0.102	9.5	0.022	84	1176	0.0015	1.08	1861
212	0.81	0.0047	0.00249	0.015	0.000026	22	0.29	0.005	334	88	0.025	0.062	0.159	2.4	0.0014	0.0011	63	0.562	0.322	0.070	2.09	86	0.102	9.5	0.022	84	1177	0.0015	1.08	1861
213	0.81	0.0047	0.00251	0.015	0.000026	22	0.29	0.005	334	88	0.025	0.062	0.159	2.4	0.0014	0.0011	63	0.562	0.322	0.070	2.09	86	0.102	9.5	0.022	84	1177	0.0015	1.08	1862
214	0.81	0.0047	0.00253	0.015	0.000026	22	0.29	0.005	334	88	0.025	0.062	0.159	2.4	0.0014	0.0011	63	0.562	0.321	0.070	2.09	86	0.102	9.5	0.022	84	1178	0.0015	1.07	1862
215	0.81	0.0048	0.00255	0.015	0.000026	22	0.29	0.005	334	88	0.025	0.062	0.159	2.4	0.0014	0.0011	63	0.561	0.321	0.070	2.09	86	0.102	9.5	0.022	83	1179	0.0015	1.07	1863
216	0.81	0.0048	0.00256	0.015	0.000026	22	0.29	0.005	334	88	0.025	0.062	0.159	2.4	0.0014	0.0011	63	0.561	0.321	0.070	2.09	86	0.102	9.5	0.022	83	1179	0.0015	1.07	1863
217	0.81	0.0048	0.00258	0.015	0.000026	22	0.29	0.005	334	88	0.025	0.062	0.158	2.4	0.0014	0.0011	63	0.561	0.321	0.070	2.09	86	0.102	9.4	0.022	83	1179	0.0015	1.07	1864
218	0.81	0.0048	0.00260	0.015	0.000026	22	0.29	0.005	334	88	0.025	0.062	0.158	2.3	0.0014	0.0011	64	0.560	0.320	0.070	2.09	86	0.102	9.4	0.022	83	1180	0.0015	1.07	1864
219	0.81	0.0048	0.00261	0.015	0.000026	22	0.29	0.005	334	88	0.025	0.062	0.158	2.3	0.0014	0.0011	64	0.560	0.320	0.070	2.08	86	0.102	9.4	0.022	83	1181	0.0015	1.07	1865
220	0.81	0.0048	0.00263	0.015	0.000026	22	0.29	0.005	334	88	0.025	0.062	0.158	2.3	0.0014	0.0011	64	0.559	0.320	0.070	2.08	86	0.101	9.4	0.022	83	1182	0.0015	1.07	1866
221	0.81	0.0048	0.00265	0.015	0.000026	22	0.29	0.005	333	88	0.025	0.062	0.158	2.3	0.0014	0.0011	64	0.559	0.320	0.070	2.08	86	0.101	9.4	0.022	83	1182	0.0015	1.07	1866
222	0.81	0.0048	0.00266	0.015	0.000026	22	0.29																							

Table 5. Model Results at Dripping Springs 1 Subdomain Aquifer - Alternative 6

Years since Mine Start	Al	Sb	As	Ba	Be	HCO3	B	Cd	Ca	Cl	Cr	Co	Cu	F	Fe	Pb	Mg	Mn	Mo	Ni	NO3-N	K	Se	Si	Ag	Na	SO4	Tl	Zn	TDS
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
1	0.216	0.00068	0.0008	0.0082	0.00001	12	0.164	0.0002	101.4	27.6	0.0021	0.002	0.093	1.40	0.0008	0.00024	30.1	0.009	0.118	0.003	0.91	39.6	0.013	9.1	0.0021	60.5	483	0.00028	0.116	760
2	0.336	0.00079	0.0005	0.0084	0.00001	12	0.174	0.0004	110.4	29.5	0.0036	0.005	0.096	1.44	0.0008	0.00023	31.4	0.032	0.133	0.005	1.40	43.7	0.017	9.6	0.0031	63.0	515	0.00032	0.163	812
3	0.398	0.00099	0.0002	0.0084	0.00001	12	0.174	0.0010	118.4	29.9	0.0066	0.011	0.096	1.40	0.0008	0.00026	30.7	0.096	0.143	0.011	1.87	45.0	0.026	9.6	0.0055	61.6	528	0.00039	0.275	833
4	0.406	0.00135	0.0001	0.0084	0.00001	12	0.169	0.0016	123.2	30.2	0.0101	0.018	0.096	1.36	0.0008	0.00032	28.7	0.176	0.156	0.019	2.14	46.5	0.036	9.6	0.0085	58.2	526	0.00061	0.411	833
5	0.412	0.00195	0.0001	0.0085	0.00002	12	0.164	0.0021	121.8	30.3	0.0126	0.024	0.096	1.35	0.0008	0.00041	25.9	0.238	0.172	0.025	2.15	48.4	0.043	9.6	0.0107	54.1	505	0.00111	0.511	806
6	0.401	0.00251	0.0000	0.0085	0.00002	12	0.162	0.0026	122.9	31.1	0.0147	0.030	0.097	1.34	0.0008	0.00047	24.0	0.294	0.194	0.031	2.11	51.9	0.051	9.6	0.0128	51.8	500	0.00157	0.603	802
7	0.394	0.00271	0.0000	0.0085	0.00002	12	0.161	0.0029	123.9	34.1	0.0161	0.034	0.097	1.33	0.0008	0.00050	22.9	0.336	0.211	0.035	2.03	54.9	0.057	9.5	0.0143	51.1	496	0.00168	0.669	803
8	0.409	0.00265	0.0000	0.0086	0.00002	12	0.157	0.0030	120.5	37.9	0.0165	0.035	0.097	1.34	0.0008	0.00051	21.9	0.351	0.215	0.036	1.89	55.1	0.059	9.2	0.0148	50.7	479	0.00161	0.687	784
9	0.424	0.00256	0.0000	0.0087	0.00002	12	0.153	0.0031	117.6	41.0	0.0168	0.036	0.096	1.34	0.0008	0.00052	21.3	0.358	0.217	0.037	1.78	54.9	0.060	9.0	0.0150	50.6	465	0.00152	0.695	770
10	0.436	0.00248	0.0000	0.0088	0.00002	12	0.151	0.0031	115.4	43.2	0.0168	0.036	0.096	1.35	0.0008	0.00052	20.9	0.362	0.217	0.037	1.70	54.6	0.060	8.8	0.0151	50.6	454	0.00143	0.698	758
11	0.446	0.00241	0.0000	0.0088	0.00002	12	0.149	0.0031	113.7	44.9	0.0169	0.036	0.096	1.35	0.0008	0.00051	20.6	0.364	0.217	0.037	1.65	54.2	0.060	8.6	0.0151	50.6	447	0.00137	0.698	750
12	0.454	0.00235	0.0000	0.0088	0.00002	12	0.147	0.0031	112.2	46.3	0.0168	0.036	0.096	1.36	0.0008	0.00051	20.4	0.364	0.216	0.037	1.61	53.9	0.061	8.5	0.0151	50.7	440	0.00131	0.697	743
13	0.462	0.00230	0.0000	0.0089	0.00002	12	0.146	0.0031	111.0	47.5	0.0168	0.036	0.096	1.36	0.0008	0.00050	20.2	0.362	0.215	0.037	1.58	53.6	0.061	8.3	0.0151	50.8	435	0.00127	0.693	737
14	0.469	0.00225	0.0000	0.0089	0.00002	12	0.145	0.0031	109.9	48.5	0.0167	0.036	0.096	1.37	0.0008	0.00049	20.1	0.360	0.215	0.037	1.56	53.3	0.062	8.2	0.0150	51.0	431	0.00123	0.687	732
15	0.468	0.00224	0.0000	0.0089	0.00002	12	0.145	0.0031	110.0	49.5	0.0168	0.037	0.096	1.37	0.0008	0.00048	20.1	0.362	0.216	0.037	1.55	53.6	0.063	8.2	0.0152	51.3	431	0.00121	0.690	734
16	0.465	0.00224	0.0000	0.0089	0.00002	12	0.146	0.0031	110.5	50.3	0.0169	0.037	0.096	1.36	0.0008	0.00048	20.1	0.365	0.219	0.038	1.55	54.1	0.064	8.2	0.0154	51.6	432	0.00119	0.696	737
17	0.469	0.00221	0.0000	0.0089	0.00002	12	0.145	0.0031	109.8	50.6	0.0168	0.037	0.096	1.37	0.0008	0.00047	20.0	0.364	0.218	0.038	1.54	53.8	0.064	8.1	0.0154	51.4	429	0.00117	0.694	733
18	0.474	0.00219	0.0000	0.0090	0.00002	12	0.144	0.0031	109.1	50.8	0.0167	0.037	0.096	1.37	0.0008	0.00047	19.9	0.363	0.217	0.038	1.52	53.5	0.065	8.1	0.0154	51.3	426	0.00115	0.693	729
19	0.478	0.00217	0.0000	0.0090	0.00002	12	0.143	0.0031	108.5	51.1	0.0167	0.037	0.096	1.37	0.0008	0.00047	19.8	0.362	0.216	0.038	1.50	53.2	0.065	8.0	0.0153	51.2	423	0.00113	0.693	725
20	0.482	0.00215	0.0000	0.0090	0.00002	12	0.143	0.0031	107.9	51.3	0.0167	0.037	0.096	1.37	0.0008	0.00047	19.7	0.361	0.215	0.038	1.49	53.0	0.065	8.0	0.0153	51.1	420	0.00111	0.693	722
21	0.487	0.00212	0.0000	0.0090	0.00002	12	0.142	0.0031	107.1	51.6	0.0166	0.037	0.096	1.37	0.0008	0.00048	19.6	0.360	0.214	0.038	1.47	52.7	0.064	7.9	0.0153	51.1	417	0.00110	0.691	718
22	0.496	0.00208	0.0000	0.0090	0.00002	12	0.141	0.0031	105.9	51.9	0.0165	0.036																		

Table 5. Model Results at Dripping Springs 1 Subdomain Aquifer - Alternative 6

Years since Mine Start	Al	Sb	As	Ba	Be	HCO3	B	Cd	Ca	Cl	Cr	Co	Cu	F	Fe	Pb	Mg	Mn	Mo	Ni	NO3-N	K	Se	Si	Ag	Na	SO4	Tl	Zn	TDS
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
70	0.227	0.00101	0.0001	0.0043	0.00001	6	0.073	0.0015	94.1	28.4	0.0081	0.017	0.051	0.76	0.0004	0.00025	11.2	0.171	0.100	0.018	0.63	24.9	0.030	2.7	0.0071	26.8	308	0.00047	0.321	502
71	0.226	0.00101	0.0001	0.0043	0.00001	6	0.073	0.0015	94.1	28.4	0.0081	0.017	0.051	0.76	0.0004	0.00025	11.2	0.171	0.099	0.018	0.63	24.9	0.030	2.7	0.0071	26.8	308	0.00047	0.321	502
72	0.226	0.00101	0.0001	0.0043	0.00001	6	0.073	0.0014	94.1	28.4	0.0081	0.017	0.051	0.76	0.0004	0.00025	11.2	0.171	0.099	0.018	0.63	24.9	0.030	2.7	0.0071	26.8	308	0.00047	0.321	502
73	0.226	0.00101	0.0001	0.0043	0.00001	6	0.073	0.0014	94.0	28.3	0.0081	0.017	0.051	0.75	0.0004	0.00025	11.2	0.171	0.099	0.018	0.63	24.9	0.030	2.7	0.0070	26.7	308	0.00047	0.321	502
74	0.226	0.00101	0.0001	0.0043	0.00001	6	0.073	0.0014	94.0	28.3	0.0081	0.017	0.051	0.75	0.0004	0.00025	11.3	0.171	0.099	0.018	0.62	24.8	0.030	2.7	0.0070	26.7	309	0.00047	0.320	502
75	0.226	0.00101	0.0001	0.0043	0.00001	6	0.073	0.0014	94.0	28.3	0.0081	0.017	0.051	0.75	0.0004	0.00025	11.3	0.171	0.099	0.018	0.62	24.8	0.030	2.7	0.0070	26.7	309	0.00046	0.320	502
76	0.226	0.00101	0.0001	0.0043	0.00001	6	0.073	0.0014	94.0	28.2	0.0081	0.017	0.051	0.75	0.0004	0.00026	11.3	0.170	0.099	0.018	0.62	24.8	0.030	2.7	0.0070	26.7	309	0.00046	0.320	502
77	0.226	0.00102	0.0001	0.0043	0.00001	6	0.073	0.0014	94.0	28.2	0.0080	0.017	0.051	0.75	0.0004	0.00026	11.4	0.170	0.099	0.018	0.62	24.8	0.030	2.7	0.0070	26.6	309	0.00046	0.320	502
78	0.226	0.00102	0.0001	0.0043	0.00001	6	0.073	0.0014	94.0	28.2	0.0080	0.017	0.051	0.75	0.0004	0.00026	11.4	0.170	0.099	0.018	0.62	24.8	0.030	2.7	0.0070	26.6	309	0.00046	0.319	503
79	0.226	0.00102	0.0001	0.0043	0.00001	6	0.073	0.0014	94.0	28.1	0.0080	0.017	0.051	0.75	0.0004	0.00026	11.4	0.170	0.099	0.018	0.62	24.8	0.030	2.7	0.0070	26.6	309	0.00046	0.319	503
80	0.226	0.00102	0.0001	0.0043	0.00001	6	0.073	0.0014	94.0	28.1	0.0080	0.017	0.051	0.75	0.0004	0.00026	11.5	0.170	0.099	0.018	0.62	24.7	0.030	2.7	0.0070	26.5	309	0.00046	0.319	503
81	0.226	0.00102	0.0001	0.0043	0.00001	6	0.073	0.0014	94.0	28.1	0.0080	0.017	0.051	0.75	0.0004	0.00026	11.5	0.170	0.099	0.018	0.62	24.7	0.030	2.7	0.0070	26.5	309	0.00046	0.319	503
82	0.226	0.00102	0.0001	0.0043	0.00001	6	0.073	0.0014	94.0	28.1	0.0080	0.017	0.050	0.75	0.0004	0.00026	11.5	0.170	0.098	0.018	0.62	24.7	0.030	2.7	0.0070	26.5	309	0.00046	0.318	503
83	0.226	0.00102	0.0001	0.0043	0.00001	6	0.074	0.0014	94.0	28.0	0.0080	0.017	0.050	0.75	0.0004	0.00026	11.6	0.169	0.098	0.018	0.62	24.7	0.030	2.7	0.0070	26.4	309	0.00046	0.318	503
84	0.226	0.00103	0.0001	0.0043	0.00001	6	0.074	0.0014	94.0	28.0	0.0080	0.017	0.050	0.75	0.0004	0.00026	11.6	0.169	0.098	0.018	0.62	24.7	0.030	2.7	0.0070	26.4	309	0.00046	0.318	503
85	0.226	0.00103	0.0001	0.0043	0.00001	6	0.074	0.0014	93.9	28.0	0.0080	0.017	0.050	0.74	0.0004	0.00026	11.6	0.169	0.098	0.018	0.62	24.7	0.030	2.7	0.0069	26.4	309	0.00046	0.318	503
86	0.226	0.00103	0.0001	0.0043	0.00001	6	0.074	0.0014	93.9	27.9	0.0080	0.017	0.050	0.74	0.0004	0.00026	11.7	0.169	0.098	0.018	0.62	24.7	0.030	2.7	0.0069	26.4	309	0.00046	0.318	503
87	0.226	0.00103	0.0001	0.0043	0.00001	6	0.074	0.0014	93.9	27.9	0.0079	0.017	0.050	0.74	0.0004	0.00026	11.7	0.169	0.098	0.018	0.62	24.6	0.030	2.7	0.0069	26.3	310	0.00046	0.317	503
88	0.226	0.00103	0.0002	0.0043	0.00001	6	0.074	0.0014	93.9	27.9	0.0079	0.017	0.050	0.74	0.0004	0.00026	11.7	0.169	0.098	0.018	0.62	24.6	0.030	2.7	0.0069	26.3	310	0.00046	0.317	503
89	0.226	0.00103	0.0002	0.0043	0.00001	6	0.074	0.0014	93.9	27.8	0.0079	0.017	0.050	0.74	0.0004	0.00026	11.8	0.169	0.098	0.018	0.62	24.6	0.030	2.7	0.0069	26.3	310	0.00046	0.317	503
90	0.226	0.00104	0.0002	0.0043	0.00001	6	0.074	0.0014	93.9	27.8	0.0079	0.017	0.050	0.74	0.0004	0.00026	11.8	0.168	0.098	0.018	0.62	24.6	0.030	2.7	0.0069	26.2	310	0.00046	0.317	503
91	0.226	0.00104	0.0002	0.0043	0.00001	6	0.074	0.0014	93.9	27.8	0.0079	0.017	0.050	0.74	0.0004	0.000														

Table 5. Model Results at Dripping Springs 1 Subdomain Aquifer - Alternative 6

Years since Mine Start	Al	Sb	As	Ba	Be	HCO3	B	Cd	Ca	Cl	Cr	Co	Cu	F	Fe	Pb	Mg	Mn	Mo	Ni	NO3-N	K	Se	Si	Ag	Na	SO4	Tl	Zn	TDS
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
139	0.224	0.00112	0.0003	0.0042	0.00001	6	0.075	0.0014	93.4	26.4	0.0075	0.017	0.047	0.70	0.0004	0.00027	13.6	0.162	0.094	0.018	0.60	24.1	0.029	2.7	0.0066	24.9	315	0.00044	0.307	505
140	0.224	0.00112	0.0003	0.0042	0.00001	6	0.075	0.0014	93.4	26.3	0.0075	0.017	0.047	0.70	0.0004	0.00027	13.7	0.162	0.094	0.018	0.60	24.1	0.029	2.7	0.0065	24.9	315	0.00043	0.307	506
141	0.224	0.00113	0.0004	0.0042	0.00001	6	0.076	0.0014	93.4	26.3	0.0075	0.017	0.047	0.70	0.0004	0.00027	13.7	0.162	0.094	0.018	0.60	24.1	0.029	2.7	0.0065	24.9	315	0.00043	0.307	506
142	0.224	0.00113	0.0004	0.0042	0.00001	6	0.076	0.0014	93.3	26.3	0.0075	0.017	0.047	0.70	0.0004	0.00027	13.7	0.162	0.094	0.018	0.60	24.1	0.029	2.7	0.0065	24.9	315	0.00043	0.306	506
143	0.224	0.00113	0.0004	0.0042	0.00001	6	0.076	0.0014	93.3	26.3	0.0075	0.017	0.047	0.70	0.0004	0.00027	13.8	0.162	0.093	0.018	0.60	24.1	0.029	2.7	0.0065	24.8	315	0.00043	0.306	506
144	0.224	0.00113	0.0004	0.0042	0.00001	6	0.076	0.0014	93.3	26.2	0.0075	0.017	0.047	0.70	0.0004	0.00027	13.8	0.162	0.093	0.018	0.60	24.1	0.029	2.7	0.0065	24.8	315	0.00043	0.306	506
145	0.224	0.00113	0.0004	0.0042	0.00001	6	0.076	0.0014	93.3	26.2	0.0075	0.017	0.047	0.70	0.0004	0.00027	13.9	0.162	0.093	0.018	0.60	24.1	0.029	2.7	0.0065	24.8	315	0.00043	0.306	506
146	0.224	0.00114	0.0004	0.0042	0.00001	6	0.076	0.0014	93.3	26.2	0.0075	0.017	0.047	0.70	0.0004	0.00027	13.9	0.162	0.093	0.018	0.60	24.0	0.029	2.7	0.0065	24.8	316	0.00043	0.306	506
147	0.224	0.00114	0.0004	0.0042	0.00001	6	0.076	0.0014	93.3	26.2	0.0075	0.017	0.047	0.70	0.0004	0.00027	14.0	0.162	0.093	0.018	0.60	24.0	0.029	2.7	0.0065	24.7	316	0.00043	0.306	506
148	0.224	0.00114	0.0004	0.0042	0.00001	6	0.076	0.0014	93.3	26.1	0.0074	0.017	0.047	0.70	0.0004	0.00027	14.0	0.162	0.093	0.018	0.60	24.0	0.029	2.7	0.0065	24.7	316	0.00043	0.306	506
149	0.224	0.00114	0.0004	0.0042	0.00001	6	0.076	0.0014	93.2	26.1	0.0074	0.017	0.047	0.70	0.0004	0.00027	14.1	0.161	0.093	0.018	0.60	24.0	0.029	2.7	0.0065	24.7	316	0.00043	0.306	507
150	0.224	0.00115	0.0004	0.0042	0.00001	6	0.076	0.0014	93.2	26.1	0.0074	0.017	0.047	0.70	0.0004	0.00027	14.1	0.161	0.093	0.018	0.60	24.0	0.029	2.7	0.0065	24.7	316	0.00043	0.305	507
151	0.224	0.00115	0.0004	0.0042	0.00001	6	0.076	0.0014	93.2	26.1	0.0074	0.017	0.047	0.70	0.0004	0.00027	14.2	0.161	0.093	0.018	0.60	24.0	0.029	2.7	0.0065	24.6	316	0.00043	0.305	507
152	0.224	0.00115	0.0004	0.0042	0.00001	6	0.076	0.0014	93.2	26.0	0.0074	0.017	0.047	0.70	0.0004	0.00027	14.2	0.161	0.093	0.018	0.60	24.0	0.029	2.7	0.0065	24.6	316	0.00043	0.305	507
153	0.224	0.00115	0.0004	0.0042	0.00001	6	0.076	0.0014	93.2	26.0	0.0074	0.017	0.047	0.69	0.0004	0.00027	14.3	0.161	0.093	0.018	0.60	24.0	0.029	2.7	0.0065	24.6	316	0.00043	0.305	507
154	0.224	0.00116	0.0004	0.0042	0.00001	6	0.076	0.0014	93.2	26.0	0.0074	0.017	0.047	0.69	0.0004	0.00028	14.3	0.161	0.093	0.018	0.60	24.0	0.029	2.7	0.0065	24.6	317	0.00043	0.305	507
155	0.224	0.00116	0.0004	0.0042	0.00001	6	0.076	0.0014	93.2	26.0	0.0074	0.017	0.047	0.69	0.0004	0.00028	14.4	0.161	0.093	0.019	0.60	24.0	0.029	2.7	0.0065	24.5	317	0.00043	0.305	507
156	0.224	0.00116	0.0004	0.0042	0.00001	6	0.077	0.0014	93.1	25.9	0.0074	0.017	0.047	0.69	0.0004	0.00028	14.4	0.161	0.093	0.019	0.60	24.0	0.029	2.7	0.0064	24.5	317	0.00043	0.305	507
157	0.224	0.00116	0.0004	0.0042	0.00001	6	0.077	0.0014	93.1	25.9	0.0074	0.017	0.047	0.69	0.0004	0.00028	14.5	0.161	0.093	0.019	0.60	24.0	0.029	2.7	0.0064	24.5	317	0.00043	0.305	508
158	0.224	0.00117	0.0004	0.0042	0.00001	6	0.077	0.0014	93.1	25.9	0.0074	0.017	0.047	0.69	0.0004	0.00028	14.5	0.161	0.093	0.019	0.60	24.0	0.029	2.7	0.0064	24.5	317	0.00043	0.304	508
159	0.224	0.00117	0.0004	0.0042	0.00001	6	0.077	0.0014	93.1	25.9	0.0074	0.017	0.047	0.69	0.0004	0.00028	14.6	0.161	0.092	0.019	0.59	24.0	0.029	2.7	0.0064	24.5	317	0.00043	0.304	508
160	0.224	0.00117	0.0004	0.0042	0.00001	6	0.077	0.0014	93.1	25.8	0.0074	0.017	0.047	0.6																

Table 5. Model Results at Dripping Springs 1 Subdomain Aquifer - Alternative 6

Years since Mine Start	Al mg/L	Sb mg/L	As mg/L	Ba mg/L	Be mg/L	HCO3 mg/L	B mg/L	Cd mg/L	Ca mg/L	Cl mg/L	Co mg/L	Cu mg/L	F mg/L	Fe mg/L	Pb mg/L	Mg mg/L	Mn mg/L	Mo mg/L	Ni mg/L	NO3-N mg/L	K mg/L	Se mg/L	Si mg/L	Ag mg/L	Na mg/L	SO4 mg/L	Tl mg/L	Zn mg/L	TDS mg/L	
208	0.223	0.00130	0.0007	0.0041	0.00001	6	0.080	0.0013	92.4	24.6	0.0070	0.017	0.044	0.66	0.0004	0.00030	17.1	0.156	0.089	0.019	0.58	23.8	0.028	2.6	0.0061	23.3	325	0.00041	0.298	514
209	0.223	0.00130	0.0007	0.0041	0.00001	6	0.080	0.0013	92.4	24.5	0.0070	0.017	0.044	0.66	0.0004	0.00030	17.2	0.156	0.089	0.019	0.58	23.8	0.028	2.6	0.0061	23.2	325	0.00041	0.298	514
210	0.223	0.00130	0.0007	0.0041	0.00001	6	0.080	0.0013	92.4	24.5	0.0070	0.017	0.044	0.66	0.0004	0.00030	17.2	0.156	0.089	0.019	0.58	23.8	0.028	2.6	0.0061	23.2	325	0.00041	0.298	514
211	0.223	0.00130	0.0007	0.0041	0.00001	6	0.080	0.0013	92.4	24.5	0.0070	0.017	0.044	0.65	0.0004	0.00030	17.3	0.156	0.089	0.019	0.58	23.8	0.028	2.6	0.0061	23.2	325	0.00041	0.298	515
212	0.223	0.00131	0.0007	0.0041	0.00001	6	0.080	0.0013	92.4	24.5	0.0070	0.017	0.044	0.65	0.0004	0.00030	17.3	0.156	0.089	0.019	0.58	23.8	0.028	2.6	0.0061	23.2	325	0.00041	0.298	515
213	0.223	0.00131	0.0007	0.0041	0.00001	6	0.081	0.0013	92.3	24.4	0.0070	0.017	0.044	0.65	0.0004	0.00030	17.3	0.155	0.089	0.019	0.58	23.8	0.028	2.6	0.0061	23.1	326	0.00041	0.297	515
214	0.223	0.00131	0.0007	0.0041	0.00001	6	0.081	0.0013	92.3	24.4	0.0069	0.017	0.044	0.65	0.0004	0.00030	17.4	0.155	0.089	0.019	0.58	23.8	0.028	2.6	0.0061	23.1	326	0.00041	0.297	515
215	0.223	0.00132	0.0007	0.0040	0.00001	6	0.081	0.0013	92.3	24.4	0.0069	0.017	0.044	0.65	0.0004	0.00030	17.5	0.155	0.089	0.019	0.58	23.8	0.028	2.6	0.0061	23.1	326	0.00040	0.297	515
216	0.223	0.00132	0.0007	0.0040	0.00001	6	0.081	0.0013	92.3	24.4	0.0069	0.017	0.044	0.65	0.0004	0.00030	17.5	0.155	0.089	0.019	0.58	23.8	0.028	2.6	0.0061	23.1	326	0.00040	0.297	515
217	0.223	0.00132	0.0007	0.0040	0.00001	6	0.081	0.0013	92.3	24.3	0.0069	0.017	0.044	0.65	0.0004	0.00030	17.6	0.155	0.089	0.019	0.58	23.8	0.028	2.6	0.0060	23.0	326	0.00040	0.297	515
218	0.223	0.00132	0.0007	0.0040	0.00001	6	0.081	0.0013	92.3	24.3	0.0069	0.017	0.044	0.65	0.0004	0.00030	17.6	0.155	0.089	0.019	0.58	23.8	0.028	2.6	0.0060	23.0	326	0.00040	0.297	516
219	0.223	0.00133	0.0007	0.0040	0.00001	6	0.081	0.0013	92.3	24.3	0.0069	0.017	0.044	0.65	0.0004	0.00030	17.7	0.155	0.089	0.019	0.58	23.8	0.028	2.6	0.0060	23.0	327	0.00040	0.297	516
220	0.223	0.00133	0.0007	0.0040	0.00001	6	0.081	0.0013	92.2	24.3	0.0069	0.017	0.044	0.65	0.0004	0.00030	17.7	0.155	0.088	0.019	0.58	23.7	0.028	2.6	0.0060	23.0	327	0.00040	0.296	516
221	0.223	0.00133	0.0007	0.0040	0.00001	6	0.081	0.0013	92.2	24.2	0.0069	0.017	0.044	0.65	0.0004	0.00030	17.8	0.155	0.088	0.019	0.58	23.7	0.028	2.6	0.0060	22.9	327	0.00040	0.296	516
222	0.223	0.00133	0.0007	0.0040	0.00001	6	0.081	0.0013	92.2	24.2	0.0069	0.017	0.044	0.65	0.0004	0.00030	17.9	0.155	0.088	0.019	0.58	23.7	0.028	2.6	0.0060	22.9	327	0.00040	0.296	516
223	0.223	0.00134	0.0007	0.0040	0.00001	6	0.081	0.0013	92.2	24.2	0.0069	0.017	0.044	0.65	0.0004	0.00030	17.9	0.154	0.088	0.019	0.58	23.7	0.028	2.6	0.0060	22.9	327	0.00040	0.296	516
224	0.223	0.00134	0.0007	0.0040	0.00001	6	0.081	0.0013	92.2	24.2	0.0069	0.017	0.044	0.65	0.0004	0.00030	17.9	0.154	0.088	0.019	0.58	23.7	0.028	2.6	0.0060	22.9	327	0.00040	0.296	516
225	0.223	0.00134	0.0008	0.0040	0.00001	6	0.081	0.0013	92.2	24.1	0.0069	0.017	0.043	0.65	0.0004	0.00030	18.0	0.154	0.088	0.019	0.57	23.7	0.028	2.6	0.0060	22.9	327	0.00040	0.296	517
226	0.223	0.00134	0.0008	0.0040	0.00001	6	0.082	0.0013	92.2	24.1	0.0069	0.017	0.043	0.64	0.0004	0.00030	18.0	0.154	0.088	0.019	0.57	23.7	0.028	2.6	0.0060	22.8	328	0.00040	0.296	517
227	0.223	0.00135	0.0008	0.0040	0.00001	6	0.082	0.0013	92.1	24.1	0.0069	0.017	0.043	0.64	0.0004	0.00030	18.1	0.154	0.088	0.019	0.57	23.7	0.028	2.6	0.0060	22.8	328	0.00040	0.296	517
228	0.223	0.00135	0.0008	0.0040	0.00001	6	0.082	0.0013	92.1	24.1	0.0068	0.017	0.043	0.64	0.0004	0.00031	18.1	0.154	0.088	0.019	0.57	23.7	0.028	2.6	0.0060	22.8	328	0.00040	0.296	517
229	0.223	0.00135	0.0008	0.0040	0.00001	6	0.082	0.0013	92.1	24.0	0.0068	0.017	0.043	0.64	0.0004	0.00031	18.2	0.154	0.088	0.019	0.57	23.7	0.028	2.6	0.0060	22.8	328	0.00040	0.296	517
230	0.223	0.00135	0.0008	0.0040	0																									

Table 6. Model Results at Gila River - Alternative 6

Years since Mine Start	Al	Sb	As	Ba	Be	HCO3	B	Cd	Ca	Cl	Cr	Co	Cu	F	Fe	Pb	Mg	Mn	Mo	Ni	NO3-N	K	Se	Si	Ag	Na	SO4	Tl	Zn	TDS
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
1	0.0000	0.000000	0.000000	0.000000	0.000000	0.000000	0.0000	0.0000	0.000000	0.00	0.00	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	
2	0.0000	0.000000	0.000000	0.000001	0.000000	0.000000	0.001	0.0000	0.000000	0.01	0.00	0.00000	0.00000	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	
3	0.0004	0.000001	0.000001	0.000013	0.000002	0.020	0.0003	0.000000	0.16	0.04	0.00000	0.00000	0.00015	0.0023	0.00001	0.00000	0.05	0.0000	0.0002	0.00000	0.001	0.06	0.00002	0.015	0.00000	0.10	0.8	0.00000	0.0002	1.2
4	0.0010	0.000003	0.000003	0.000030	0.000004	0.045	0.0006	0.000001	0.38	0.10	0.00001	0.00001	0.00034	0.0052	0.00003	0.00000	0.11	0.0001	0.0005	0.00001	0.004	0.15	0.00005	0.034	0.00001	0.22	1.8	0.00001	0.0005	2.8
5	0.0014	0.000004	0.000002	0.000005	0.000005	0.051	0.0007	0.000002	0.47	0.12	0.00002	0.00003	0.00040	0.0060	0.00004	0.00001	0.13	0.0002	0.0006	0.00003	0.006	0.18	0.00008	0.040	0.00002	0.26	2.2	0.00001	0.0008	3.4
6	0.0017	0.000005	0.000001	0.000036	0.000006	0.051	0.0007	0.000005	0.51	0.13	0.00003	0.00005	0.00041	0.0059	0.00004	0.00001	0.13	0.0005	0.0006	0.00006	0.008	0.19	0.00012	0.041	0.00003	0.26	2.2	0.00002	0.013	3.5
7	0.0017	0.000006	0.000001	0.000036	0.000006	0.050	0.0007	0.000007	0.52	0.13	0.00004	0.00008	0.00041	0.0058	0.00004	0.00001	0.12	0.0008	0.0007	0.00008	0.009	0.20	0.00016	0.041	0.00004	0.25	2.2	0.00003	0.018	3.5
8	0.0017	0.000009	0.000000	0.000036	0.000007	0.050	0.0007	0.000009	0.52	0.13	0.00005	0.00011	0.00041	0.0058	0.00004	0.00002	0.11	0.0010	0.0008	0.00011	0.009	0.21	0.00019	0.041	0.00005	0.23	2.2	0.00005	0.022	3.5
9	0.0017	0.000011	0.000000	0.000036	0.000007	0.050	0.0007	0.000011	0.53	0.14	0.00006	0.00013	0.00041	0.0057	0.00004	0.00002	0.10	0.0013	0.0008	0.00013	0.009	0.22	0.00022	0.041	0.00006	0.22	2.1	0.00006	0.026	3.4
10	0.0017	0.000011	0.000000	0.000037	0.000007	0.050	0.0007	0.000012	0.52	0.15	0.00007	0.00014	0.00041	0.0057	0.00004	0.00002	0.10	0.0014	0.0009	0.00015	0.009	0.23	0.00024	0.040	0.00006	0.22	2.1	0.00007	0.028	3.4
11	0.0018	0.000011	0.000000	0.000037	0.000007	0.050	0.0007	0.000013	0.51	0.16	0.00007	0.00015	0.00041	0.0057	0.00004	0.00002	0.09	0.0015	0.0009	0.00015	0.008	0.23	0.00025	0.039	0.00006	0.22	2.0	0.00007	0.029	3.3
12	0.0018	0.000011	0.000000	0.000037	0.000007	0.051	0.0007	0.000013	0.50	0.18	0.00007	0.00015	0.00041	0.0057	0.00004	0.00002	0.09	0.0015	0.0009	0.00016	0.008	0.23	0.00025	0.038	0.00006	0.22	2.0	0.00006	0.030	3.3
13	0.0019	0.000011	0.000000	0.000037	0.000007	0.051	0.0006	0.000013	0.49	0.19	0.00007	0.00015	0.00041	0.0058	0.00004	0.00002	0.09	0.0015	0.0009	0.00016	0.007	0.23	0.00026	0.037	0.00006	0.22	1.9	0.00006	0.030	3.2
14	0.0019	0.000010	0.000000	0.000038	0.000007	0.052	0.0006	0.000013	0.49	0.19	0.00007	0.00015	0.00041	0.0058	0.00004	0.00002	0.09	0.0016	0.0009	0.00016	0.007	0.23	0.00026	0.037	0.00006	0.22	1.9	0.00006	0.030	3.2
15	0.0019	0.000010	0.000000	0.000038	0.000007	0.052	0.0006	0.000013	0.48	0.20	0.00007	0.00015	0.00041	0.0058	0.00004	0.00002	0.09	0.0016	0.0009	0.00016	0.007	0.23	0.00026	0.036	0.00006	0.22	1.9	0.00006	0.030	3.2
16	0.0020	0.000010	0.000000	0.000038	0.000007	0.052	0.0006	0.000013	0.47	0.16	0.00007	0.00015	0.00041	0.0057	0.00004	0.00002	0.09	0.0015	0.0009	0.00015	0.008	0.23	0.00025	0.039	0.00006	0.22	2.0	0.00007	0.029	3.3
17	0.0020	0.000010	0.000000	0.000038	0.000007	0.052	0.0006	0.000013	0.47	0.21	0.00007	0.00016	0.00041	0.0058	0.00004	0.00002	0.09	0.0015	0.0009	0.00016	0.007	0.23	0.00026	0.035	0.00006	0.22	1.8	0.00005	0.029	3.1
18	0.0020	0.000010	0.000000	0.000038	0.000007	0.052	0.0006	0.000013	0.47	0.21	0.00007	0.00016	0.00041	0.0058	0.00004	0.00002	0.09	0.0016	0.0009	0.00016	0.007	0.23	0.00027	0.035	0.00007	0.22	1.8	0.00005	0.030	3.1
19	0.0020	0.000010	0.000000	0.000038	0.000007	0.052	0.0006	0.000013	0.47	0.21	0.00007	0.00016	0.00041	0.0058	0.00004	0.00002	0.09	0.0016	0.0009	0.00016	0.007	0.23	0.00027	0.035	0.00007	0.22	1.8	0.00005	0.030	3.1
20	0.0020	0.000009	0.000000	0.000038	0.000007	0.052	0.0006	0.000013	0.47	0.22	0.00007	0.00016	0.00041</																	

Table 6. Model Results at Gila River - Alternative 6

Table 6. Model Results at Gila River - Alternative 6

Table 6. Model Results at Gila River - Alternative 6

Surface WQ Standard = 0.03 0.15 0.004^a 0.0176^a 1.0 0.00587^a 0.101^a 0.002 0.15 0.229^a

Notes:

^a Cd, Cu, Pb, Ni and Zn standards are hardness dependent and were calculated using lowest (most stringent) hardness value available (220 mg/L on 5/21/2003) for Arizona Department of Environmental Quality site 21ARIZ-101652, located along the Gila River downstream of Dripping Springs Wash

- Model results indicate estimated concentrations immediately following mixing of Dripping Springs discharge with the median flow rate of the Gila River

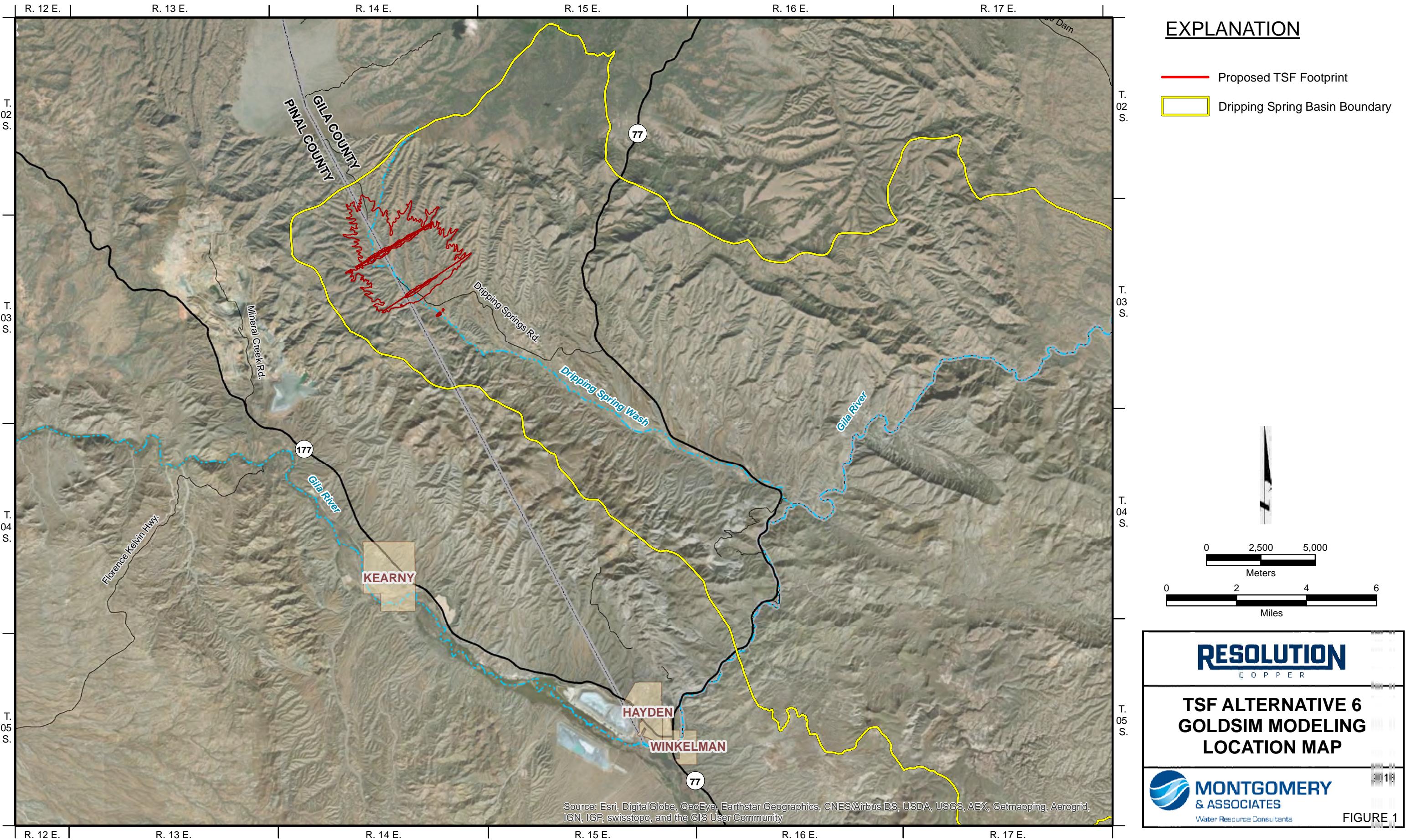
2. Results do not include natural background concentrations and assume no mass flux contributions from recharge, underflow or the Gila River

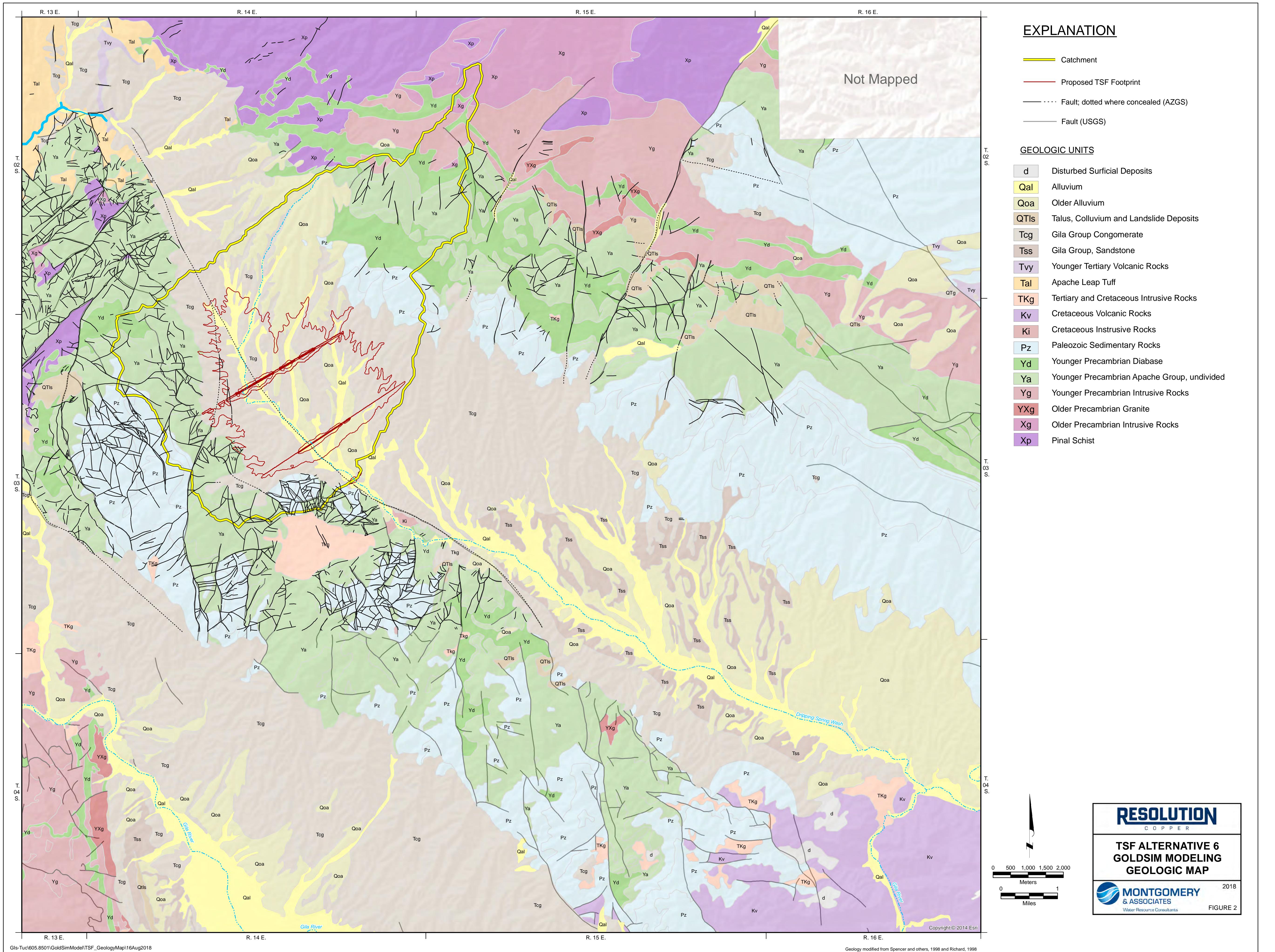
3. Surface WQ Standard = Arizona Department of Environmental Quality Water Quality Standard for "Aquatic and wildlife warm" (A&ww) water with chronic exposure (Arizona Administrative Code - Title 18, Ch. 11, Sup. 16-4, 2016)

4. Values in bold italic indicate that concentration is above water quality standard

5. mg/L = milligrams per liter

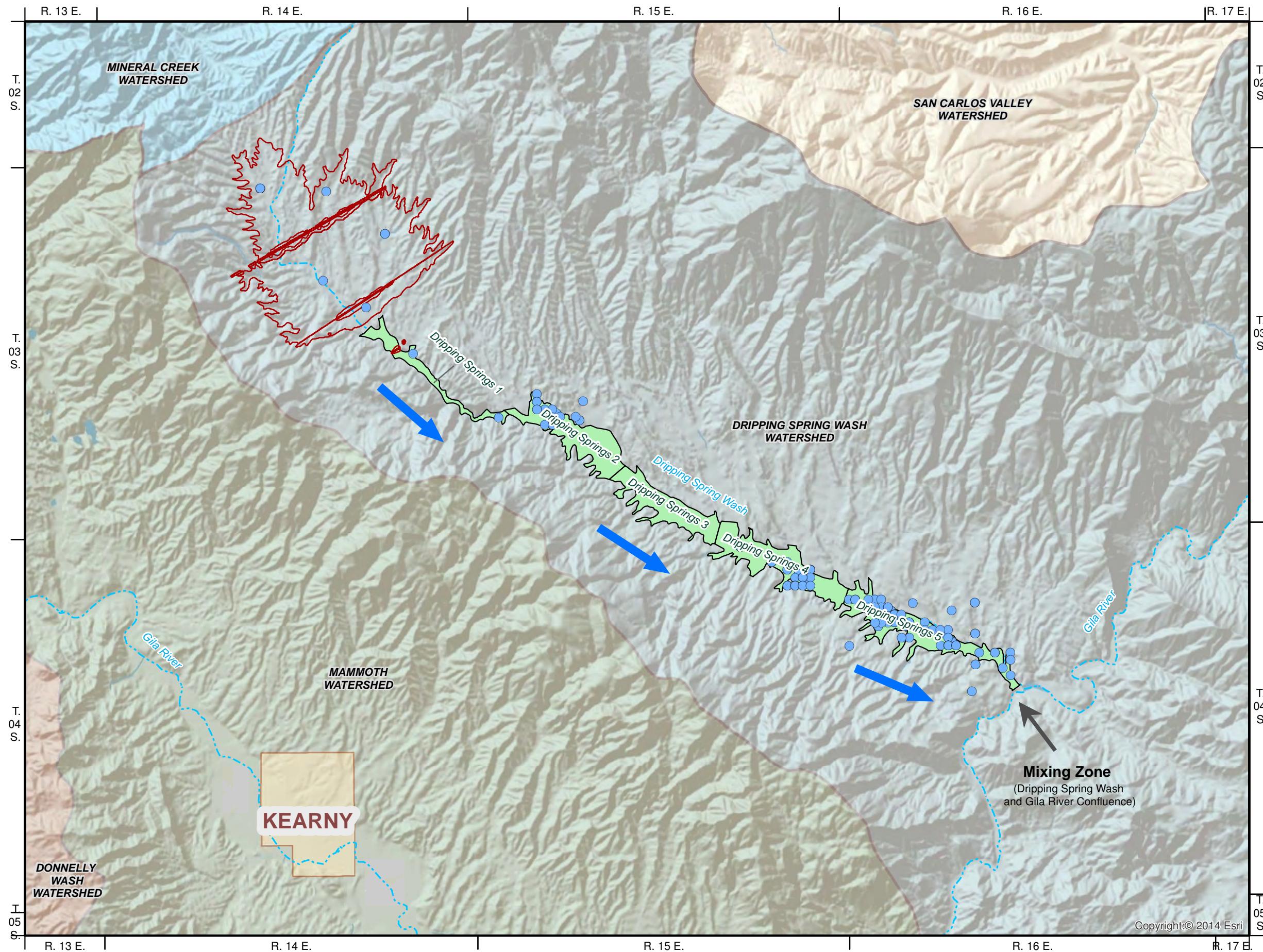






RESOLUTION
COPPER
TSF ALTERNATIVE 6
GOLDSIM MODELING
GEOLOGIC MAP
2018
MONTGOMERY
& ASSOCIATES
Water Resource Consultants

FIGURE 2



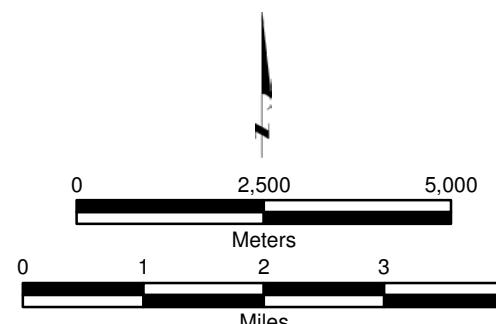
EXPLANATION

- [Green Box] Aquifer Subdomain
- [Red Line] Proposed TSF Footprint
- [Grey Box] ADWR Watershed Boundary
- [Blue Arrow] Flow Direction
- [Blue Dot] ADWR Well

Aquifer Subdomain	Length (ft)	Area (ft ²)	Average Width (ft)
Dripping Springs 1	15,400	15,977,900	1,040
Dripping Springs 2	11,200	23,192,700	2,070
Dripping Springs 3	10,000	20,060,700	2,010
Dripping Springs 4	12,200	26,001,800	2,130
Dripping Springs 5	17,200	27,462,500	1,600

Notes:

1. Average widths of aquifer elements calculated by dividing aquifer polygon areas by lengths





102 Magma Heights – P.O. Box 1944
Superior, AZ 85173
Tel.: 520.689.9374
Fax: 520.689.9304

September 17, 2018

Mr. Neil Bosworth
Supervisor – Tonto National Forest
US Forest Service
Supervisor's Office
2324 East McDowell Road
Phoenix, AZ 85006-2496

Subject: Response to ANALYSIS DATA REQUEST #1 – Request for Analysis of Tailings Seepage – Item #4 GoldSim Contaminant Transport Module.

Dear Mr. Bosworth,

To complete the response to item #4 from your March 8, 2018 letter, the following documents from Montgomery and Associates are enclosed:

- TSF Alternatives 2 and 3 – Near West: Life of Mine and Post-Closure Seepage Transport Modeling
- TSF Alternative 4 – Silver King: Life of Mine and Post-Closure Seepage Transport Modeling
- TSF Alternative 5 – Peg Leg: Life of Mine and Post-Closure Seepage Transport Modeling
- TSF Alternative 6 – Skunk Camp: Life of Mine and Post-Closure Seepage Transport Modeling

Sincerely,

A handwritten signature in blue ink that reads "Vicky Peacey".

Vicky Peacey,

Senior Manager, Environment, Permitting and Approvals; Resolution Copper Company, as Manager of Resolution Copper Mining, LLC

Cc: Ms. Mary Morissette; Senior Environmental Specialist; Resolution Copper Company



Enclosure(s):

Montgomery & Associates, September 2018. *TSF Alternatives 2 & 3 – Near West: Life of Mine and Post-Closure Seepage Transport Modeling.*

Montgomery & Associates, September 2018. *TSF Alternatives 4 – Silver King: Life of Mine and Post-Closure Seepage Transport Modeling.*

Montgomery & Associates, September 2018. *TSF Alternatives 5 – Peg Leg: Life of Mine and Post-Closure Seepage Transport Modeling.*

Montgomery & Associates, September 2018. *TSF Alternatives 6 – Near West: Life of Mine and Post-Closure Seepage Transport Modeling.*