

Rise Grass Valley Inc.
Idaho Maryland Mine Project
Nevada County, California

Well Mitigation Plan

~~February 2nd, 2021~~

May 11th, 2022

Summary

Policy 17.12 of the Nevada County General Plan provides for protection of domestic water wells from potential mining impacts. Policy 17.12 states:

In approving mining projects which according to expert opinion may threaten the existing quality or quantity of surface or subsurface water which supply adjacent homes and businesses:

- 1) *The County shall require the operator to guarantee a comparable supply of water to such homes or businesses through accessible forms of security or alternate sources of water.*
- 2) *Where water quantity and quality problems occur, an immediate water supply shall be provided by the operator until the source of the problem is determined.*
- 3) *The burden of proof shall be on the operator to show that the mining operation did not create the water problem.*
- 4) *If it is determined that the operator is at fault, impacted owners shall be compensated by the operator.*

Expert opinion has determined that there is no threat to water quality to domestic water wells from the Idaho-Maryland Mine Project.¹

The potential impact to the quantity of water available at domestic wells in the mine vicinity would be indicated by a decrease in the available water column in the well, caused by a drop in the elevation of the static groundwater level in the fractured bedrock in the well vicinity. One domestic water well located above the historic mine workings could be impacted, with the possibility for a ~40% reduction in the well water column, due to the groundwater drawdown from dewatering of the mine. Building in a 100% safety factor, an additional six domestic water wells could, at least theoretically, be impacted, with a reduction in those well's water column of ~7% – 12%. All potentially impacted wells are located in the E. Bennett Road area. Domestic water wells outside this area will not be impacted.¹

~~A monitoring program~~ The Groundwater Monitoring Plan Idaho-Maryland Mine Project (the "GMP") has been designed by qualified consultants and Rise proposes it be implemented prior to any dewatering efforts to provide ongoing proof that significant water level drawdowns are not occurring outside of the E. Bennett Area throughout the project's duration. The monitoring program is designed to ensure early warning of potential impacts to outside areas. If an impact to outside areas was projected during operations, pre-emptive action would be taken as necessary to ensure immediate water supply and compensation. ~~Such action~~

¹ EMKO Environmental, Inc. (2020). Groundwater Hydrology and Water Quality Analysis Report for the Idaho-Maryland Mine Project, Nevada County, California. El Dorado Hills, CA.

If the GMP predicts a potential impact to domestic water wells outside of the E. Bennett Road Area then the following measures will be taken.

- 1) The property owner will be contacted, and the company will request to inspect and test the well. Nearby properties which do not have well completion records, or a previous negative confirmation, will also be contacted to verify whether there is a well on the property.
- 2) The well will be inspected to determine the characteristics of the well, including well depth, casing and screen depth, static water level, pump depth, pump flowrate and pressure rating, well yield, and the treatment system. A water quality sample will be taken during the inspection.
- 3) The Performance Standard for the individual property will be determined based on the parameters in Table 1.
- 4) A hydraulic test will be conducted to obtain hydraulic-conductivity information.
- 5) Instrumentation will be installed to measure water level on a periodic basis (such as 1 or 4 hours) and pumping rates (to correlate water level with the wells use). Data from the instruments will be transmitted by telemetry.
- 6) An evaluation will be prepared to determine actions to be taken at certain drawdowns and/or reduction in well yield in order to maintain the performance standard for the property. This would include points where a different pump would be required, or additional holding capacity installed.
- 7) An evaluation would be made based on the geology of the area, wells in the vicinity of the property, property constraints, and current well characteristics (such as current well depth and potential for well yield to depth) whether the deepening of the well or the drilling of a new well would be an effective mitigation. The maximum drawdown required to require the implementation of well deepening or installation of a new well will be estimated.
- 8) If the well's purpose is entirely or partially for agricultural or extensive landscape irrigation, an evaluation of the feasibility to service this property with NID agricultural water (from nearby canals) will be conducted.
- 9) If deepening of wells or drilling of a new well would not be an effective mitigation, the extension of NID potable water service to the property will be evaluated and designed. The maximum drawdown to require the implementation of a connection to NID potable water service will be estimated.
- 10) The increase in cost of water supply from actions will be estimated. For example, the montly cost of water supplied by NID or an increase in power consumption from water pumping.
- 11) All data collected and reports generated will be provided to the property owner and to Nevada County.
- 12) Action taken, based on the evaluations and monitoring, could include extension of NID potable water, the installation of holding tanks and/or replacement of a pump, lowering of well pumps or deepening of domestic water wells, or drilling of new wells, in all cases paid for by Rise. If a domestic well were to be deepened, water quality sampling of the well would be taken before and after deepening to ensure that similar water quality is present. If deepening of a well results in a negative change to water quality, Rise would arrange and fund the modification of the wells treatment system, by a qualified professional, as appropriate.
- 13) If the cost of water supply will be increased by actions taken under the Well Mitigation Plan the property owner will be reimbursed for as long as they own the property.

14) If water supply to a property is disrupted for an appreciable amount of time (greater than a day), a temporary water supply will immediately be provided to the property using water tanks and potable water will be delivered as necessary to provide water supply to the property during testing, maintenance, or construction.

Table 1 - Performance Standards

<u>Well Use</u>	<u>Units</u>	<u>Daily Water Supply (Gallons /Day)</u>	<u>Peak Water Demand (GPM)</u>
<u>Single Family Residential</u>	<u>per home</u>	<u>400</u>	<u>Determined based on Waster Supply Fixtures</u>
<u>Multi-Family Residential</u>	<u>per suite</u>	<u>630</u>	
<u>Commercial</u>	<u>per connection</u>	<u>950</u>	
<u>Industrial</u>	<u>per connection</u>	<u>4,200</u>	
<u>Crop or Pasture Irrigation</u>	<u>per acre</u>	<u>8,700</u>	

***See performance standards notes below**

NID Water Connection – E. Bennett Area

Rise will connect up to 30 properties in the E. Bennett area to the Nevada Irrigation District potable water system, if those property owners agree to allow the connection. Rise will construct an extension of the NID potable water system to 26 properties while 4 properties already have NID service available at their property line. These connections will be made before mine dewatering commences. The entire cost of this connection will be paid by Rise and include:

- 1) Engineering and Permitting
- 2) Construction of main water piping
- 3) Construction of service lateral piping
- 4) Installation of water meters at property line
- 5) Connection of water meters to house (If requested and authorized by property owner)
- 6) Closure of domestic water wells (If requested and authorized by property owner)
- 7) NID installation and capacity charges.

The value per property owner, including capacity charges, is estimated at ~\$85,000. Property owners will be consulted on design of service, lateral piping, meter locations, and connections to residences. Rise will provide for installation and capacity charges for 5/8" meters. The design and construction will be done to NID standards and approved by NID.

Rise will close property owners' wells, using certified well drillers and under Nevada County regulations, if requested by the landowner at the time of NID connection and service to their properties. It is unlikely that the reduction in water column of wells in the E. Bennett area will make these wells unusable. Therefore, property owners may decide to retain and continue using their water wells. Rise will not close domestic water wells in the future if property owners decline this closure at the time of NID potable water connection. If property owners decide to both retain their well and connect to the NID system, Rise will install a Double Check Valve (DCV), at the time of NID connection and service, in compliance with the

requirements of NID Water Service Regulations. Monthly fees for the DCV will be the responsibility of the property owner.

NID Water Charges – E. Bennett Area

Rise will pay for NID water charges for ongoing water supply for property owners who are currently using well water and decide to switch to NID potable water. This reimbursement would include monthly fixed service charges for a 5/8" connection and volumetric ~~service~~service charges for use of up to 400 gallons per day. Rise would reimburse this cost to property owners annually. Assuming the use of 400 gallons per day and current water rates, this reimbursement would be approximately \$870 per year per property owner.

Property owners of vacant land or who are currently supplied by NID would not be eligible for reimbursement of NID water charges. Existing NID customers will be confirmed through consultation with NID during the design process.

Reimbursement for water charges will continue until the sooner of the following occurs:

- 1) The property is sold by the owner after the NID connection is accomplished and paid for by Rise.
- 2) The property is annexed into the City of Grass Valley.

Figure 1 and Table ~~12~~ show properties in the E. Bennett area to be provided NID potable water service.

Figure 1 – Properties in E. Bennett Area to be serviced by NID potable water

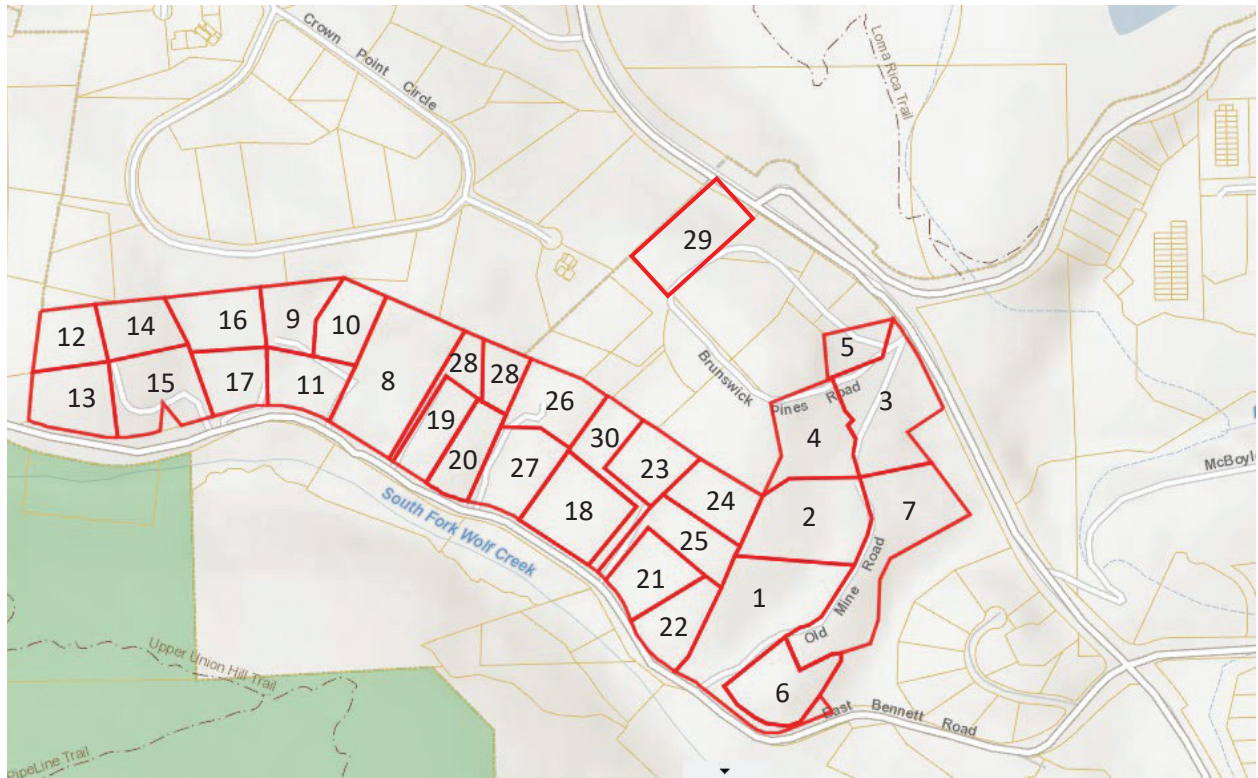


Table 12 – Properties in E. Bennett Area to be serviced by NID potable water

#	APN	Site Address	Notes
Eligible for NID water cost reimbursement			
1	009-581-016	12477 OLD MINE ROAD	
2	009-581-017	12401 OLD MINE ROAD	
3	009-581-018	12202 BET ROAD	Existing NID service at property line
4	009-581-019	12305 BET ROAD	Existing NID service at property line
5	009-581-020	11844 BRUNSWICK PINES ROAD	Existing NID service at property line. May be existing NID Customer
6	009-581-045	12368 EAST BENNETT ROAD	
7	009-581-053	12448 OLD MINE ROAD	
8	009-590-005	11918 EAST BENNETT ROAD	
9	009-590-006	11882 AMETHYST COURT	
10	009-590-007	12047 AMETHYST COURT	
11	009-590-008	11866 EAST BENNETT ROAD	
12	009-590-009	12052 CORDELL COURT	
13	009-590-010	12034 CORDELL COURT	
14	009-590-011	12051 CORDELL COURT	
15	009-590-012	11780 EAST BENNETT ROAD	
16	009-590-013	11828 EAST BENNETT ROAD	
17	009-590-014	11818 EAST BENNETT ROAD	
18	009-600-004	12110 EAST BENNETT ROAD	
19	009-600-008	11966 EAST BENNETT ROAD	
20	009-600-009	12000 EAST BENNETT ROAD	
21	009-600-010	12176 EAST BENNETT ROAD	
22	009-600-011	12228 EAST BENNETT ROAD	
23	009-600-013	14036 DIAMOND COURT	
24	009-600-014	14035 DIAMOND COURT	
25	009-600-015	14069 DIAMOND COURT	
26	009-600-016	13997 EMERALD COURT	
27	009-600-017	12040 EAST BENNETT ROAD	
28	009-600-018/019	11948 EAST BENNETT ROAD	
29	009-581-026	11693 BRUNSWICK PINES ROAD	Existing NID service at property line
Not Eligible for NID water cost reimbursement			
30	009-600-012	14070 DIAMOND COURT	Vacant

Performance Standard Notes and References

The single-family home unit demand factor of 0.36 acre-feet per year per connection is used by NID for projecting demands. (Page 18 of the NID 2020 Urban Water Management Plan). This is equivalent to 321 gallons per day. The performance standard for the Well Mitigation Plan is 400 gallons per day or approximately 25% more than NID's estimate of demand for a single-family home.

The multi-family home unit demand factor of 2.82 acre-feet per year per four-plex connection is used by NID for projecting demands. (Page 18 of the NID 2020 Urban Water Management Plan). This is equivalent to 630 gallons per day per suite. The performance standard for the Well Mitigation Plan is 630 gallons per day per suite of a multifamily home and equal to NID's estimate of demand for multi-family homes.

The commercial unit demand factor of 1.06 acre-feet per year per connection is used by NID for projecting demands. (Page 18 of the NID 2020 Urban Water Management Plan). This is equivalent to 946 gallons per day per connection. There are industrial zoned properties in the project area that utilize wells (the East Bennett Industrial Area). The performance standard for the Well Mitigation Plan is 950 gallons per day per commercial unit connection and equal to NID's estimate of demand for industry

The industrial unit demand factor of 4.70 acre-feet per year per connection is used by NID for projecting demands. (Page 19 of the NID 2020 Urban Water Management Plan). This is equivalent to 4,194 gallons per day per connection. There are industrial zoned properties in the project area that utilize wells (the East Bennett Industrial Area). The performance standard for the Well Mitigation Plan is 4,200 gallons per day per industrial unit connection and equal to NID's estimate of demand for industry.

The maximum monthly irrigation for crops during a dry year is for Apple, Pear, Cherry, Plum, and Prune with 9.7 inches of irrigation in July (Page 346 of appendix to NID 2020 Agricultural Water Management Plan). This is equivalent to 8,700 gallons per day. The performance standard for the Well Mitigation Plan for crop and pasture irrigation is 8,700 gallons per day per and equal to NID's estimate of maximum demand for crop and pasture irrigation.

The peak water demand for the water supply (gallons per minute) will be determined based on the Water Supply Fixture Units (WSFU) at the property in accordance Appendix A or using the Peak Water Demand Calculator in Appendix M of the California Plumbing Code. A single-family home would typically require a water supply capable of approximately 10 gallons per minute. However, the instantaneous demand is dependant on the type and number of fixtures and must be determined on a case-by-case basis.

<https://www.iapmo.org/water-demand-calculator/>

ETc Table for Irrigation District Water Balances Zone 13 Monthly Evapotranspiration - Surface Irrigation Dry Year

	<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>	<u>Total</u>	<u>Max monthly</u>	<u>Max daily</u> gallons
<u>Precipitation</u>	4.7	7.7	2.0	1.6	0.8	0.4	0.0	0.2	0.0	1.6	2.9	0.5	22.2	7.7	6,910
<u>Grass Reference ETc</u>	1.2	1.5	3.1	4.7	6.8	7.6	9.0	7.2	6.0	4.1	1.8	1.3	54.2	9.0	8,040
<u>Apple, Pear, Cherry, Plum and Prune</u>	0.6	1.6	2.0	2.2	3.6	6.1	8.0	6.2	5.0	3.5	1.6	0.9	41.2	8.0	7,100
<u>Apples, Plums, Cherries etc w/covercrop</u>	1.3	1.6	3.3	4.4	6.4	8.1	9.7	7.7	6.4	3.9	2.0	1.4	56.2	9.7	8,700
<u>Almonds</u>	0.6	1.6	2.0	2.1	3.2	5.5	7.4	6.0	5.0	3.4	1.9	0.9	39.6	7.4	6,640
<u>Almonds w/covercrop</u>	1.2	1.6	3.0	3.8	5.5	6.9	8.9	7.1	5.8	3.8	2.0	1.3	50.8	8.9	7,920
<u>Immature Almonds</u>	0.6	1.6	1.9	1.9	2.3	4.2	5.2	4.3	3.7	2.5	1.8	0.9	30.8	5.2	4,660
<u>Walnuts</u>	0.6	1.6	1.9	2.3	3.2	5.5	8.9	7.2	5.7	3.5	1.9	0.9	43.2	8.9	7,920
<u>Pistachio</u>	0.6	1.6	1.7	2.2	2.6	5.1	8.5	7.2	5.8	3.6	1.9	0.9	41.7	8.5	7,590
<u>Pistachio w/ covercrop</u>	1.2	1.6	3.0	3.8	5.1	6.9	9.5	7.8	6.5	4.3	2.0	1.4	52.9	9.5	8,450
<u>Immature Pistachio</u>	0.6	1.6	1.7	1.8	1.7	3.6	5.7	4.9	3.9	2.6	1.7	0.9	30.7	5.7	5,050
<u>Misc. Deciduous</u>	0.6	1.6	1.7	2.0	2.4	4.9	7.7	6.3	5.2	3.5	1.7	0.9	38.3	7.7	6,880
<u>Grain and Grain Hay</u>	0.8	1.6	3.3	4.9	3.3	0.3	0.0	0.2	0.0	0.6	1.5	1.0	17.5	4.9	4,340
<u>Rice</u>	1.0	1.2	0.4	1.4	6.3	7.6	9.4	8.6	2.5	1.0	0.7	1.0	40.9	9.4	8,420
<u>Corn and Grain Sorghum</u>	0.6	1.6	1.8	1.9	3.1	7.1	8.9	6.3	0.8	0.6	1.5	0.9	35.1	8.9	7,990
<u>Misc. field crops</u>	0.6	1.6	1.8	1.9	3.0	6.8	8.1	2.6	0.0	0.6	1.5	0.9	29.3	8.1	7,220
<u>Alfalfa Hay and Clover</u>	1.2	1.6	3.2	5.0	6.1	6.7	7.4	6.4	5.0	2.1	1.9	1.4	48.0	7.4	6,640
<u>Pasture and Misc. Grasses</u>	0.6	1.6	2.7	4.2	6.4	7.1	8.3	6.7	5.4	3.4	1.8	0.9	49.0	8.3	7,400
<u>Small Vegetables</u>	1.0	1.6	3.0	1.7	0.6	0.3	0.0	1.1	1.3	1.6	1.8	1.3	15.3	3.0	2,680
<u>Tomatoes and Peppers</u>	0.6	1.6	2.0	2.0	4.2	7.5	7.6	0.7	0.0	0.6	1.5	0.9	29.1	7.6	6,740
<u>Strawberries</u>	0.6	1.6	1.8	1.9	3.0	6.8	8.1	2.6	0.0	0.6	1.5	0.9	29.3	8.1	7,220
<u>Flowers, Nursery and Christmas Tree</u>	0.6	1.6	1.7	2.0	2.4	4.9	7.7	6.3	5.2	3.5	1.7	0.9	38.3	7.7	6,880
<u>Misc Subtropical</u>	0.6	1.6	1.7	2.0	2.4	4.9	7.7	6.3	5.2	3.5	1.7	0.9	38.3	7.7	6,880
<u>Grape Vines with 80% canopy</u>	0.6	1.6	2.0	2.4	4.2	5.5	6.1	4.7	2.7	0.6	1.5	0.9	32.7	6.1	5,400

<u>Grape Vines with cover crop (80% canopy)</u>	<u>1.1</u>	<u>1.6</u>	<u>2.8</u>	<u>3.6</u>	<u>5.0</u>	<u>6.3</u>	<u>7.1</u>	<u>5.6</u>	<u>3.3</u>	<u>1.9</u>	<u>1.8</u>	<u>1.2</u>	<u>41.2</u>	<u>7.1</u>	<u>6,320</u>
<u>Immature Grapes Vines with 50% canopy</u>	<u>0.6</u>	<u>1.6</u>	<u>1.9</u>	<u>2.0</u>	<u>3.0</u>	<u>4.4</u>	<u>4.6</u>	<u>3.5</u>	<u>1.9</u>	<u>0.7</u>	<u>1.5</u>	<u>0.9</u>	<u>26.4</u>	<u>4.6</u>	<u>4,070</u>
<u>Cannabis</u>	<u>0.6</u>	<u>1.6</u>	<u>1.7</u>	<u>2.0</u>	<u>2.4</u>	<u>4.9</u>	<u>7.7</u>	<u>6.3</u>	<u>5.2</u>	<u>3.5</u>	<u>1.7</u>	<u>0.9</u>	<u>38.3</u>	<u>7.7</u>	<u>6,880</u>
<u>Idle</u>	<u>0.6</u>	<u>1.6</u>	<u>1.7</u>	<u>1.5</u>	<u>0.6</u>	<u>0.3</u>	<u>0.0</u>	<u>0.2</u>	<u>0.0</u>	<u>0.6</u>	<u>1.5</u>	<u>0.9</u>	<u>9.5</u>	<u>1.7</u>	<u>1,530</u>