IDAHO-MARYLAND MINE PROJECT

EMPLOYMENT DETAILS

RISE GRASS VALLEY INC.

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INTRODUCTION

Rise Grass Valley Inc. (Rise) owns the Idaho-Maryland Mine Project. Rise proposes to reopen the Idaho-Maryland underground gold mine in Nevada County, California. This report provides details of the workforce requirements at the Idaho-Maryland Mine and focuses on the workforce requirements when the Project reaches commercial production. Achieving commercial production, defined as a stable production rate of 1,000 tons per day of gold mineralization mined and processed, will take several years and the majority of positions would be phased-in as the project advances. Workforce details are estimates, are preliminary in nature, and are contingent on actual results and requirements as the project advances. A general sequence of activities required to reach commercial production are provided as follows:

1) Approval of Nevada County Use Permit
2) Issuance of secondary construction and operating permits (building permits, water discharge permits, etc.)
3) Mine dewatering and underground exploration
4) Underground and surface construction
5) Employee recruitment and training and integration of workforce
6) Ramp up of production rates to commercial production

The core of the Rise Grass Valley management team would be hired after approval of the Use Permit. The project's construction phase is generally completed by contractors. Most of the permanent workforce is recruited and trained during the period from commissioning to commercial production. The workforce details provided in this report are dependant on numerous factors which include exploration success and productivity. The wage estimates provided in this report are based on recent surveys in the US mining industry and are presented as average values by occupation. Actual wages during operations are subject to applicant experience and labor market conditions.

SUMMARY

The total workforce when the Idaho-Maryland Mine Project reaches commercial production is estimated at three hundred and twelve (312) persons. Table 1 shows the breakdown of the operations workforce by working schedule and area. The majority of workers (268 employees) would work twelve (12) hour shifts with four (4) days of work followed by four (4) days of rest. The remining workforce (44 employees) would work regular eight (8) hour shifts with five (5) days of work followed by the weekend of rest.

Table 1 – Idaho-Maryland Workforce by Area and Schedule*

Workforce	Shift	Total Employees	Employees per Shift
Management and technical staff	8 hours a day,5 days a week—dayshift	36	36
Assaying and construction	8 hours a day, 5 days a week—dayshift	4	4
Underground mine	12 hours a day, 4 days on, 4 days off	202	50
Mineral processing	12 hours a day, 4 days on. 4 days off	64	16
Truck transport of engineered fill	12 hours a day, 4 days on. 4 days off	2	1
Placement and compaction of engineered fill	8 hours a day, 5 days per week—dayshift	4	4
	Total Workforce	**312**	**111**

*Workforce by Area and Schedule as presented in the Project Description for the Idaho-Maryland Mine Project

The total payroll, including wages and benefits, is estimated at $38 million per year with average annual earnings per employee estimated at $122,000. The workforce broken down by job category is displayed in Table 2. Substantial economic incentive exists to maximize employee recruitment from the local Nevada County area and Rise Grass Valley estimates that approximately two-thirds of the workforce can be recruited locally. Local recruitment targets will be achieved through the implementation of a significant training program and 162 positions have been designated for trainees with no previous experience. Rise Grass Valley estimates that approximately 51 additional workers, with previous experience and training in mining, engineering, electrical or other trades, are available for local area recruitment. **Therefore, at least 213 workers (~68% of workforce) are estimated to be sourced from the immediate Nevada County area.** Approximately 99 workers (32% of workforce) would be recruited from outside the local area. These positions require extensive experience in underground mining which are less likely to be possessed by persons currently residing in the immediate local area.

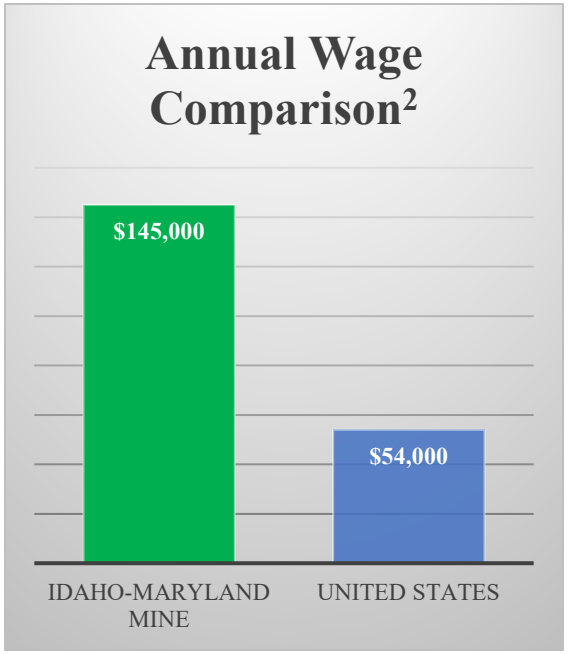
Table 2 – Idaho-Maryland Workforce by Job Category

Job Category	Total Employees	Local Trainee Positions	Local Experienced Workers (Estimate)	Local Recruitment (Estimate)	Non-Local Recruitment (Estimate)	Annual Wages (Avg)	Annual[1] Benefits (Avg)	Annual Earnings (Avg)	Total Payroll
Underground Mine	156	80	18	98	58	$168,000	$37,000	$205,000	$3,895,000
Mineral Processing	36	36	0	36	0	$98,000	$32,000	$130,000	$2,080,000
Trades	34	12	14	26	8	$121,000	$35,000	$156,000	$4,368,000
Labor - Underground & Surface	17	17	0	17	0	$116,000	$34,000	$150,000	$5,100,000
Geology, Engineering, Environmental	28	7	7	14	14	$113,000	$32,000	$145,000	$22,620,000
Accountants, Administration, Security	16	8	8	16	0	$97,000	$31,000	$128,000	$4,608,000
Surface equipment operators	6	2	4	6	0	$88,000	$32,000	$120,000	$720,000
Managers & Supervisors	19	0	0	0	19	$76,000	$31,000	$107,000	$1,819,000
Total / Average	**312**	**162**	**51**	**213**	**99**	**$112,000**	**$33,000**	**$145,000**	**$45,210,000**

An experienced core of miners, trades people, administrators, engineers, and scientists will ensure the success of new workers in their assigned roles. The mine operations would be led by a highly experienced management and supervisory team to ensure that the health & safety, environmental and regulatory compliance, and productivity requirements of the mine are achieved.

The mine would provide substantial opportunities for local workers to embark on satisfying and well-paid careers in underground mining, core drilling, mineral processing, trades, equipment operation, and administration. Average annual wages at the Idaho-Maryland are expected to be almost triple that of average United States wages[2].

In addition to excellent wages, the mining industry provides robust benefit packages which include medical, dental and vision insurance as well as paid vacation time and retirement plan contributions.



[1] Benefits assumed at $26,000 per year for every employee plus retirement contribution of 7% of wages
[2] https://www.gold.org/esg/the-social-and-economic-contribution-of-gold-mining

UNDERGROUND MINE

The underground mine department, led by the Mine Manager and shift supervisors, requires a significant workforce of one hundred fifty-six (156) workers. The core of the underground mining workforce requires skilled workers with a minimum of four years experience at a producing underground metal mine. It is assumed that eighteen (18) experienced underground miners and core drillers would be recruited locally, and fifty-eight (58) would be recruited from outside the local area. A significant training program would be implemented to allow eighty (80) underground mining and core drilling assistant positions to be filled by trainees recruited from the local Nevada County area.

Activities performed in the underground mine vary. The most physically demanding activities such as raise mining, ground support, and mine services comprise 22 of 80 trainee positions. These activities require use of rock drills and the handling of heavy materials such as ground support rebar, pipes, and ventilation ducting. Mine haulage, production and development drilling, which makes up 24 of the 80 trainee positions, is less physically demanding and requires the operation of underground mechanized machinery. Production blasting, mine backfill, and shaft services comprise 18 of the 80 trainee positions. These positions are less physically demanding than those previously described but require specific training and close coordination with supervisors and technical workers. Rise Grass Valley anticipates operating four underground exploration core drilling rigs. All sixteen (16) core drilling assistant positions would be local trainee positions who would receive on-the-job training. Core drilling is a physically demanding job requiring the constant lifting of drill rods and drill core. Core drilling assistants learn drilling skills on the job and commonly advance to become core drillers. The mine training programs will be more intensive than most other roles available. Training programs would include offsite vocational training and extensive onsite training.

The details of the underground mine workforce are provided in Table 3.

Artisan Vehicles
Underground Loader

Atlas Copco
Pusher Leg Drill

Sandvik
Underground Jumbo Drill

Zinex U5
Underground Core Drill

Table 3 – Underground Mine

Job Category	Total Employees	Local		Annual Wages (Typical)	Annual Benefits	Annual Earnings
		Trainee	Experienced			
Raise Miner	8	2	0	$125,000	$34,000	$159,000
Development Drilling	12	3	1	$125,000	$34,000	$159,000
Ground Support	24	12	2	$125,000	$34,000	$159,000
Production Drilling	12	3	1	$125,000	$34,000	$159,000
Production Blasting	12	6	2	$103,000	$32,000	$135,000
Mine Haulage	24	18	4	$103,000	$32,000	$135,000
Mine Services	16	8	4	$103,000	$32,000	$135,000
Mine Backfill	8	4	2	$103,000	$32,000	$135,000
Shaft Services	8	8	0	$103,000	$32,000	$135,000
Core Drillers	16	0	2	$125,000	$34,000	$159,000
Core Driller Assistant	16	16	0	$103,000	$32,000	$135,000
Total / Average	**156**	**80**	**18**	$113,000	$33,000	$146,000

MINERAL PROCESSING

The mineral processing plant requires a thirty-six (36) person workforce. Rise Grass Valley expects to fully staff the mineral process plant by trainee's recruited locally. The mineral process plant requires the operation of equipment in each section of the plant. The modern mineral process plant is highly automated, and most jobs are technically oriented rather than physically demanding. Some plant operators will be trained to operate mobile machinery such as forklifts, trucks, and front-end loaders. Plant operators would be recruited locally and receive on-the-job training and vocational training, as required.

Table 4 – Mineral Processing

Job Category	Total Employees	Local		Annual Wages (Typical)	Annual Benefits	Annual Earnings
		Trainee	Experienced			
Control Room	4	4	0	$97,000	$31,000	$128,000
Grinding	4	4	0	$97,000	$31,000	$128,000
Gravity	4	4	0	$97,000	$31,000	$128,000
Flotation	4	4	0	$97,000	$31,000	$128,000
Dewatering	4	4	0	$97,000	$31,000	$128,000
Concentrate	4	4	0	$97,000	$31,000	$128,000
General Plant	4	4	0	$97,000	$31,000	$128,000
Backfill Plant	4	4	0	$97,000	$31,000	$128,000
Water Treatment	4	4	0	$97,000	$31,000	$128,000
Total / Average	**36**	**36**	**0**	$97,000	$31,000	$128,000

Mineral Process plant using gravity and flotation methods with similar machinery and building layout as proposed at the Idaho-Maryland Mine Project.

TRADES

Modern underground mining is heavily mechanized and requires a significant skilled team of trades people to maintain the equipment required for operations. Heavy duty mechanics are required in the underground mine to maintain and repair underground mobile machinery with includes wheeled and track-mounted electric and battery powered equipment and hydraulic drills. Heavy duty mechanics require vocational training and experience. Equipment vendors also provide specific training. A total of sixteen (16) mechanics would be required with four mechanics per shift. It is assumed that six (6) experienced mechanics would be recruited locally, and four (4) experienced mechanics would be recruited from outside the area. The mine will have an apprenticeship program and six (6) heavy duty mechanic apprentices will be recruited locally and receive vocational training and on-the-job training.

The mine and plant are powered by electricity and require a significant skilled team of trades people to maintain the electrical services required for operations. Industrial electricians are required in both the underground mine and the surface plant to maintain electrical equipment and services. Industrial electricians require vocational training and experience. A total of eight (8) electricians would be required with two electricians per shift. Rise Grass Valley assumes that four (4) experienced electricians would be recruited locally, and two (2) experienced electricians will be recruited from outside the area. The mine will have an apprenticeship program and two (2) industrial electrician apprentices will be recruited locally and receive vocational training and on-the-job training.

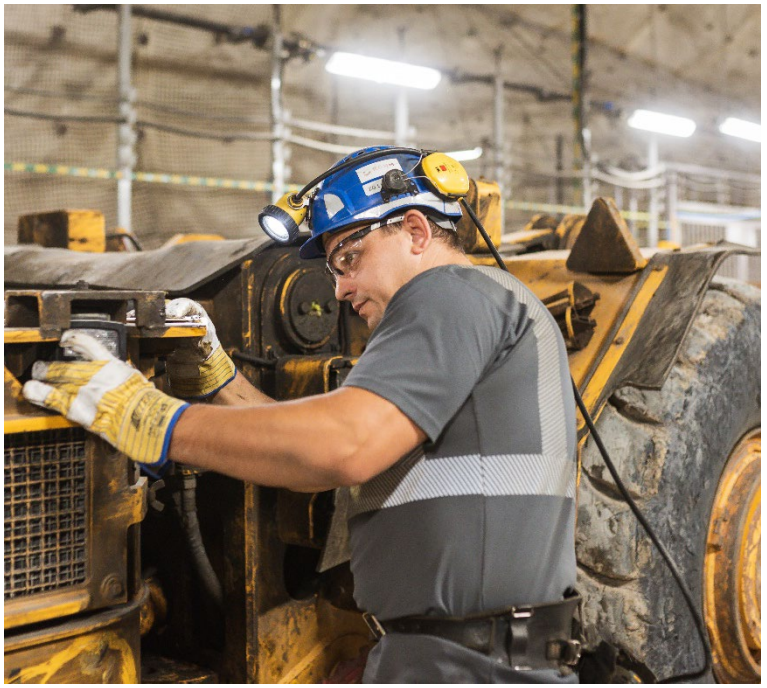
The mineral process plant and mine shaft conveyances require a significant skilled team of millwrights to maintain operations. A total of eight (8) millwrights would be required with two millwrights per shift. Rise Grass Valley assumes that two (2) experienced millwrights would be recruited locally and two (2) experienced millwrights would be recruited from outside the area. The mine will have an apprenticeship program and four (4) millwright apprentices will be recruited locally and receive vocational training and on-the-job training.

The mine and plant will require metal fabrication and carpentry for maintenance of operations. Rise Grass Valley assumes a qualified and experienced carpenter and metal fabricator would be recruited from the local area.

The details of trades employment are provided in Table 5.

Table 5 – Trades

Job Category	Total Employees	Local		Annual Wages	Annual Benefits	Annual Earnings
		Trainee	Experienced			
Mine Mechanic	16	6	6	$120,000	$34,000	$154,000
Mine Electrician	4	1	2	$120,000	$34,000	$154,000
Millwright	8	4	2	$114,000	$32,000	$146,000
Plant Electrician	4	1	2	$114,000	$32,000	$146,000
Carpenter	1	0	1	$91,000	$32,000	$123,000
Metal Fabricator	1	0	1	$91,000	$32,000	$123,000
Total / Average	**34**	**12**	**14**	$116,000	$34,000	$150,000



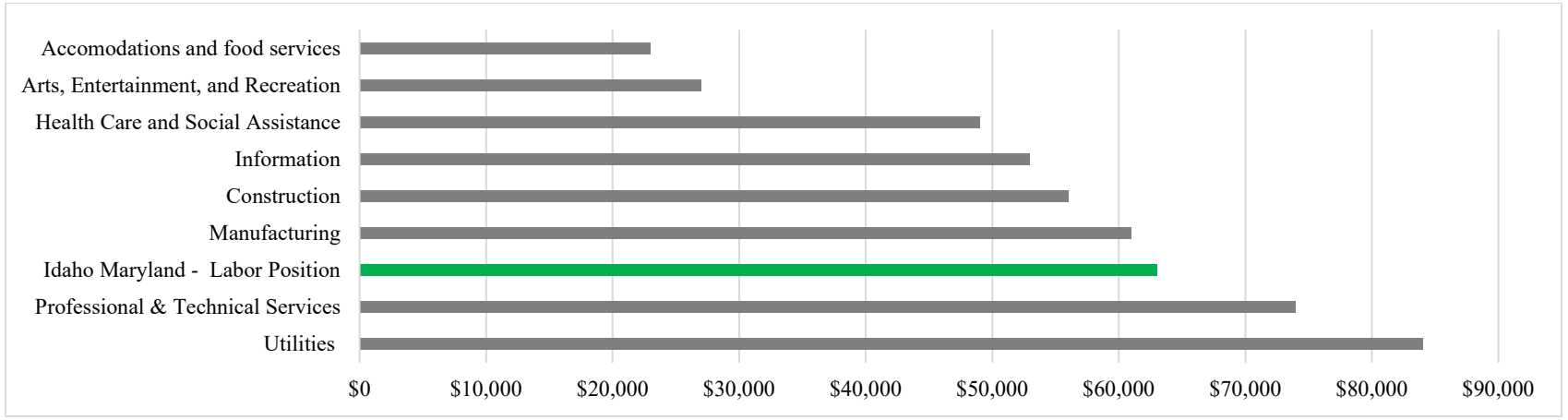
LABOR

Laborers are required in the underground mine and mineral process plant. A total of twenty-two (22) laborers will be recruited locally. The labor workforce is closely supervised by more experienced workers. These entry level positions provide an opportunity to develop valuable job skills. Wages for labor workers compare favorably to most occupations in Nevada County, as shown in Figure 2. They include full benefit packages along with advancement opportunities into more skilled and higher wage positions in the plant, underground mine, or trades.

Table 6– Labor

Job Category	Total Employees	Local		Annual Wages (Typical)	Annual Benefits	Annual Earnings
		Trainee	Experienced			
Mine Laborer	14	14	0	$78,000	$31,000	$109,000
Plant Laborer	8	8	0	$72,000	$30,000	$102,000
Total / Average	**22**	**22**	**0**	$76,000	$31,000	$107,000

Figure 2 – Idaho-Maryland Labor Wage Vs. Nevada County Industry Average[3]



[3] https://ncerc.org/wp-content/uploads/2020/04/Nevada-County-Economic-and-Workforce-Opportunity-Profile-March-2020.pdf

GEOLOGY, ENGINEERING, AND ENVIRONMENTAL

The mine engineering department is responsible for the underground mine design and planning to ensure the safe and economic extraction of gold mineralization. The Chief Engineer leads the department of three formally educated and experienced mine engineers. Mine engineering positions require an engineering degree and a minimum of four years experience at a producing underground metal mine. Rise Grass Valley assumes that all four (4) mine engineer positions including the Chief Engineer would be recruited from outside the local area. The engineering department is supported by three (3) mine surveyors. Mine surveyors work in the underground mine, survey new mine workings, and plot mine workings using CAD software. Rise Grass Valley assumes that one (1) experienced surveyor would be available for recruitment locally. Two (2) trainee surveyors would be recruited locally and receive vocational training and on-the-job training.

The geology department is responsible for discovering, sampling, and mapping gold mineralization. The Chief Geologist leads the department of eleven (11) experienced mine and exploration geologists. Geology positions require a geology degree and experience requirements are dependent on position. Some positions are available for geologists without specific underground mining experience. Rise Grass Valley assumes that five (5) geologists would be recruited locally and six (6) including the Chief Geologist would be recruited from outside the local area. The geology department is supported by two (2) core technicians. Core technicians work on surface and are responsible for logging and cutting of exploration drill core. Two (2) trainee core technicians recruited locally would receive on-the-job training.

The environmental department is responsible for environmental compliance with numerous and complex environmental regulations. Environmental compliance includes water quality, dust control, air quality monitoring, and noise monitoring. The Chief Environmental Scientist leads the department of three (3) formally educated and experienced environmental scientists. Rise Grass Valley assumes that one (1) experienced environmental scientist could be recruited locally, and two (2) environmental scientists including the Chief Environmental Scientist would be recruited from outside the local area. The environmental department is supported by two (2) technicians who monitor site activities, collect samples, and manage environmental databases. Two (2) trainee environmental technicians would be recruited locally and receive vocational training and on-the-job training.

A Chief Metallurgist is responsible for ensuring recovery and efficiency during the processing of gold mineralization. The Chief Metallurgist position requires an engineering degree and a minimum of four years experience at a similar processing plant. This position reports to the Plant Manager. The metallurgist is supported by an assayer who determines gold and metal values in order to maximize gold recovery and ensure engineered fill meets environmental requirements. Rise Grass Valley assumes that the metallurgist and assayer positions would be recruited from outside the local area. An assayer assistant will be recruited locally and receive on-the-job training.

The details of trades employment are provided in Table 7.

Table 7 – Geology, Engineering, Environmental

Job Category	Total Employees	Local		Annual Wages (Typical)	Annual Benefits	Annual Earnings
		Trainee	Experienced			
Chief Mine Engineer	1	0	0	$168,000	$38,000	$206,000
Mine Engineer	3	0	0	$138,000	$36,000	$174,000
Mine Surveyor	3	2	1	$85,000	$32,000	$117,000
Chief Geologist	1	0	0	$168,000	$38,000	$206,000
Mine Geologist	8	0	4	$136,000	$34,000	$170,000
Exploration Geologist	2	0	1	$108,000	$35,000	$143,000
Core Tech	2	2	0	$72,000	$32,000	$104,000
Chief Environmental Scientist	1	0	0	$168,000	$38,000	$206,000
Environmental Scientist	2	0	1	$138,000	$36,000	$174,000
Environmental Tech	2	2	0	$85,000	$32,000	$117,000
Chief Metallurgist	1	0	0	$168,000	$38,000	$206,000
Assayer	1	0	0	$91,000	$32,000	$123,000
Assay Assistant	1	1	0	$78,000	$32,000	$110,000
Total / Average	**28**	**7**	**7**	$121,000	$35,000	$156,000

ACCOUNTANTS, ADMINISTRATION, AND SECURITY

Rise Grass Valley's Chief Financial Officer will lead the accounting department with assistance of the Accounting Manager. Two (2) accountants will be required, and it is expected that formally educated and experienced accountants can be recruited from the Nevada County area. The accounting department will include two (2) purchasers, responsible for purchasing materials and supplies for the mine operation, and two (2) site admins, responsible for clerical work to support the department. Locally hired trainee purchasers and site admins would receive vocational education and software training in conjunction with on-the-job training.

An Executive Assistant, to assist the General and Operations Managers, would possess business, organization, clerical, and communication skills and experience. Rise anticipates that an experienced executive assistant would be recruited locally.

A fully trained emergency medical technician (EMT) will always be onsite at the mine to ensure rapid response to medical emergencies on surface or in the underground mine. The EMT, reporting to the Safety Manager, will be a full-time member of the mine rescue team and serve as the chief liaison with the local fire district, first responders, and medical providers. As a member of the mine rescue team, the EMT would be fully trained in underground and surface emergency response in addition to medical training. Five (5) EMT positions are allocated to cover four working shifts in order to allow EMT's to participate in continuous training and collaborate with local emergency response organizations. Rise Grass Valley assumes that all Emergency Medical Technicians positions would be recruited locally and receive vocational training.

A security officer will always be onsite to ensure controlled access to the fenced, gated mine site. Four (4) trainee security employees would be recruited locally and receive vocational training and on-the-job training.

Table 8 – Accountants, Administration, Security

Job Category	Total Employees	Local		Annual Wages (Typical)	Annual Benefits	Annual Earnings
		Trainee	Experienced			
Accountant	2	0	2	$138,000	$36,000	$174,000
Purchaser	2	2	0	$106,000	$34,000	$140,000
Site Admin	2	2	0	$72,000	$32,000	$104,000
Executive Assistant	1	0	1	$108,000	$35,000	$143,000
Emergency Medical Technician	5	0	5	$103,000	$32,000	$135,000
Security	4	4	0	$82,000	$31,000	$113,000
Total / Average	**16**	**8**	**8**	$98,000	$32,000	$130,000

SURFACE EQUIPMENT OPERATORS

Surface equipment operators are required for transport and placement of engineered fill. Surface equipment includes on-road trucks, bulldozers, excavators, front-end loaders, and compactors. Rise Grass Valley assumes that four (4) experienced equipment operators could be recruited from the local area. Two (2) trainees will be recruited locally and receive vocational training and on-the-job training.

Table 9 – Surface Equipment Operators

Job Category	Total Employees	Local		Annual Wages (Typical)	Annual Benefits	Annual Earnings
		Trainee	Experienced			
Truck Driver	2	0	2	$98,000	$32,000	$130,000
Heavy Equipment Operator	4	2	2	$83,000	$32,000	$115,000
Total / Average	**6**	**2**	**4**	$88,000	$32,000	$120,000

MANAGEMENT & SUPERVISORS

Mine operations would be led by a highly experienced management and supervisory team to ensure that the health, safety, environmental, regulatory, and productivity requirements are achieved. The General Manager will serve as Rise Grass Valley's President. The General and Operations Managers are responsible for overall mine leadership and are supported by Safety, Human Resources, Financial, Mine, and Plant Managers. The Mine and Plant areas have continuous supervision with eight shift supervisors. Management & Supervisor positions generally require previous leadership experience and a minimum of eight years experience at a producing underground metal mine. Rise Grass Valley is assuming that all nineteen positions would be recruited from outside the local area.

Table 10 – Management & Supervisors

Job Category	Total Employees	Local		Annual Wages (Typical)	Annual Benefits	Annual Earnings
		Trainee	Experienced			
General Manager	1	0	0	$318,000	$49,000	$367,000
Operations Manager	1	0	0	$246,000	$43,000	$289,000
Safety Manager	1	0	0	$136,000	$36,000	$172,000
Human Resource Manager	1	0	0	$154,000	$37,000	$191,000
Chief Financial Officer	1	0	0	$204,000	$41,000	$245,000
Accounting Manager	1	0	0	$168,000	$38,000	$206,000
Exploration Manager	1	0	0	$132,000	$36,000	$168,000
Mine Manager	1	0	0	$204,000	$41,000	$245,000
Mine Maintenance Manager	1	0	0	$132,000	$36,000	$168,000
Mine Shift Supervisor	4	0	0	$125,000	$34,000	$159,000
Plant Manager	1	0	0	$204,000	$41,000	$245,000
Plant Maintenance Manager	1	0	0	$132,000	$36,000	$168,000
Plant Supervisors	4	0	0	$166,000	$36,000	$202,000
Total / Average	**19**	**0**	**0**	**$168,000**	**$37,000**	**$205,000**

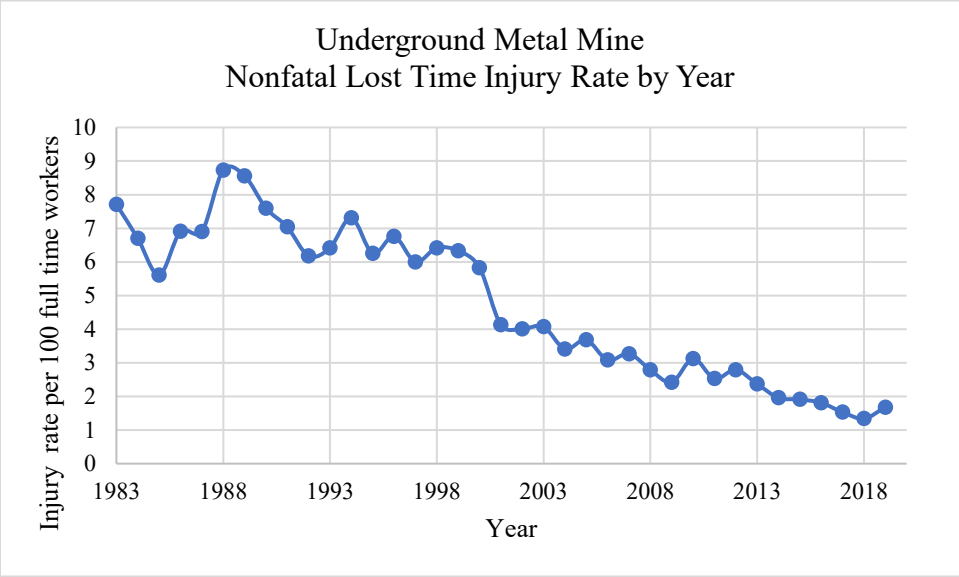
General Manager
Chief Financial Officer
Human Resources Manager
Operations Manager
Accounting Manager
Mine Manager
Safety Manager
Plant Manager
Mine Shift Supervisors
Mine Maintenance Manager
Exploration Manager
Plant Supervisors
Plant Maintenance Manager

HEALTH & SAFETY

UNDERGROUND METAL MINING

Safety in underground metal mining has shown a remarkable and continuous improvement through recent decades due to increased mechanization, technology, safety practices, and regulations. Underground metal mining has injury rates similar to residential construction and injury rates are significantly less than agriculture, truck transportation, and logging. As shown in Figure 3, injury rates today 80% less than those experienced 30 years ago and have decreased by 33% in the last 10 years. Occupational health in underground metal mining has also greatly improved from previous decades due to engineering controls, technology, mechanization and stringent regulations to reduce hazards from noise, repetitive stress, silica and other dust, and diesel particulates. Recent commercialization of battery powered underground mobile equipment allow the complete elimination of diesel-powered equipment underground at Idaho-Maryland.

Figure 3 – Underground Metal Mining - Non-Fatal Lost Time Injury Rate by Year*



* CDC - NIOSH, Non-fatal occupational injury rate for underground metal mines. wwwn.cdc.gov/niosh-mining/MMWC

The non-fatal lost time injury rate for underground mining of 1.3[4] injuries per 100 workers is similar to that experienced in the residential construction industry[5] as shown in Figure 4. From the period of 2016 to present, only two fatal injuries have occurred in all the underground metal mines combined in the United States[6].

The five-year average for fatal injury rates in underground metal mining has improved to 5.6[7] per 100,000 workers versus the 10-year average of 18.7 per 100,000 workers. Based on data from the previous five years, fatal injuries rates in underground metal mining are similar to automotive mechanics, carpenters, and taxi drivers. Even considering the data from the previous 10 years, fatal injuries rates in underground metal mining are similar to agricultural workers, powerline repair, and ground maintenance workers. Data from five and 10-year averages show underground metal mining is significantly less hazardous than iron workers, truck drivers, roofers, aircraft pilots, fishing, and logging workers as shown in Figure 5.

MINERAL PROCESSING PLANT & OFFICE

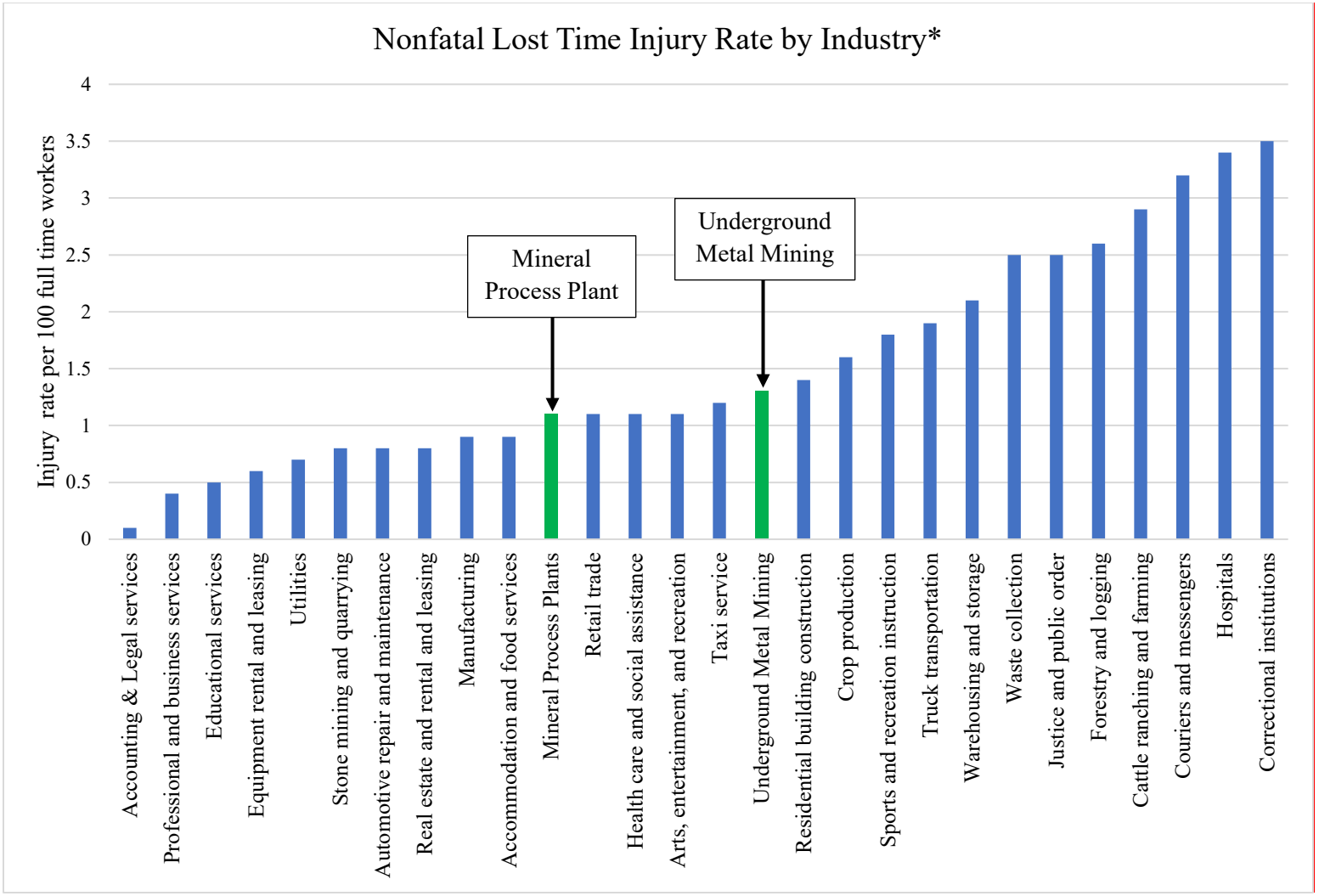
The non-fatal lost time injury rate for mineral process plants of 1.1[8] per 100 workers is similar to that experienced in the retail trade industries[9] as shown in Figure 4. From the period of 2016 to present, only one fatal injury has occurred in a mineral process metal plant in the United States[10].

The five-year average for fatal injury rates in mineral processing has improved to 1.5 per 100,000 workers versus the 10-year average of 2.0[10] per 100,000 workers. Based on data from the previous five years, fatal injuries rates in mineral processing are similar to food preparation, food serving, and retail sales. Considering the data from the previous 10 years, fatal injuries rates in mineral processing are similar to retail sales, janitors, and building cleaners as shown in Figure 5.

In 2018, lost time injuries in 2018 for office workers at domestic mining operations is reported at a very low rate of 0.09 per 100 workers, similar to office workers in other industries. No fatal injuries have occurred at domestic mine offices during the previous 10 years in the United States[10].

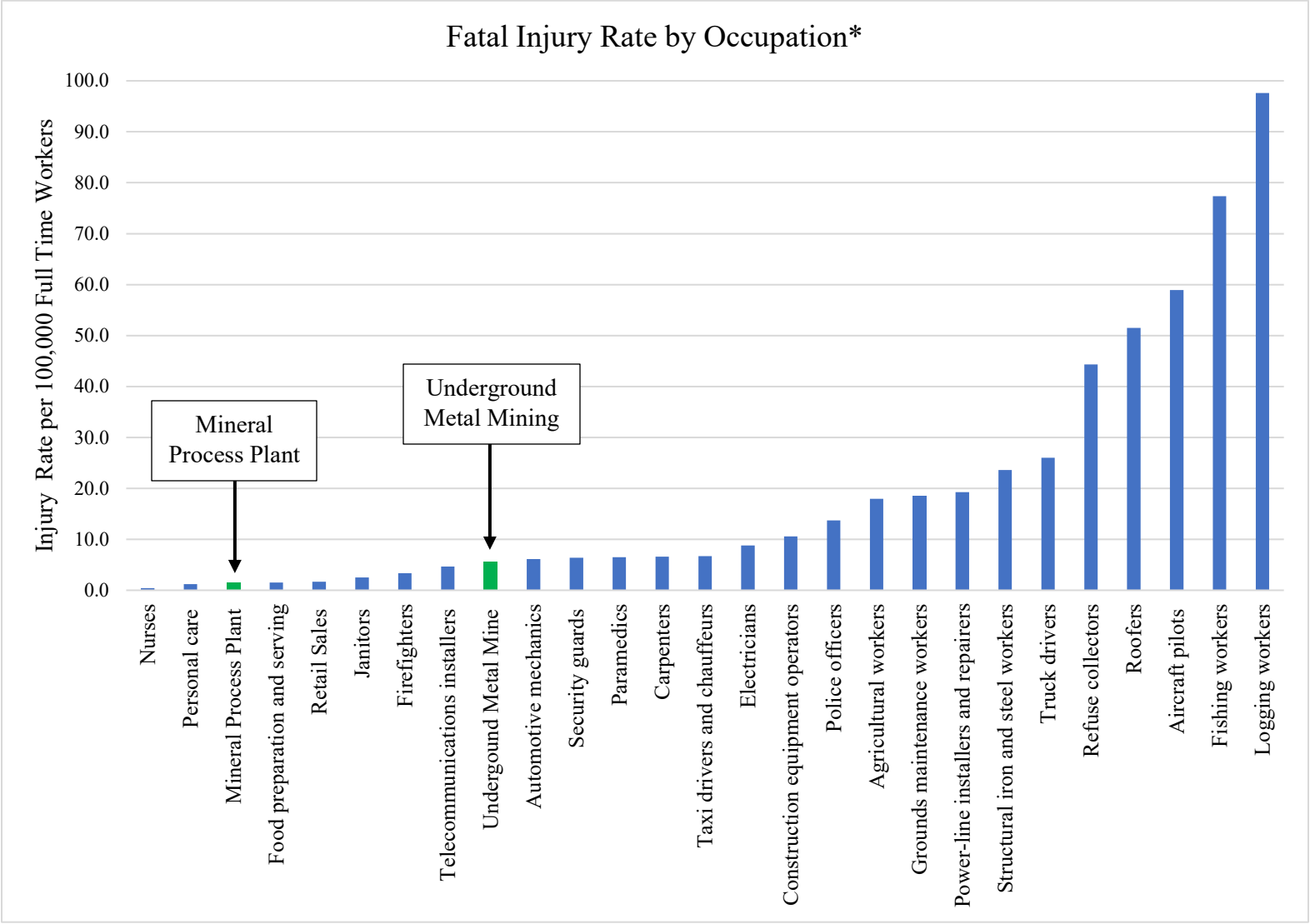
Figure 4 – Non-Fatal Lost Time Injury Rate by Industry Vs. Mineral Processing and Underground Metals Mining

[4] US Department of Labor – MSHA, 2018 Mine Injury Report. https://arlweb.msha.gov/Stats/Part50/WQ/2018/MIWQ%20Report%20CY%202018.pdf
[5] US Bureau of Labor Statistics, 2018 Non-fatal occupational injury rate by industry. www.bls.gov/web/osh/summ1_00.htm
[6] In the period from 2016-2020, 2 fatal injuries occurred (both in 2018) at underground metal mines in the United States.
www.msha.gov/data-reports/fatality-reports/2018/fatality-16-november-11-2018/final-report
www.msha.gov/data-reports/fatality-reports/2018/fatality-14-october-25-2018/final-report
[7] Underground Metal Mining fatality rates were calculated on 5 year (2016 – 2020) and 10-year periods (2011 – 2020). No fatalities have been reported in 2020 as of October 15th. For the purpose of calculations, it is assumed that no fatalities will occur until the end of 2020. https://arlweb.msha.gov/ACCINJ/accinj.htm
[8] Department of Labor – MSHA, 2018 Mine Injury Report. https://arlweb.msha.gov/Stats/Part50/WQ/2018/MIWQ%20Report%20CY%202018.pdf
[9] US Bureau of Labor Statistics, 2018 Non-fatal occupational injury rate by industry. www.bls.gov/web/osh/summ1_00.htm
[10] Mineral Process Metal Plant fatality rates were calculated on 5 year (2016 – 2020) and 10-year periods (2011 – 2020). No fatalities have been reported in 2020 as of October 15th. For the purpose of calculations, it is assumed that no fatalities will occur until the end of 2020. No fatal injuries at mine offices in 10-year period reviewed.
https://arlweb.msha.gov/ACCINJ/accinj.htm



* US Bureau of Labor Statistics, 2018 Non-fatal occupational injury rate by industry. www.bls.gov/web/osh/summ1_00.htm
US Department of Labor – MSHA, 2018 Mine Injury Report. https://arlweb.msha.gov/Stats/Part50/WQ/2018/MIWQ%20Report%20CY%202018.pdf

Figure 5 – Fatal Injury Rate by Occupation Vs. Mineral Processing and Underground Metals Mining



* US Bureau of Labor Statistics, 2018 Fatal occupational injury rate by selected occupation. www.bls.gov/iif/oshcfoi1.htm#rates
US Department of Labor – MSHA, 2016-2020 Mine Injury Reports. https://arlweb.msha.gov/ACCINJ/accinj.htm

MINE RESCUE

The mine rescue team is the pride of every American mining operation and the Rise Grass Valley's workforce will include fully trained and equipped mine-rescue teams, trained in accordance with Mine Safety and Health Administration (MSHA) regulations. These professionals will be available to respond to underground and surface fires, accidents, or medical emergencies. The Idaho-Maryland Mine will seek cross-training opportunities and mutual-aid agreements with local emergency response organizations and other mining operations. The project will always have skilled tradesmen on-site, including electricians and mechanics.

Rise does not require assistance from local agencies for underground mine rescue.

Rise is willing to make available its human resources and infrastructure to assist local first responders in fire fighting and other emergencies in the region surrounding the mine site.

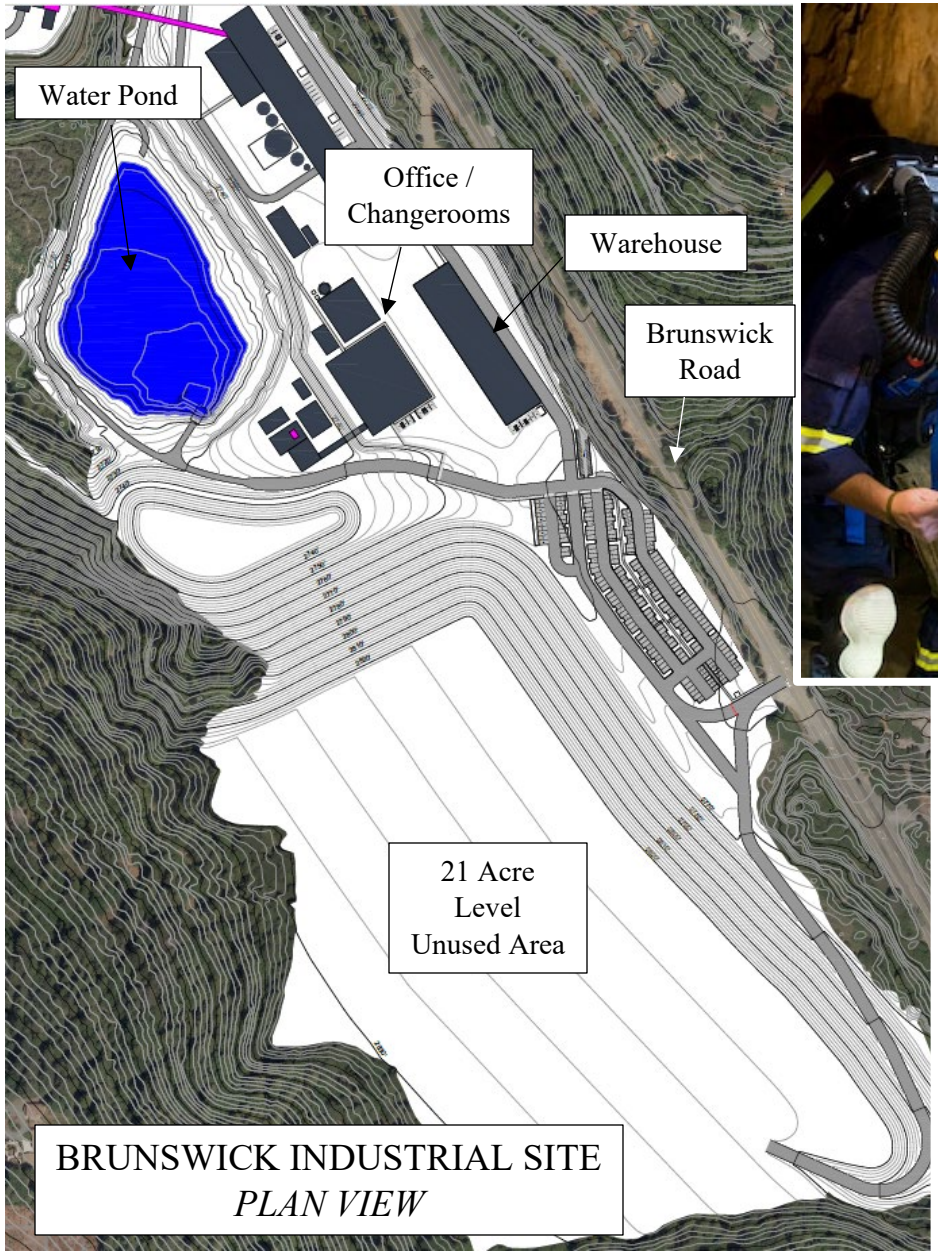
Rise Grass Valley's mine rescue team will total 24 members and includes five emergency medical technicians (EMT). An EMT will always be onsite to provide rapid response to any medical emergencies and a permanent member of the mine rescue team. Each of the four mine rescue teams would be on call to respond to emergencies. As per MSHA, a minimum of two teams is required to be available within a one-hour travel time to respond to the mine site.

The mine rescue teams will be fully trained and equipped with personal protective equipment, closed circuit rebreather apparatus for underground, open circuit SCBA breathing apparatus for surface responses, oxygen and equipment supplies, gas testing equipment, thermal imaging cameras, communication devices, fire fighting vehicles, hand tools, pumps, hoses, and other equipment.

The mine rescue teams would also be trained and equipped to fight forest fires, in coordination with local agencies, which threaten the mine property and surrounding area. With organized leadership and a skilled workforce, substantial additional human resources could also be mobilized to support fire fighting efforts. The forest fire fighting capacity is augmented by the water treatment pond which holds approximately 30 acre-ft of water and 850 gallons per minute of continuous water supply. The Brunswick site will have approximately 21 acres of unused level graded area which could be used as a base and for marshalling of fire fighting resources. The 24,000 ft^2 office/changeroom facility includes 66 individual showers to support fire fighting efforts of longer durations. The property also has full back-up power system providing 6 MW of power in the event that the PG&E utility power is disturbed or pre-emptively shut off.

There has not been a mine disaster in an underground metal mine in the United States for almost 50 years, with the last metal mine disaster occurring in 1972[11]. Modern underground mines have robust ventilation systems, fire resistant materials, automatic fire suppression on mobile equipment, advanced ground support, and numerous technologies and procedures. Metal mining does not have significant methane or other mine gases which occur in coal mining.

[11] Sunshine Mine disaster, Idaho in 1972 was last underground metal mine disaster https://www.cdc.gov/niosh/mining/statistics/content/mnmdisasters.html


Water Pond
Office / Changerooms
Warehouse
Brunswick Road
21 Acre Level Unused Area
BRUNSWICK INDUSTRIAL SITE
PLAN VIEW

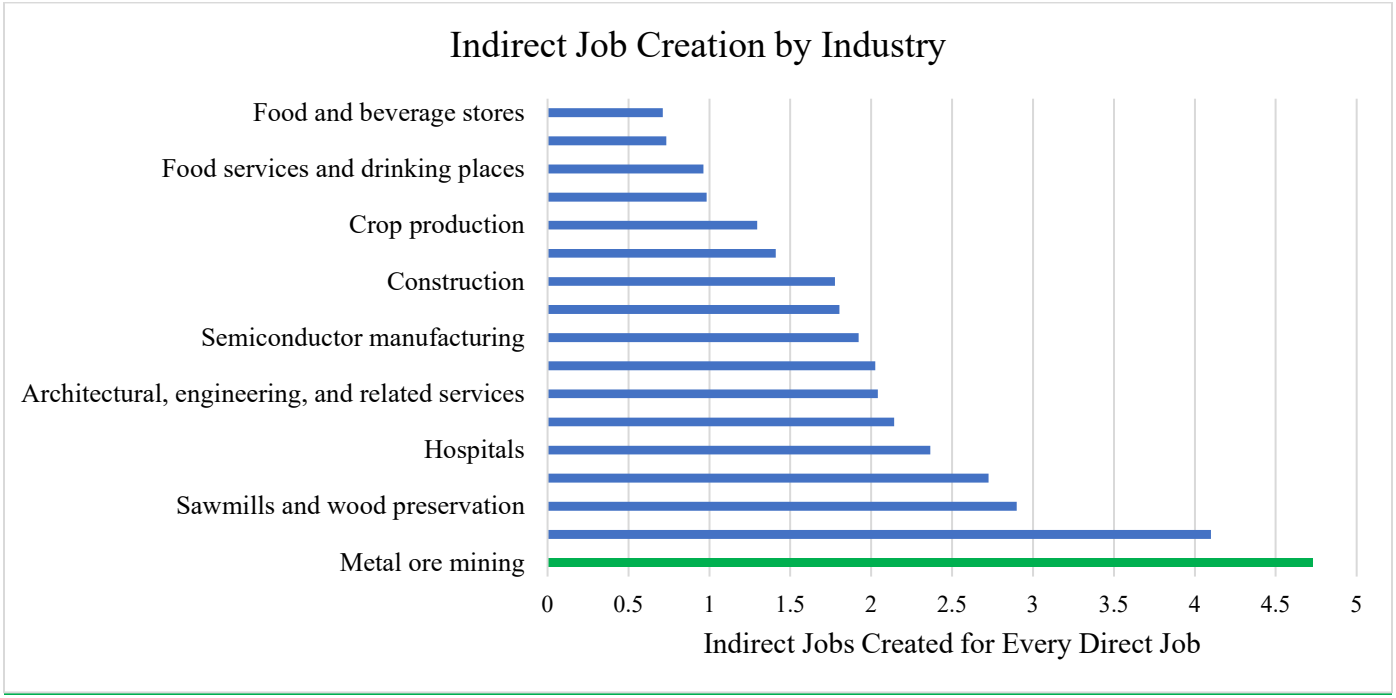
Example
Mine Rescue Team

Water Treatment Pond.
Live Capacity ~ 30 acre feet

INDIRECT JOBS / ECONOMIC MULTIPLIER

Each industry has *backward linkages* to economic sectors that provide materials needed for the industry's output. Additionally, each industry has *forward linkages* to the economic sectors where the industry's workers spend their income. Therefore, in addition to the jobs directly supported by an industry, a large number of indirect jobs may also be supported by that industry.[12] Metal ore mining has a high economic multiplier in comparison to other industries as shown in Figure 6 with approximately 4.7 indirect jobs created for every direct job. The amount of local indirect jobs created by the project has been estimated at 300 jobs[13] and therefore the project would create a total of 612 new local jobs. This significant number of indirect jobs would be created in the local Nevada County area due to local spending by employees and service providers supporting its operation. Local job creation during construction and state and national job creation has not been estimated.

Figure 6 – Indirect Job Creation by Industry[12]



[12] Economic Policy Institute, 2019 https://www.epi.org/publication/updated-employment-multipliers-for-the-u-s-economy/

[13] Economic Impacts of the Idaho-Maryland Mine on Nevada County, March 2021.

MINE CONSTRUCTION

The Idaho-Maryland Mine Project's construction represents a significant capital investment in Nevada County. With an estimated capital investment of approximately $100 million to bring the Project to commercial production, ample opportunities exist for participation of local contractors, material suppliers, and service providers.

Local contractors and suppliers would be requested to assist in many Project construction activities. A partial list is provided as follows:

- Site grading and earthworks to prepare site for construction
- Installation of numerous culverts and storm water collection
- Concrete slabs and foundations for all buildings, headframes and process plant machinery
- Asphalt paving
- Landscaping including planting of trees and installation of irrigation systems
- Erection of over 20 pre-manufactured steel buildings making up 126,000 square feet of industrial space
- Ancillary construction in buildings including doors, windows, interior walls, noise control, showers, etc.
- Installation of building services including HVAC, electrical, and plumbing
- Installation of septic system
- Assembly and welding of process plant tanks
- Custom metal fabrication for support structures in the process plant and mine headframes
- Installation of numerous equipment in the process plant and water treatment plant
- Installation of piping, electrical cable, and instrumentation in the process plant and water treatment plant
- Installation of over 1 mile of potable water line, distribution line, and meters to service properties along E. Bennett Road
- Equipment, tools, and vehicle rentals
- Freight delivery
- Security to ensure controlled access to the site and protect equipment during non-work hours
- Engineering, environmental, and survey support for all construction activities

LOCAL SERVICE PROVIDERS

The Idaho-Maryland Mine Project operation would be supported by numerous service providers during commercial production. A partial list of services required from local providers during operations is provided below. It is estimated that Company and employee spending would create new local annual spending of ~$50 million per year[14].

Table 11 – Outside Services Required

Landscaping Maintenance	Maintenance of landscaping and planting in the parking areas and around buildings.
Building Maintenance	Maintenance of buildings including plumbing, electrical, and HVAC
Septic System Maintenance	Maintenance of septic system and field
Fuel and lubricant supply and delivery	Supply and delivery of fuel, oils, and lubricants
Freight Delivery	Incoming freight deliveries and outgoing concentrate shipments
Janitorial Services	Daily cleaning of offices and changerooms
Waste and Recycling	Pickup and disposal or recycling of materials
Laundry	Launder & repair mine workers coveralls on a regular basis
Health Care	Provision of health care services in conjunction with employee benefit programs
Child Care	Childcare services for participating employees
Industrial sewing / fabric repair	Professional repair of torn ventilation ducting
Light Vehicle Maintenance	Repair and maintenance of light vehicles used to support surface operations
Surface Equipment Maintenance	Maintenance and repair of trucks and heavy surface equipment
Electrical Motor rebuilding	Rewinding and rebuilding of electrical motors
Mechanical Machine rebuilding	Rebuild and repair of various machine components
Hydraulic fittings and hoses	Hydraulic hoses and fittings to support mine equipment maintenance
Steel Fabrication	Custom steel fabrication to support mine operations project and repairs
Steel Recycling	Recycling of steel from worn machine parts, ground support rebar and screen.
Machining	Machining of custom parts and fasteners
Building supplies & small tools	General supplies such as fasteners, cleaning supplies, lumber, and small tools.
Core Boxes	Manufacture and supply of wooden core boxes
Safety supplies	Personal Protective Equipment such as gloves, coverall, hard hats, etc.
Taxi services	Transport visitors and consultants from Sacramento Airport to Grass Valley. Hot shot services for critical parts or materials.
Travel services	Travel arrangements for visitors and consultants travelling to Grass Valley from other areas
Hotels and Accommodations	Accommodation of visitors and consultants travelling to Grass Valley from other areas
Engineering and Environmental Consultants	Assistance to company regulatory compliance
Insurance Services	Assistance with employee benefit programs and company insurance policies
Accounting Services	Financial Auditing and assistance with payroll and taxes

[14] Economic Impacts of the Idaho-Maryland Mine on Nevada County, March 2021.