ECONOMIC IMPACT OF THE PROPOSED IDAHO-MARYLAND MINE PROJECT

15 NOVEMBER 2022

Prepared for:

County of Nevada

Prepared by:

Robert D. Niehaus, Inc.

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EXECUTIVE SUMMARY

This report, prepared for Nevada County by Robert D. Niehaus, Inc. (RDN), presents results of the economic and fiscal impact analysis of the proposed Idaho-Maryland Mine project (proposed project). The proposed project would reinitiate underground mining and gold mineralization processing in Nevada County, which would result in costs and benefits to the local community. This study evaluates potential costs and benefits of the proposed project in Nevada County. Potential costs include increased need for public services, while potential benefits include increased economic activity, employment, wages, and tax revenue. This study also assesses whether operation of the proposed project may indirectly impact local property values. Although this study assumes the project proponent, Rise Grass Valley (RGV), would construct and operate the proposed project, the impacts would remain the same if another operator were to purchase the mine because the new operator would be subject to the same constraints, conditions, and requirements.

The County is responsible for processing and reviewing RGV's application for consideration by decision-makers, including the Nevada County Planning Commission and Board of Supervisors. Understanding both costs and benefits of the proposed project and how they relate to one another is important for helping decision-makers, as well as the public and other stakeholders, better understand the economic implications of the proposed project for the local community. This study aims to provide a clearer picture of the proposed project's potential economic and fiscal effects to the local community, including anticipated costs and benefits of the proposed project in Nevada County. This study, in combination with the Draft Environmental Impact Report (EIR), provides valuable information about the potential impacts of the proposed project to help inform the decision-making process.

This study evaluates the anticipated economic and fiscal impacts of the proposed project to local businesses, residential property values, utility providers, public services, tax revenues, and the County General Fund. Given the uncertainty regarding the mine's production and resulting economic impact, these results require careful interpretation. Although this study includes information about the economic impacts of the proposed project during multiple phases—construction, ramp up, and ongoing operation—the most critical impacts are those related to ongoing operation. Therefore, this summary focuses on the impact of ongoing project operation to businesses, residents, utility providers, government agencies, and special districts in Nevada County.

The results of this economic and fiscal impact analysis are summarized below. This analysis assumes the proposed project would operate as proposed by the applicant and documented in the project description in the Draft EIR, and the applicant's projections for employment, payroll, and operational expenditures on goods and services provided for this study are accurate. This report presents all dollar figures in constant (inflation-adjusted) 2022 dollars.

Economic Impact from Proposed Project Spending

- RGV provided estimated annual payroll expenditures for the proposed project, which are expected to total $38.1 million for 312 jobs, including 213 local hires and 99 non-local hires, for an average $122,000 in total compensation (i.e., wages plus benefits) per job.

- RDN adjusted RGV's estimated local annual operational expenditures on goods and services based on known industry dynamics of local versus non-local spending. The revised annual operational expenditures total $5.0 million. This estimate is $7.5 million lower than RGV's

original estimate of $12.5 million.

- Full operation of the proposed project would result in yearly output of $202.8 million in Nevada County. The community impact, which considers the portion of output that would be generated by RGV spending and benefits the local community, would be $61.1 million.

- During full operation, the proposed project would directly employ 312 workers and the proposed project's operational expenditures on goods and services would support an additional 163 indirect and induced jobs at local businesses.

- Operation of the proposed project would result in yearly labor income of approximately $45.4 million: $38.1 million from jobs working directly for the mine (direct jobs), $2.2 million from jobs in supporting industries (indirect jobs), and $5.1 million from jobs in industries that serve residents (induced jobs).

Impact to Local Property Values

- RDN performed extensive research and analysis and found no conclusive evidence to assert that the proposed project would have a significant impact on local property values.

- An extensive literature review did not identify any studies that focused specifically on property value impacts of a modern, underground mineral mine.

- A rigorous analysis of three mines determined to be viable case study locations did not find a statistically significant impact on nearby residential property values.

- A survey of licensed real estate professionals in Nevada County indicates that most respondents believe that the proposed project would result in a large and permanent negative impact on local property values. This result is coupled with their opinion that the Draft EIR significantly understates the significance of the proposed project's environmental impacts.

Impacts to Utilities, Public Services, and the General Fund

- The County provides public services that would be affected by the proposed project and associated increase in population. Certain costs would be covered by mitigation through the project's conditions of approval. Costs to the County not covered by mitigation are primarily associated with law enforcement and emergency services, which expect increases in costs related to heightened traffic on local roads and associated vehicle accidents.

- RGV's mineral property tax accounts for a sizable portion of the impact to the County's tax revenue. Mineral property taxes would be based on the amount of gold reserves that are available and economically viable, which is currently unknown. Given this uncertainty, RDN estimates that the tax revenue on mineral properties going to the County General Fund would be between $141,000 and $742,000 in the first year of full production. This value would decrease over time if mineral properties were reduced during operation without the discovery of additional reserves.

- During full operation, the proposed project would result in approximately $881,000 in estimated annual tax revenue from property, sales, and other taxes due to indirect and induced effects from

RGV spending, with $147,000 of this revenue going to the Nevada County General Fund.

- This study estimates a range for the net fiscal impact of the proposed project to the Nevada County General Fund. The high-end estimate is $763,000 in the first year of full operation, declining gradually to somewhere between $760,000 and $741,000 per year for as long as the mine is fully operational and continues discovering new reserves at the projected rate of extraction. The low-end estimate is $163,000 in the first year of full operation before declining over an eight-year productive life of the mine to somewhere between $22,000 and $17,000 per year after exhausting mineral reserves.

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1. INTRODUCTION

Rise Grass Valley (RGV), a private company, is applying to construct and operate the Idaho-Maryland Mine Project (proposed project), which would reinitiate underground mining and gold mineralization processing in Nevada County. The County is responsible for processing and reviewing the application for consideration by decision-makers, including the Nevada County Planning Commission and Board of Supervisors. In order to provide a clearer picture of the proposed project's potential effects to the local community, the County contracted with Robert D. Niehaus, Inc. (RDN) to perform this economic impact analysis. The study was performed concurrently with the environmental review process and, in combination with the Draft Environmental Impact Report (EIR), provides valuable information about the potential impacts of the proposed project to help inform the decision-making process.

This study evaluates the proposed project based on the assumption that it would operate as proposed by the applicant and documented in the project description in the Draft EIR. Any concerns about the potential for the proposed project to result in environmental impacts above or below those discussed in the Draft EIR should be addressed as part of the California Environmental Quality Act (CEQA) process. This study assumes RGV constructs and operates the proposed project. If another mine operator were to purchase the mine and assume responsibility for the project, they would be subject to the same constraints, conditions, and requirements. Therefore, the expected economic impact would remain the same.

Construction and operation of the proposed project would result in costs and benefits to the local community as a result of new mining activity. These activities would provide financial benefits to the community by increasing economic activity and supporting new jobs. However, they could also result in adverse environmental effects, such as increased traffic volumes, noise levels, and visual impacts, making the surrounding area a less desirable place to live or visit. In the event the proposed project resulted in substantial long-term adverse effects, these effects could translate to indirect financial costs in the form of reduced property values and County tax revenues.

Understanding both costs and benefits of the proposed project and how they relate to one another is important for helping decision-makers, as well as the public and other stakeholders, better understand the economic implications of the proposed project to the local community. This study provides quantitative analysis of the measurable economic impacts, including estimated impacts to output, local jobs, and property values, as well as qualitative analysis of other financial costs and benefits that cannot be precisely measured, such as potential impacts to existing local businesses that are not captured in the aggregated data. The conclusion of this study includes a summary of the costs relative to the benefits of the proposed project to help provide an understanding of the overall economic effects of the project.

The following sections of this report include:

- **Section 2: Proposed Project Summary** – This section provides an overview of the proposed project, including key project components that affect the economic and fiscal impact analysis.
- **Section 3: Economic Impact from Proposed Project Spending** – This section evaluates the estimated payroll and expenditures, and resulting output, employment, and labor income that construction and operation of the proposed project would generate in Nevada County.
- **Section 4: Impact to Local Property Values** – This section provides an analysis of how similar

projects have impacted property values and discusses the potential impact of the proposed project to property values in Nevada County; this section also includes the results of an opinion survey that asked local Realtors® to estimate the potential impacts.

- **Section 5: Impacts to Utilities, Public Services, and the General Fund** – This section summarizes anticipated fiscal impacts to utility providers, public services, tax revenues, and the County General Fund.

2. PROPOSED PROJECT SUMMARY

The proposed project would reinitiate underground mining and gold mineralization processing for the Idaho-Maryland Mine over an 80-year permit period, with proposed operation occurring 24 hours a day, 7 days a week during full operations. It includes underground mining within the 2,585 subsurface acres to which the applicant retains mineral rights and above-ground activities at two properties comprising approximately 175 acres in unincorporated western Nevada County: the Brunswick and Centennial industrial sites. The proposed project would construct and operate above-ground mineral processing and water treatment facilities at the Brunswick Industrial Site and place engineered fill at both industrial sites for the first five years of the project. Once these sites have reached their specified capacity for engineered fill, this material would be trucked out of the area for disposal elsewhere. For a detailed description of the proposed project, refer to *Section 3: Project Description* of the Draft EIR.

This section provides a summary of the primary project components that affect the economic impact analysis, including the proposed project's schedule, estimated level of gold production, and anticipated increase in vehicle and truck trips on local roadways, which would increase needs and associated costs for public law enforcement and emergency services. Another key component is the proposed project's local spending on project operation, including both payroll and expenditures on goods and services, which is discussed in *Section 3.1: Project Payroll and Expenditures*.

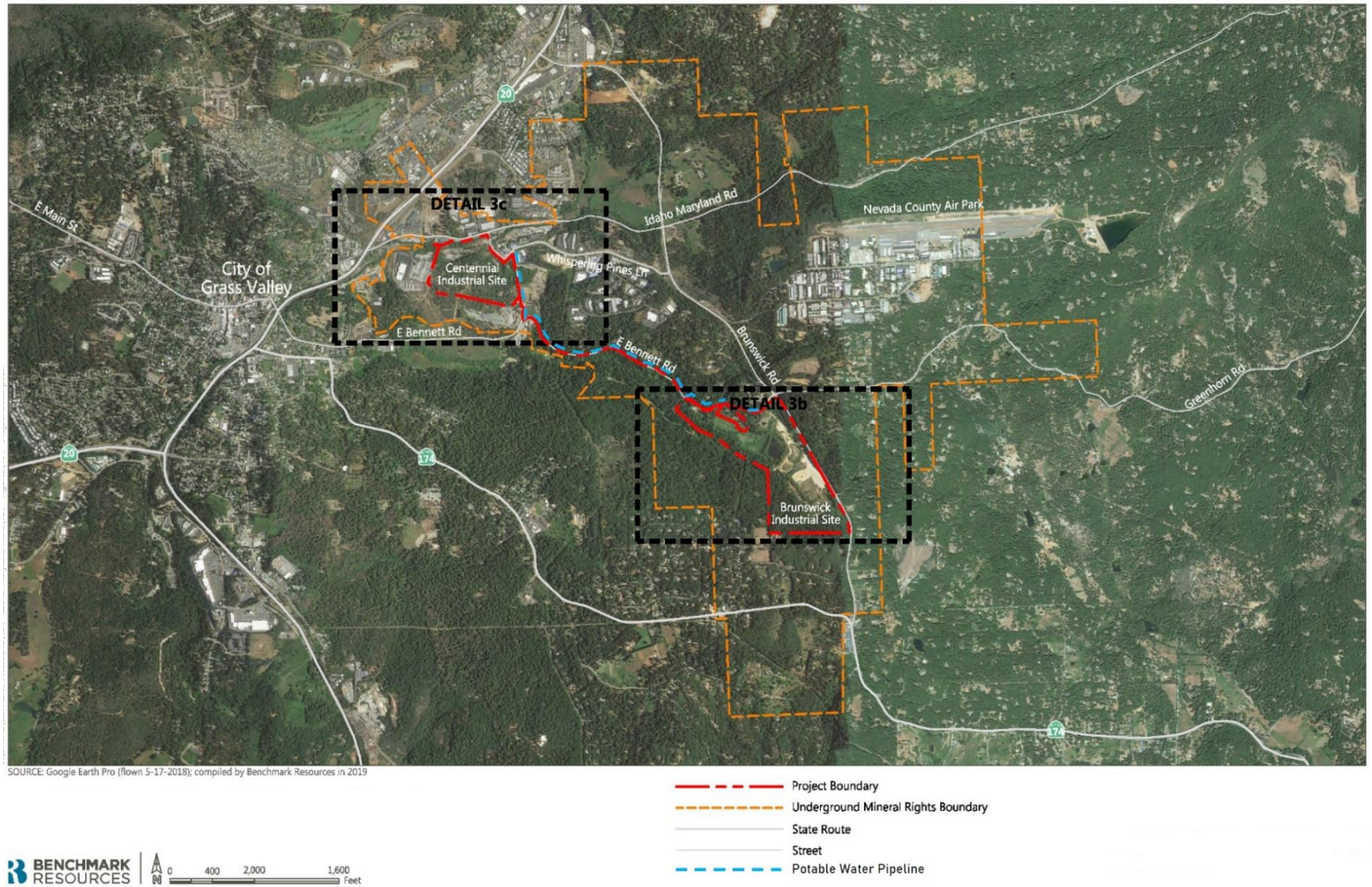
2.1 Project Location and Description

The proposed project's underground mining and above-ground mineral processing activities would occur on the Brunswick Industrial Site, which is located on approximately 119 acres immediately southwest of the East Bennett Road and Brunswick Road intersection. The site is currently located in unincorporated Nevada County, though the northern portion is also within the City of Grass Valley's long-term sphere of influence. This means the City could someday annex the northern portion of the site into their incorporated city boundary. The property is an industrial site with several historic mine shaft entrances, including the Brunswick and Union Hill shafts, which are currently covered. The property was more recently used for a sawmill that operated into the early 2000s. Surrounding properties include low-density residences to the north, west, south, and east, industrial uses to the north, open space to the west and south, and South Fork Wolf Creek to the west.

During the first five years of mining operation, the proposed project would place engineered fill at the Centennial Industrial Site, which is located on approximately 56 acres southwest of the Idaho Maryland Road and Centennial Drive intersection and is entirely within unincorporated Nevada County and the City of Grass Valley's long-term sphere of influence. The site is located immediately adjacent to the City of Grass Valley, with the western, northern, and part of the eastern property lines located along the city's boundary. The site is designated for light industrial uses and was previously used to deposit mine tailings. Development is not currently permitted on the majority of this site due to unstable soils and contamination, but RGV is performing voluntary cleanup of the site. Cleanup efforts are a separate project and are not part of the proposed project. Uses that surround the Centennial Industrial Site include commercial uses to the north, west, and east, and industrial uses to the north, south, and east.

Figure 2-1 provides an overview of the project area, depicting the location of the project sites and the underground mineral rights boundary. No underground mining activity would occur in the first 500 feet of the surface except at access points on the project site. Figure 2-2 maps the proposed haul routes for transporting material to and from the project sites.

Figure 2-1. Project Location



Source: Draft EIR

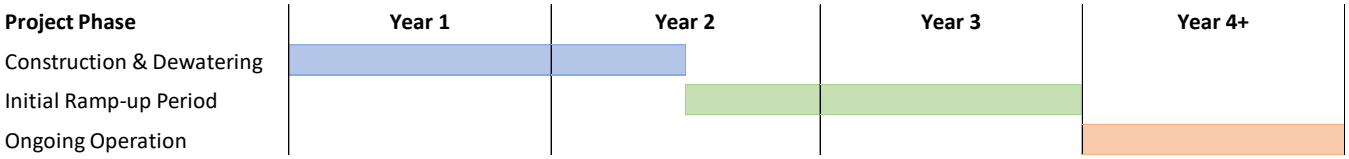
Figure 2-2. Proposed Haul Routes

Source: Draft EIR

2.2 Key Project Components

The anticipated schedule for the proposed project includes 18 months of above-ground construction and mine dewatering, 18 months of initial ramp up, and then full ongoing project operation. The construction phase includes the construction of above-ground facilities and the initial dewatering of mine shafts. The ramp-up phase includes underground construction, employee training, mill commissioning, initial mining, and ramp-up to full production and workforce. Once these phases are complete, the project would be in its full operation phase, which would continue for as long as the mine is active, up to the 80-year permit period. Figure 2-3 displays the projected schedule for the proposed project.

Figure 2-3 Proposed Project Schedule



This study uses estimates of the proposed project's mineral extraction schedule and annual mineral production, based on data provided by RGV. RGV provided information about underground gold mining operations with similar throughputs to the proposed project and similar reserve grades to historic production at the Idaho-Maryland Mine. These mines maintain approximately 5 to 11 years of mineral reserves with an average of 8 years, meaning that they extract their known reserves over an eight-year period as they continue to explore and discover additional reserves. The 2021 economic impact report commissioned by RGV projected annual mineral production of the Idaho-Maryland Mine would be 108,400 ounces of gold per year based on an estimated 365,000 tons of annual gold mineralization and the assumption that mineralization grades are at historic levels achieved before mine closure (Applied Economics LLC 2021). Based on this information, this study assumes the proposed project would maintain eight years of mineral reserves and produce 108,400 ounces of gold per year.

The proposed project would increase traffic in the area from workers commuting to their jobs and from new truck trips associated with project operation, which would impact long-term costs to law enforcement and emergency services. During full operation, the Brunswick Industrial Site would generate a maximum of 174 employee trips per day, while the Centennial Industrial Site would generate a maximum of 4 employee trips per day. In addition to employee traffic, the maximum number of two-way truck trips is 118 trucks completing 236 total daily trips, one inbound and one outbound. The proposed haul routes go from the Brunswick Industrial Site to the Centennial Industrial Site on Brunswick Road and Whispering Pines Lane or off-site locations on SR49, depending on the location used for engineered fill. The roadways most heavily impacted by the haul routes are Brunswick Road between E. Bennett Road and Project Driveway; Brunswick Road between E. Bennett Road and Whispering Pines Lane; Brunswick Road between SR 49 and Whispering Pines Lane; E. Bennett Road between Project Driveway and Brunswick Road; Whispering Pines Lane between Brunswick Road and Crown Point Circle; and Whispering Pines Lane between Crown Point Circle and the Centennial Industrial Site.

3. ECONOMIC IMPACT FROM PROPOSED PROJECT SPENDING

This section estimates the economic impacts in Nevada County from construction and operation of the proposed project if it were to operate at its anticipated capacity. The proposed project would increase economic activity and support new jobs due to local spending and employment associated with initial construction and ongoing mining activities. This new spending and employment would have spillover effects to local businesses and residents as RGV purchases goods and services from other businesses in the county, which in turn spend some portion of this money and potentially employ additional county residents. In addition to this activity, workers supported directly and indirectly by the proposed project would spend money at local businesses, such as shops and restaurants, resulting in additional economic activity and jobs.

RDN recognizes that aggregate economic effects do not fully account for impacts to existing individual businesses in the area because the proposed project would impact businesses differently. For example, a local truck repair shop may get additional business repairing trucks used by the mining operation, while a local restaurant with outdoor seating along the transportation corridor may suffer reduced patronage due to the degraded atmosphere from traffic and noise. This study considers these impacts by incorporating feedback obtained through stakeholder interviews to better understand potential project impacts that are not captured in the aggregated data.

This analysis evaluates the short-term and long-term impact of the proposed project. The construction and ramp-up phases of the proposed project would result in short-term economic impacts. The proposed project schedule includes 18 months of construction and 18 months of initial ramp up. Impacts from these phases would be short-term, as they are expected to last only for the duration of construction and ramp-up activity. Economic impacts from ongoing operation of the proposed project are expected to continue as long as the project operates at its anticipated capacity. These impacts are therefore considered long-term impacts that continue for the life of the project. This analysis evaluates the economic impacts in the following periods:

Year 1: Construction (above-ground)
Year 2: Construction (above ground), dewatering and initial ramp up
Year 3: Ramp up to full operation
Year 4+: Annual ongoing operation

This report adjusts all dollar figures for inflation in order to present them in today's dollars. Therefore, the proposed project's expenses, revenues, and economic impacts for each year are presented in constant 2022 dollars. In the case of ongoing annual expenses and revenues, the amounts of these cash flows appear unchanged over time because this study assumes these cash flows would escalate at the projected rate of inflation, and then deflates them by the same projected rate of inflation to bring them into today's dollars. For example, assume the proposed project purchases 100 hard hats each year. If the cost for 100 hard hats is $10,000 in 2022 and inflation is 3.0 percent, the cost would be $10,300 in 2023, $10,609 in 2024, etc. Once these costs are deflated to constant 2022 dollars using a rate of 3.0 percent, they would be $10,000 in 2022, 2023, 2024, and every future year of the project.

3.1 Project Payroll and Expenditures

This study uses anticipated employment and payroll expenditures based on data provided by RGV. The proposed project would employ 63 workers during the construction and dewatering phase, 121 workers

during the initial ramp-up period, and 312 workers during full ongoing operation. During the construction phase, 52 of the 63 workers would perform construction work related to the proposed project's above-ground infrastructure and mine dewatering. RDN estimates that the remaining 11 workers would perform construction work related to the potable water pipeline and other conveyance infrastructure needed to provide water from Nevada Irrigation District (NID) to up to 30 residential properties currently on wells along 1.25 miles of East Bennett Road. This estimate is based on average construction costs provided by NID.

Table 3-1 presents anticipated workforce, average annual compensation (i.e., wages plus benefits), and total payroll during full operations. The majority of construction workers would be contractors rather than direct employees of RGV. The 121 workers for the ramp-up period represents the average employment across the 18-month project phase, during which employment would consistently grow. During full operation, the proposed project would employ 312 full-time workers with a total annual payroll of $38.1 million. RGV projects they would hire 213 of these workers locally and recruit 99 workers from outside the county (RGV, 2021).

Table 3-1. Projected Workforce and Annual Average Compensation and Payroll by Category

Job Category	Total Jobs	*Local Hires*	*Non-Local Hires*	Average Compensation	Total Payroll[1]
Underground Mine	156	*98*	*58*	$123,000	$19,188,000
Mineral Processing	36	*36*	*0*	$108,000	$3,888,000
Trades	34	*26*	*8*	$126,000	$4,284,000
Labor – Underground	17	*17*	*0*	$89,000	$1,513,000
Geology, Engineering, and Environmental	28	*14*	*14*	$130,000	$3,640,000
Accountants, Administration, and Security	16	*16*	*0*	$110,000	$1,760,000
Surface equipment operators	6	*6*	*0*	$99,000	$594,000
Managers and Supervisors	19	*0*	*19*	$172,000	$3,268,000
Total or Weighted Average[2]	**312**	***213***	***99***	**$122,000**	**$38,135,000**

[1] Total payroll in millions

[2] Numbers may not sum due to rounding

RGV projects the average compensation including wages and benefits for their 312 employees would be $122,000 per year. This includes employees that are hired locally and from outside the area. Based on the average compensation by job category, the 213 employees hired locally would have an average compensation of $117,000 per year and the 99 employees hired from outside the County would have an average compensation of $134,000 per year. The difference in average compensation for local and non-local hires is primarily driven by the 19 non-local employees RGV expects to hire for manager and supervisor positions, which have a projected average compensation of $172,000 per year. The weighted average compensation for all employees excluding managers and supervisors would be $119,000 per year.

Table 3-2 presents anticipated annual local operational expenditures on goods and services, including RGV's initial estimates and RDN's adjustments.

Table 3-2. Annual Local Operational Expenditures on Goods and Services by Category

Expenditure Category	RGV Estimate	RDN Adjustment	Revised Estimate
Office, Administration, & Miscellaneous	$1,232,000	-	$1,232,000
Engineering, Environmental, and Professional Services	$360,000	-	$360,000
Facility and Road Operation and Maintenance[1]	$457,000	$24,000	$481,000
Electric Power and Fuel	$7,918,000	($7,442,000)	$476,000
Equipment Maintenance and Repair	$210,000	-	$210,000
Operating Supplies	$1,327,000	-	$1,327,000
Transportation and Deliveries	$368,000	-	$368,000
Lodging and Local Transportation	$639,000	($128,000)	$511,000
Total[2]	**$12,511,000**	**($7,546,000)**	**$4,965,000**

[1] RDN adjusted this category by deducting $12,000 for internet expenses and adding $36,000 for water expenditures
[2] Numbers may not sum due to rounding

The proposed project's anticipated local operational expenditures on goods and services (i.e., those that would occur within the county) are $5.0 million. RGV provided initial expenditures estimates and RDN adjusted them based on the dynamics of specific industries. RDN excluded expenditures to utility companies that are headquartered outside of the local area because these expenditures would not substantially affect local economic activity and employment. In the case of electrical expenditures to Pacific Gas and Electricity (PG&E), payments to their customer service office in Nevada City would be routed to PG&E's headquarters, and the amount of the payments routed through this office would not affect its operation in terms of costs or employment. Additionally, although much of the electricity used in the project area is generated locally and delivered by electrical infrastructure built and maintained by local workers, an increase in local demand would not necessarily increase the amount of electricity generated locally or the amount of ongoing infrastructure maintenance activity. The power grid is a dynamic system that is managed across the state, and new demand in one area may be served by any number of generation facilities throughout the state.

RDN also adjusted anticipated local expenditures for taxis, rental cars, and airport shuttles. The closest major airport is located outside of Nevada County, so some of these expenditures would likely occur outside the local area. Finally, RDN adjusted expenditure data to account for the cost of water RGV would purchase from NID to serve up to 30 residential properties currently on wells along East Bennett Road.

3.2 Input-Output Methodology and Inputs

This analysis evaluates the economic impact of the proposed project in Nevada County using IMPLAN, a widely recognized economic modeling software platform commonly used in the planning community. The key component of the IMPLAN platform is an input-output (I-O) model containing accounting tables that trace the linkages of interindustry purchases and sales in a specific region. The model uses these linkages to calculate the impacts per dollar of spending on jobs, income, and additional expenditures in one industry on the overall economy of the study region. For more information on the IMPLAN modeling process, visit IMPLAN.com.

This study presents the potential direct, indirect, induced, and total economic impacts of the proposed project in Nevada County in terms of output, employment, and labor income. These impacts include:

- **Direct Impacts**: The proposed project would draw dollars into the local area, some of which RGV would use to pay for supplies, services, and labor from local businesses. The direct impacts of the proposed project include the output of the mine, which is the market value of all goods and services produced by the mine, jobs working directly for the mine, and the labor income associated with those jobs. Construction activities would also draw dollars into the area, stimulating the local economy and producing output in the form of new buildings and infrastructure.

- **Indirect Impacts**: Indirect impacts include output, jobs, and labor income at businesses supported by (1) RGV's procurement spending, i.e., purchases of goods and services used in the course of business, and (2) local expenditures by supplying industries responding to demand from the sectors where these initial expenditures occur. An example of an indirect impact is increased employment and spending by a local firm providing services to RGV. For example, suppose RGV hires ABC Maintenance to repair some machinery. ABC Maintenance then purchases parts from a local wholesaler to perform the work. RGV's expenditures to ABC Maintenance, the jobs at ABC Maintenance supported by this spending, and the resulting increased sales of parts and associated employment are all indirect impacts of RGV's operational expenditures.

- **Induced Impacts**: Employees of RGV, as well as employees of businesses directly and indirectly impacted by RGV's expenditures, would spend a portion of their income in Nevada County. Local spending by these employees and the employment and labor income it supports are induced impacts. Examples of induced impacts include output, employment, and labor income at businesses such as retail stores, gas stations, banks, restaurants, and service companies that supply goods and services to workers and their families.

- **Total Impacts**: The total impacts are the sum of all direct, indirect, and induced impacts.

The proposed project's spending on construction and operation, including payroll and procurement of goods and services, would drive the economic impacts of the project. This analysis relies on employment, payroll, and local spending estimates based on data provided by RGV and reviewed and adjusted by RDN. Refer to *Section 3.1: Project Payroll and Expenditures* for details regarding these estimates. The proposed project's expenditures include:

1. **Construction Expenditures:** RGV would pay for construction of above-ground facilities, initial dewatering of the mine, and construction of underground water pipelines and associated infrastructure. Construction of the proposed project would occur over 18 months and require an estimated 52 workers for above-ground facilities and dewatering, and 11 workers for underground water pipelines. RGV was not able to provide estimated costs for construction of above-ground facilities and dewatering, so RDN used the IMPLAN model to translate the number of construction workers to the estimated costs associated with that level of employment. RDN obtained the estimated cost of construction for underground pipelines and associated infrastructure from NID.

2. **Payroll Expenditures:** RGV projects they would spend $38.1 million per year employing 312 workers at the mine during full operation. Refer to Table 3-1 in *Section 3.1: Project Payroll and Expenditures* for a breakdown of anticipated workforce, average annual compensation, and total payroll. During the 18-month ramp-up period, RGV projects they would employ an average of 121 workers. This analysis assumes the same average pay for these workers as for those that would be employed during full operations.

3. **Operational Expenditures on Goods and Services**: RGV would procure a portion of the goods and services necessary to support the proposed project's operation from businesses located in Nevada County. Annual expenditures during full operation of the proposed project would be approximately $5.0 million per year. Refer to Table 3-2 in *Section 3.1: Project Payroll and Expenditures* for a breakdown of anticipated local operational expenditures on goods and services, including RGV's initial estimates and RDN's adjustments. This analysis accounts for the industry-level effects of the proposed project's operational spending based on the major industry codes for these expenditures, as defined by the North American Industry Classification System (NAICS). For the ramp-up period, this analysis scales down anticipated operational expenditures proportionally to the anticipated level of employment during the ramp-up period relative to full operations.

3.3 Output, Jobs, and Labor Income

Total output represents the amount of money that would circulate in the economy as a result of the proposed project's activity and includes the multiplier effect that is generated by the portion of each dollar that gets re-spent locally. In this analysis, direct output represents the value of everything that would be produced by RGV, including the new facilities and infrastructure they would build during the construction phase, and the minerals they would mine, process, and sell to the market during the ramp-up and full operation phases. Indirect output includes RGV's initial spending on procurement of goods and services and the successive rounds of spending that would occur at businesses across multiple sectors. Induced output includes all of the spending by RGV employees and employees at businesses supported directly and indirectly by RGV spending. The total output is the sum of direct, indirect, and induced output. Indirect and induced impacts relative to the total impact represent the multiplier effect of RGV's direct output.

Because much of the total output would be related to RGV's profit, this analysis also estimates a "community impact." Impacts to the local community include the multiplier effect from RGV's output (i.e., the sum of indirect and induced output), the value of RGV's newly constructed facilities and infrastructure, and RGV's payroll spending to local residents.

Table 3-3 presents the proposed project's estimated direct, indirect, induced, and total impact in terms of output for each year of the construction and ramp-up period, and for ongoing operation. It also provides the economic multiplier, multiplier effect, and the community impact for each of these periods.

Table 3-3. Annual Output (in millions; 2022 dollars)

Type of Impact	Year 1	Year 2	Year 3	Year 4+
Direct	$10.1	$13.5	$69.7	$179.8
Indirect	$2.7	$2.6	$2.4	$6.1
Induced	$2.4	$4.5	$6.6	$16.9
Total[1]	**$15.2**	**$20.6**	**$78.6**	**$202.8**
Multiplier	*1.51*	*1.52*	*1.13*	*1.13*
Multiplier Effect	$5.1	$7.1	$8.9	$23.0
Community Impact[3]	**$15.2**	**$20.6**	**$23.7**	**$61.1**

[1] Number may not sum due to rounding

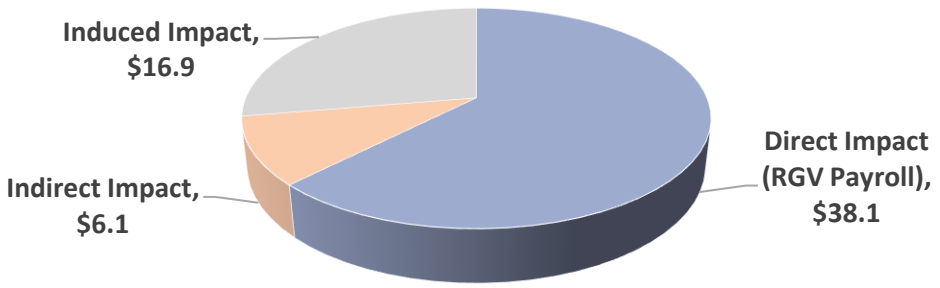
[2] The multiplier effect is equivalent to the sum of indirect and induced impacts

[3] The community impact represents indirect and induced effects, the value of constructed infrastructure, and RGV's payroll spending

The total economic impact of expenditures by the proposed project would increase each year during the construction and ramp-up period and reach approximately $202.8 million per year of output during full operation. The proposed project's direct impact is the annual output produced by mining activity, estimated at $179.8 million based on RGV's projected production of 108,400 ounces of gold per year and the current three-year average price of gold of $1,659 per ounce. Of these funds, RGV would spend approximately $5.0 million on procurement of local goods and services to support their operations, which would generate an indirect economic impact of $6.1 million. These impacts would accrue to businesses where RGV initially spends these funds as well as to those businesses' supply chains. In addition to direct and indirect impacts, the proposed project would generate an induced impact of $16.9 million due to household spending by RGV employees and employees of the businesses supported directly or indirectly by RGV's operational spending.

This analysis estimates that the portion of the total economic activity that would impact the local community during full project operation would be $61.1 million per year. The IMPLAN analysis generated an economic multiplier for the proposed project in Nevada County of 1.13, which indicates that each dollar worth of output generated by the proposed project would support an additional 13 cents of indirect and induced output, i.e., economic activity, in Nevada County due to local and successive rounds of spending. Therefore, the multiplier effect would result in $23.0 million of output. This, in combination with RGV's local payroll spending of $38.1 million, comprises the total community impact of $61.1 million per year. Figure 3-1 shows the community impact during full operation by impact type.

Figure 3-1. Annual Community Impact during Full Operation by Impact Type (in millions; 2022 dollars)



Output during the construction and ramp-up periods would be $15.2 million in Year 1, $20.6 million in Year 2, and $78.6 million in Year 3. The community impacts in Year 1 and Year 2 are equal to the total output because RGV's expenditures would go toward construction of local infrastructure, development of the mine, and mill commissioning, all of which produce value locally. This analysis assumes the mine would begin mining and processing minerals in Year 3 and would therefore start generating output in the form of RGV revenue in that year. The estimated community impact in Year 3 is $23.7 million in output.

Operation of the proposed project would generate local jobs and associated labor income, including direct jobs working for the mine, indirect jobs working for businesses supported by RGV's operational expenditures, and induced jobs working for businesses that supply goods and services to workers and their families. All direct jobs working for the mine would be full-time positions and each count as one job in the following analysis. However, this analysis estimates the employment impact in terms of the total number of jobs, per the IMPLAN methodology, rather than full-time equivalent jobs. This means that two part-time indirect or induced jobs would count as two jobs rather than one. Labor income includes the combined cost of total payroll paid to employees (e.g., wages and salaries, benefits, and payroll taxes) and payments received by self-employed individuals and unincorporated business owners.

Table 3-4 presents the proposed project's estimated direct, indirect, induced, and total impact in terms of jobs and labor income for each year of the construction and ramp-up period, and for ongoing operation.

Table 3-4. Annual Employment and Labor Income

Type of Impact	Year 1	Year 2	Year 3	Year 4+
Employment (in number of jobs)				
Direct	63.0	93.0	121.0	312.0
Indirect	17.6	19.2	20.4	52.6
Induced	15.8	29.6	42.8	110.4
Total[1]	**96.3**	**141.8**	**184.2**	**475.0**
Labor Income (in millions; 2022 dollars)				
Direct	$4.5	$9.7	$14.8	$38.1
Indirect	$0.7	$0.8	$0.8	$2.2
Induced	$0.7	$1.4	$2.0	$5.1
Total[1]	**$5.9**	**$11.9**	**$17.6**	**$45.4**

[1] Number may not sum due to rounding

Ongoing operation of the proposed project would support an estimated 475 jobs and $45.4 million in labor income in Nevada County annually. This includes 312 jobs working directly for RGV, all of which would be full-time positions. The remaining 163 jobs would be a mix of full-time and part-time jobs working for businesses supported directly and indirectly by RGV expenditures and associated household spending. Based on RGV's projected payroll spending of $38.1 million, average annual compensation for their workers would be $122,000. Estimated income for the indirect and induced jobs amounts to $7.3 million, which equates to average annual compensation of $44,000 for these jobs.

Many of the direct, indirect, and induced expenditures that would occur as a result of the proposed project would also generate local tax payments. RDN evaluated the total tax effects from project spending in Nevada County that would accrue to all taxing entities in the county, as well as the amount

of tax dollars that would accrue to the County's General Fund. Refer to *Section 5.3: Tax Revenue*, for the results of this tax analysis.

3.4 Impacts to Commercial Industries

Operation of the proposed project and associated indirect and induced spending would impact hundreds of industries in Nevada County.

Table 3-5 displays the top 12 industries that would be impacted by operation of the proposed project in terms of output, employment, and labor income.

Table 3-5. Industries with Largest Impact in terms of Output, Employment, and Labor Income

Industry	Direct	Indirect	Induced	Total[1]
Output				
Gold Ore Mining	$179,800,000	$1,000	$1,000	$179,802,000
Retail Sales	$0	$667,000	$1,880,000	$2,547,000
Wholesale Suppliers	$0	$1,373,000	$886,000	$2,259,000
Healthcare Services	$0	$0	$1,837,000	$1,837,000
Real Estate Services	$0	$243,000	$927,000	$1,171,000
Restaurants and Drinking Places	$0	$31,000	$1,048,000	$1,080,000
Financial Services	$0	$34,000	$813,000	$847,000
Local Government Enterprises	$0	$116,000	$623,000	$739,000
Services to Buildings and Landscaping	$0	$434,000	$136,000	$571,000
Insurance Providers and Related Activity	$0	$54,000	$511,000	$566,000
Truck Transportation	$0	$380,000	$38,000	$418,000
Hotels and Motels	$0	$411,000	$0	$412,000
Employment				
Gold Ore Mining	312.0	0.0	0.0	312.0
Retail Sales	0.0	6.7	16.7	23.4
Restaurants and Drinking Places	0.0	0.5	13.1	13.5
Healthcare Services	0.0	0.0	13.0	13.0
Wholesale Suppliers	0.0	5.1	5.0	10.1
Dry-Cleaning and Laundry Services	0.0	6.6	0.6	7.2
Services to Buildings and Landscaping	0.0	5.0	1.5	6.5
Real Estate Services	0.0	1.3	4.6	5.9
Individual and Family Services	0.0	0.0	5.9	5.9
Financial Services	0.0	0.2	4.5	4.7
Hotels and Motels	0.0	4.6	0.0	4.6
Transit and Ground Passenger Transportation	0.0	3.6	0.8	4.3
Labor Income				
Gold Ore Mining	$38,135,000	$0	$0	$38,135,000
Healthcare Services	$0	$0	$1,036,000	$1,036,000
Retail Sales	$0	$313,000	$718,000	$1,030,000
Restaurants and Drinking Places	$0	$15,000	$436,000	$451,000
Local Government Enterprises	$0	$62,000	$225,000	$287,000
Dry-Cleaning and Laundry Services	$0	$243,000	$21,000	$264,000
Services to Buildings and Landscaping	$0	$188,000	$62,000	$250,000
Automotive Repair and Maintenance	$0	$19,000	$223,000	$242,000
Financial Services	$0	$9,000	$196,000	$205,000
Hotels and Motels	$0	$187,000	$0	$187,000
Wholesale Suppliers	$0	$98,000	$83,000	$180,000
Truck Transportation	$0	$157,000	$16,000	$173,000

[1] *Numbers may not sum due to rounding. Dollar figures presented in 2022 dollars and rounded to thousands.*

The total direct economic impact of proposed project operation would be the $179.8 million of output, 312 jobs, and $38.1 million of labor income produced by RGV in the Gold Ore Mining sector, while the indirect and induced impacts would be the resulting rounds of spending that occur at businesses across multiple sectors. The industry with the largest indirect and induced impacts in terms of output and employment would be Retail Sales. RGV and supporting industry expenditures as well as local household spending would drive these impacts. The industry with the largest indirect and induced impacts in terms of labor income would be Healthcare Services, with this impact entirely driven by household spending. The reason the 13 jobs in Healthcare Services would result in more labor income than the 23 jobs in Retail Sales is that jobs in this sector have higher average wages and weekly hours (Bureau of Labor Statistics, 2022).

RGV and supporting industry expenditures, i.e., those that contribute to indirect impacts, would have the largest impact in terms of output in the Wholesale Suppliers, Retail Sales, and Services to Buildings and Landscaping sectors. The impact of industry spending would outweigh that of household spending in the Wholesale Supplier sector (60.8 percent versus 39.2 percent), while the reverse is true in the Retail Sales sector (26.2 percent versus 73.8 percent). This finding is in line with general spending patterns of businesses and households, with both of these types of buyers making purchases from both types of sellers, with businesses generally purchasing supplies from wholesalers and households generally purchasing goods from retailers. The output impact to the Services to Buildings and Landscaping sector would be primarily driven by RGV and supporting industry expenditures, which would make up 76.0 percent of the total impact in this industry.

The economic impacts from RGV and supporting industry expenditures in terms of jobs and labor income are generally in line with those for output, with a couple of exceptions. Although industry rather than household spending supports the majority of output in the Wholesale Supplier sector, employment and labor income supported by each type of buyer is relatively equal. This finding implies that more staff is required relative to total sales volume at wholesale suppliers that serve households rather than businesses. Another exception is the Dry-Cleaning and Laundry Services sector, which would not be in the top 12 industries in terms of output but would grow by seven jobs and $264,000 in labor income. RGV projects they would have high costs for laundry services ($183,000 per year), which would be the primary driver of this impact.

The induced impacts of proposed project operation are greater than the indirect impacts, with $16.9 million versus $6.1 million in output (refer to Table 3-3 in *Section 3.3: Output, Jobs, and Labor Income*), as much of the household spending occurs locally. This spending impacts a wide variety of household-supporting industries, with the top industries in terms of output being Retail Sales, Healthcare Services, and Restaurants and Drinking Places. These three industries would also experience the highest indirect impacts in terms of employment and labor income.

3.5 Impacts to Existing Local Businesses

RDN understands that the proposed mining operations may impact individual local businesses in a variety of ways. While the IMPLAN analysis captures the aggregate anticipated economic impact, it does not capture the differences in how existing local businesses may be impacted. To better understand potential impacts to these businesses, RDN reached out to local business organizations and owners and other representatives at individual businesses to conduct brief interviews.

RDN and the County developed an initial list of local businesses to contact based on their proximity to the project site and transportation corridors, and then refined and expanded the list based on stakeholder input from MineWatch and local business organizations. RDN spoke to representatives at business organizations about the impacts they anticipate could occur as a result of the proposed project to local businesses, public services, and real estate. During these interviews, RDN also requested recommendations for specific local businesses or types of businesses that should be included in the stakeholder interviews. RDN then interviewed representatives at individual local businesses about their general operations and anticipated impacts to their business from the proposed project.

RDN spoke with representatives of MineWatch and four business organizations: Nevada City Chamber of Commerce, Greater Grass Valley Chamber of Commerce, Nevada County Economic Resource Council, and Sierra Business Council. Given the controversial nature of the proposed project, representatives from a couple of these organizations largely declined to comment because their organizations are not taking a position on the proposed project. Representatives from the remaining organizations had mixed responses.

Generally speaking, these organizations indicated that the new economic activity generated by the proposed project could support new businesses in the area, but potential environmental effects could adversely affect other local businesses. Even if the proposed project does not have substantial negative environmental impacts, the perception of such impacts may negatively affect the tourism industry, as people may choose not to visit the area if they believe it has been negatively impacted by mining activity. Another concern is the size of the local workforce. Local businesses are already competing for talent and labor; introducing additional high-paying jobs would likely make it harder for local businesses to meet their hiring needs.

After interviewing organizations, RDN reached out to representatives at 24 individual businesses in Nevada County, of which 8 agreed to an interview, 6 declined to participate, and 10 did not respond to our messages. Similar to our experience with business organizations, many of the business representatives who chose not to participate cited the contentious nature of the proposed project as their reason for declining. Even among the business representatives who responded to our questions, there was a general sense of hesitancy to participate in the interview and responses were often guarded.

Of those business owners and representatives that spoke with RDN about the proposed project, their anticipated impacts varied. Some business representatives anticipate little to no change in business revenue but expressed concern over how potential environmental impacts, namely water quality, might impact their business's operations. Others expect that the proposed mining operation would likely benefit their businesses. When asked about the effect of the proposed mine on the economy more generally (beyond their specific business), responses echoed those from the business organizations. Their responses varied, with some expecting that the mine would facilitate new economic activity in Nevada County and others articulating concerns about labor shortages. While the sample size and response rate limit the ability to quantify or draw broader conclusions, the variance in responses highlights the variety and complexity of potential impacts that the proposed mine may have on existing local businesses.

4. IMPACT TO LOCAL PROPERTY VALUES

RDN researched the potential impacts of re-opening the Idaho Maryland Mine on local residential property values. This research consisted of (1) a literature review, (2) a case study analysis, and (3) a survey of real estate professionals that work in western Nevada County. This section details our research methodologies and findings.

4.1 Literature Review Summary

Although there is an extensive body of literature about the potential spillover effects of adverse environmental impacts on home prices, there are relatively few rigorous, well-executed studies that focus specifically on mining and its impact on home prices, and these studies cover a range of mining operations and locations. As a result, our thorough review of the academic literature did not yield any significant research on the impact to home values of mines that closely resemble the proposed project. Most studies focus on more visibly impactful activities, such as open pit mining or other major industrial activities, rather than underground mineral mining. Please see *Section 7: References* for a complete list of papers RDN reviewed for this study and *Appendix A—Literature Review: Impacts of Mining and Industrial Activities on Home Values* for a summary of results for the studies RDN found most relevant to the proposed project.

Table 4-1 summarizes the findings of the key studies identified in RDN's literature review based on the type of site, study area, and direction and magnitude of the impact. The literature presents a wide range of impacts from mining and other industrial activities on property values, from a positive impact of 3.8 percent for home sales within two kilometers of industrial sites in the Netherlands to a negative impact of up to 17.2 percent on rental prices in Chilean cities where new mines opened. For the studies RDN reviewed, the distance of measurable impacts ranged from 0.3 miles away for general hazardous waste sites to 10 miles away for open pit rock mines.

Table 4-1: Summary of Key Study Findings

Author(s)	Site Type	Impact Area	Impact on Residential Property Values
Bakker (2021)	Industrial sites	2 kilometers (1.2 miles)	Premium of 4% for homes near an industrial site (i.e., homes cost more closer to the site)
Boxall, Chan, and McMillan (2005)	Natural gas facilities	4 kilometers (2.5 miles)	4% to 8% decline in value for homes near natural gas facilities
Brasington and Hite (2005)	General environmental hazards	Not applicable; study estimates a distance-to-hazard price elasticity	3% increase in home prices when distance from the nearest environmental hazard increases by 10%
Currie, et al. (2015)	Toxic plants	1 mile	11% decline in home prices within a half mile of a source of toxic air emissions; negative impact may remain even after closure of the source of pollution

Author(s)	Site Type	Impact Area	Impact on Residential Property Values
Davis (2011)	Power plants	2 miles	Reduction between 3% and 7% for homes near power plants
Fitzpatrick and Parmeter (2021)	Coal mining	2.3 kilometers (1.4 miles)	15.5% decline in value for homes near coal mining
Ford and Seals (2018)	Rock quarries	In some specifications they estimate elasticities, so they do not use a specific distance; in other specifications they use 2 miles	Finds no compelling statistical evidence that either the anticipation of, or the ongoing operation of, rock quarries negatively impact home prices
Kiel and McClain (1995)	Incinerator Plant	Not applicable; study estimates a distance-to-hazard price elasticity over a 28-square-mile area	Home prices increased by 1.7% per mile away from the plant during construction, 3.2% per mile during early operation, and 2.7% per mile after four years of continued activity
Malikov, Sun, and Hite (2017)	Rock mining	10 miles for near-zero effect (effects dissipate with distance)	2.3% to 5.1% reduction per mile closer to rock mining activity
Muehlenbachs, Spiller, and Timmins (2015)	Shale gas	1.5 kilometers (0.9 miles)	Reductions in value between 10% and 17% for homes near shale gas development
Neelawala, Wilson, and Athukorala (2012)	Mining of different resources	4 kilometers (2.5 miles)	6% to 7% increase in willingness to pay per kilometer of distance from mine/smelting operation
Rivera (2020)	Mining of different resources	Not applicable; study evaluates city-level data	10% to 17% reduction in rents in cities with new mine openings
Taylor, Phaneuf, and Liu (2016)	Contaminated and clean commercial/ industrial sites	Home impacted by a contaminated site if within 0.5 miles, and by a clean site if within 0.3 miles	Proximity to clean sites reduces neighboring home values by 2.5%; proximity to a contaminated site reduces values by about 8%; remediation of a contaminated site increases values by as much as 5%

4.2 Case Study Analysis

Given that existing academic research does not specifically address impacts to property values from underground gold mining activities and shows a range of impacts by the type of activity and size of impact area, RDN performed a case study analysis to estimate the impacts of similar mining operations on property values. The steps of this analysis include searching for existing mines that are reasonably comparable to the proposed project, acquiring real estate transaction data for continuous periods during which the comparable mines switched from a period of extended closure to full operation, selecting an appropriate methodology for evaluating impacts of these operations to property values, and performing the analysis.

Site Selection

To identify potential case study mines, RDN searched records from two public databases that catalog active and inactive or abandoned mines in the U.S.: the Mine Safety and Health Administration's (MSHA) Mine Data Retrieval System (MDRS) and the U.S. Geological Survey's (USGS) Mineral Resource Data System (MRDS). MSHA's MDRS online database contains information on over 31,500 mines, including location, type, mineral, operational status, operator, and quarterly employment data. While the MSHA data include information from 1983 to present, the bulk data files available for public download only go back to 2000. (Data for 1983 to 1999 is accessible through the web interface for individual mines.) USGS MRDS records go back much further and include historical information on the type of workings and mineral deposits for over 300,000 locations. Unfortunately, many of the USGS's database records are also incomplete and/or out of date. Where needed, RDN supplemented our research with internet searches for news articles, press releases, and financial documents on candidate mines' operational histories. Our screening criteria considered the following factors:

Mine Status –*When did the mine open and, if it has since closed, when did it close? If the mine was intermittently open, were there periods of inactivity during which the community believed the mine would close permanently?* Ideally, the mine will have opened in an area where mining has not previously occurred or where the existing mine has either been abandoned or inactive long enough that the community was uncertain whether the mine would re-open. Due to the lack of bulk data from MSHA MDRS before 2000, we restricted our search to mines that opened or re-opened in 2000 or later. Compared to the proposed project, we assume older mines are less likely to have used the same mining processes or be subject to the same environmental standards during their early operation. Similarly, real estate data providers are more likely to have parcel-level information available for recent periods versus older periods.

Mine Material – *What are the mine's primary products? Are the mine's extraction processes and environmental impacts similar to those of the proposed Idaho-Maryland Mine Project?* Ideally, the mine should use similar mining extraction processes as the proposed project and output similar waste products. Thus, the mined material should ideally be gold or other metal as opposed to coal or other non-metals.

Mine's Proximity to Residential Areas – *How many people live within one, five, and ten miles? Are there any other significant commercial or industrial activities nearby which could interfere with an analysis of the mine's impacts?* The mine must be close enough to a residential area that the mine could conceivably impact nearby property values. Areas with large populations close to the mine are preferable to areas with smaller populations. They will most likely contain more real estate transactions

for the period of interest and thus a larger dataset available for analysis. Our literature review included studies with an impact radius that ranged from 0.3 miles to 10 miles, with most using an impact radius of between 1 mile and 2.5 miles. It is also important that the area have a sizable population close to the mine but outside the impact radius to act as a control group.

Mine Type – *Is the mine (1) a surface or open-pit mine, (2) an underground mine, (3) a hybrid surface and underground mine, or (4) an in-situ mine?* Ideally, the mine should be an underground mine so as to match the proposed project. Research shows that the potentially adverse environmental spillover effects of underground mines are typically lower than those of similarly sized surface mines.

Using the search criteria above, RDN filtered the MSHA dataset down to about a dozen candidates, then determined the total population and housing units within one, five, and ten miles as of the 2000, 2010, and 2020 censuses. After a holistic review of each mine's characteristics, operational histories, and surrounding population, RDN chose three mines to use as case studies: the Haile Gold Mine in Lancaster County, SC; the Coy Mine in Jefferson County, TN; and the Lincoln Mine in Amador County, CA.

The final step in our preparation for the case study analysis was to acquire residential sales transactions and property characteristics for surrounding parcels. RDN investigated several potential sources for these data, including public data available from County Assessor's Offices and Zillow, and licensed data available from third-party sellers, including ATTOM Data Solutions, CoreLogic, and ParcelQuest. We ultimately purchased data from CoreLogic. In consideration of budget constraints, we limited the scope of our purchase to parcels partially or wholly located in ZIP codes within five miles of each case study mine. We also limited our purchase of sales transactions to 11-year periods during which the mines ramped up production after an extended closure. These periods were 2010-2020 for the Haile Gold Mine, 2004-2014 for the Coy Mine, and 2009-2019 for the Lincoln Mine. Of course, not all parcels in the study area necessarily sold during these periods. For parcels that only sold before or after the requested periods, the CoreLogic data still includes the most recent sales price. To validate and supplement the CoreLogic data, RDN manually collected historical sales prices from Zillow for a random sample of properties located at various distances from each mine. This supplementary data collection was particularly helpful for increasing our sample size of observations for the Haile Gold Mine.

Case Study Mines

Haile Gold Mine

The Haile Gold Mine is a surface gold mining operation located in Lancaster County, South Carolina. The closest town to the Haile Gold Mine is Kershaw, South Carolina, which is approximately four miles away. According to the decennial censuses, the population within 10 miles of the mine increased from 15,233 in 2000, to 16,564 in 2010, and 17,253 in 2020.

The mine is currently owned and operated by Haile Gold Mine, Inc., a subsidiary of OceanaGold, a global mining company. The mine initially opened in 1827 before closing in the early 1900s; it was then periodically mined for the rest of the century. More recently, MSHA records indicate the mine was inactive from December 2002 until November 2011, when the mine changed back to active status. However, the mine operator did not receive all the necessary permits to commence new construction and

operations until October 2014. The mine then ramped up employment and operations, pouring its first gold in January 2017.

Table 4-2 presents summary statistics for single-family homes sold within 10 miles of the mine, broken down into two periods: before and after the mine re-opened. For purposes of this study, we are using 2016Q3 as the opening period. As show in the table, the real average sales price and price per square foot (in constant 2022 dollars) grew after the mine re-opened. However, this does not mean there is a causal relationship between increases in sales prices and the mine opening, which could be attributed to confounding factors.

Table 4-2: Summary Statistics for Home Sales within 10 Miles of Haile Gold Mine, Before and After Opening (2016Q3)

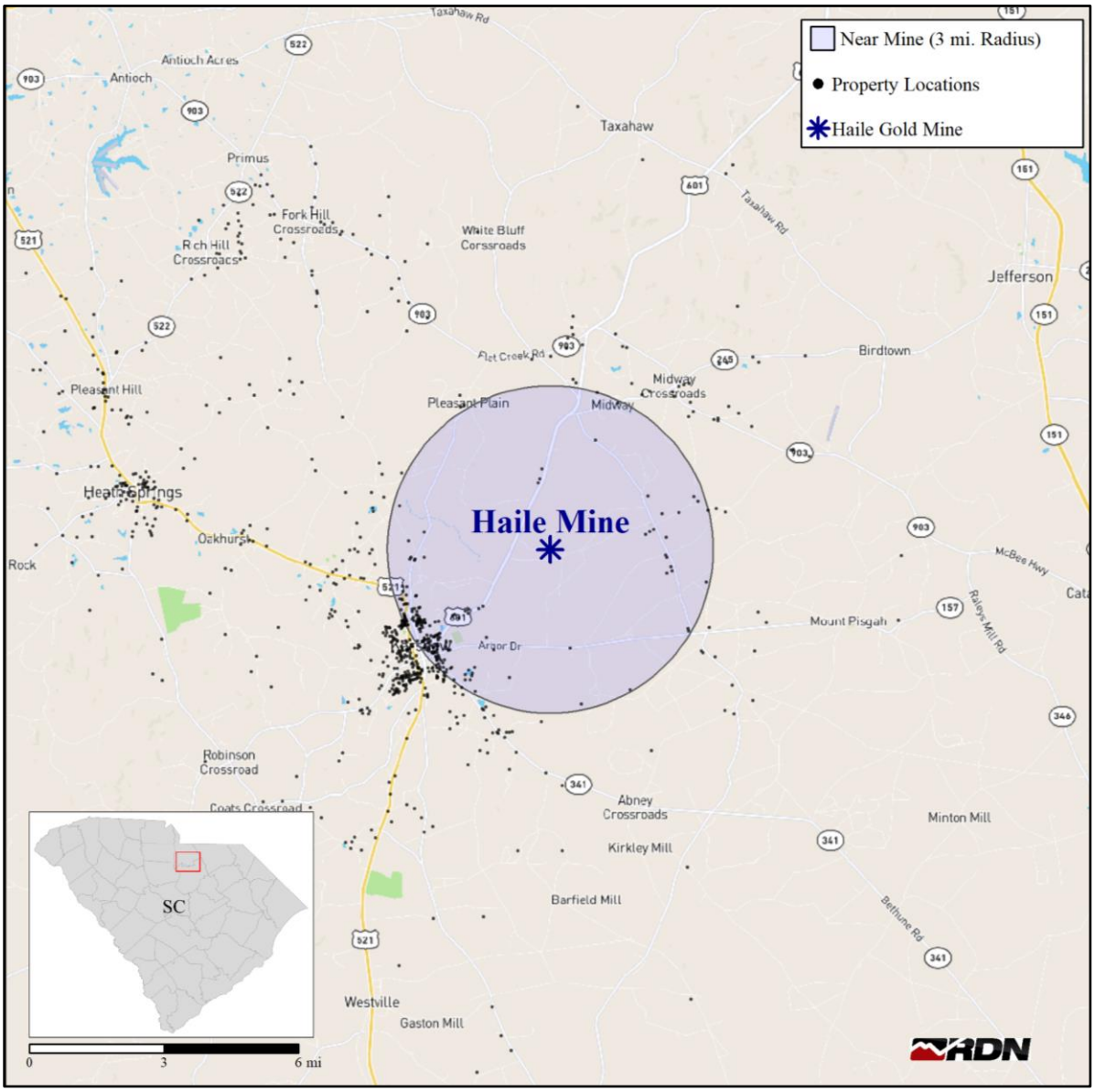
Variable	(n=622) Before Opening 2002Q1-2016Q2	(n=497) After Opening 2016Q3-2022Q1	Change
Sale Price (Adj.)	$96,032	$111,284	***$15,252
Price per Square Foot (Adj.)	$56.68	$68.98	***$11.15
Age (Sale Date – Year Built)	38	37	(1)
Square Footage (Home)	1,614	1,585	(29)
Square Footage (Land)	120,804	175,570	*54,766
Population Density (Pop./sq mi)	319	315	(4)
Distance to Nearest School (miles)	1.48	1.40	(0.08)

*Notes: *** p < 0.001; ** p < 0.01; * p < 0.05. All values are average estimates for properties within 10 miles of the mine. The opening of the mine is defined as 2016Q3. All prices in constant 2022 dollars.*

Sources: CoreLogic, 2022; Zillow, 2022; ESRI, 2022; and RDN estimates prepared for this study.

For the purpose of our analysis, we consider properties within three miles of the Haile Gold Mine as "near" the mine and all other properties are "far" from the mine. We chose this radius for the impact area because it is within the range of distances used in the literature and results in a similar number of observations that are inside or outside the impact area in our hedonic regression analysis. All else equal, having similar sample sizes in each area (i.e., near and far from the mine) increases the statistical power of their comparison. This means we are more likely to detect the effect, if any, that the mine has had on nearby property values relative to a dataset with the same total sample size but with fewer observations in one area and more in the other. Figure 4-1 maps the Haile Gold Mine, the impact area, and the locations of property sales observed over the case study period.

Figure 4-1: Residential Property Sales Near and Far from Haile Gold Mine, Lancaster County, SC, 2002-2022



Coy Mine

The Coy Mine is an underground zinc mine located in Jefferson County, Tennessee; it is one of three East Tennessee Mines, the others being the Immel Mine and the Young Mine. The population within 10 miles of the Coy Mine was 52,190 in 2000, 59,356 in 2010, and 63,042 in 2020. Asarco purchased the site in the 1960s and operated the Coy Mine until 2001. Press releases indicate the mine closed at the tail end of 2001 following the U.S. recession and a steep fall in the price of zinc. The mine remained closed for several years before briefly re-opening in 2007 under new owner Glencore. The current owner, Nyrstar, completed its purchase of the mine in 2009 and resumed operations, reaching full capacity by 2010Q4.

Table 4-3 presents summary statistics for single-family homes sold within 10 miles of the Coy Mine, classified into two periods: before and after the mine re-opened. For purposes of this study, we set 2009Q3 as the period for mine re-opening. Though the mine was active from 2007 to 2008, it appears the current owner, Nystar, significantly ramped up production after they acquired the mine in 2009. As show in the table, the real average sales price and price per square foot (in constant 2022 dollars) fell after the mine re-opened. However, this does not mean there is a causal relationship between decreases in sales prices and the mine opening, which could be attributed to confounding factors. To establish a causal relationship, we must also analyze the marginal change in prices for impacted homes and non-impacted homes at different stages of the mine's operation.

Table 4-3: Summary Statistics for Home Sales within 10 Miles of Coy Mine, Before and After Opening (2009Q3)

Variable	(n=4,594) Before Opening 2002Q1-2009Q2	(n=3,683) After Opening 2009Q3-2022Q1	Change
Sale Price (Adj.)	$194,928	$170,966	***($23,962)
Price per Square Foot (Adj.)	$108.32	$94.12	***($14.20)
Age (Sale Date – Year Built)	11	16	***5
Square Footage (Home)	1,810	1,811	1
Square Footage (Land)	46,220	45,727	(493)
Population Density (Pop./sq mi)	538	566	**28
Distance to Nearest School (mi.)	2.83	2.83	0

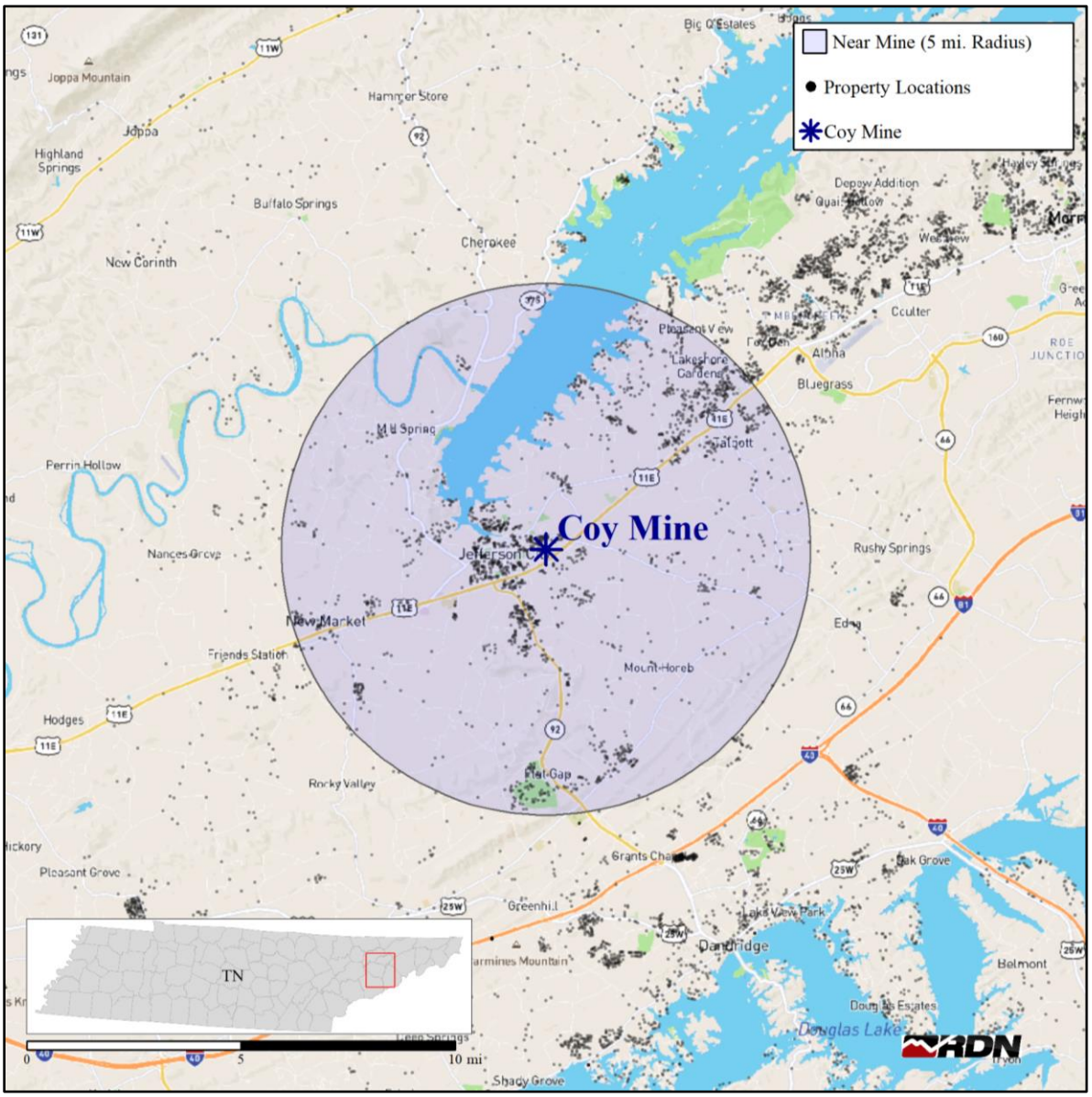
*Notes: *** p < 0.001; ** p < 0.01; * p < 0.05. All values are average estimates for properties within 10 miles of the mine. The opening of the mine is defined as 2009Q3. All prices in constant 2022 dollars.*

Sources: CoreLogic, 2022; Zillow, 2022; ESRI, 2022; and RDN estimates prepared for this study.

For the purpose of our analysis, properties within five miles of the Coy Mine are "near" the mine and all other properties are "far" from the mine. We chose this radius for the impact area because it is within the range of distances used in the literature (albeit at the upper end) and results in a similar number of observations that are "near" and "far" from the mine in our hedonic regression analysis, which increases

the statistical power of their comparison. Figure 4-2 maps the Coy Mine, the impact area, and the locations of property sales observed between 2002 and 2022.

Figure 4-2: Coy Mine Impact Area and Residential Property Sales, Jefferson County, TN, 2002-2022



Lincoln Mine

The Lincoln Mine is an underground gold mine in Amador County, California that was first established in 1851. The closest town to the Lincoln Mine is Sutter Creek, California, which is approximately 1.4 miles away. The population within 10 miles of the mine, retrieved from decennial census data for 2000, 2010, and 2020, were 26,397, 28,964, and 30,536, respectively. According to MSHA data, the Lincoln Mine was abandoned from at least 1999 to July 2012, when "intermittent" operation began under then owner, Sutter Gold. A February 2013 news article from ABC7 describe the mine as "weeks away from starting full-scale mining," but the company ran into financial and equipment issues that delayed production. The mine was put on care and maintenance in 2014 until the current owner, Seduli Sutter Operations, purchased the mine in 2020 and resumed operations, pouring its first gold in 2022.

Table 4-4 presents summary statistics for single-family homes sold within 10 miles of the Lincoln mine from before the mine re-opened and after the mine re-opened. For purposes of this study, we define the "mine opening" period as 2016Q3. As shown in the table, the real average sales price and price per square foot (in constant 2022 dollars) grew after the mine re-opened. However, this does not by itself indicate any causal relationship between homes sales prices and the mine opening. To establish a causal relationship, we must also analyze the marginal change in prices for impacted homes and non-impacted homes at different stages of the mine's operation.

Table 4-4: Summary Statistics for Home Sales within 10 Miles of Lincoln Mine, Before and After Opening

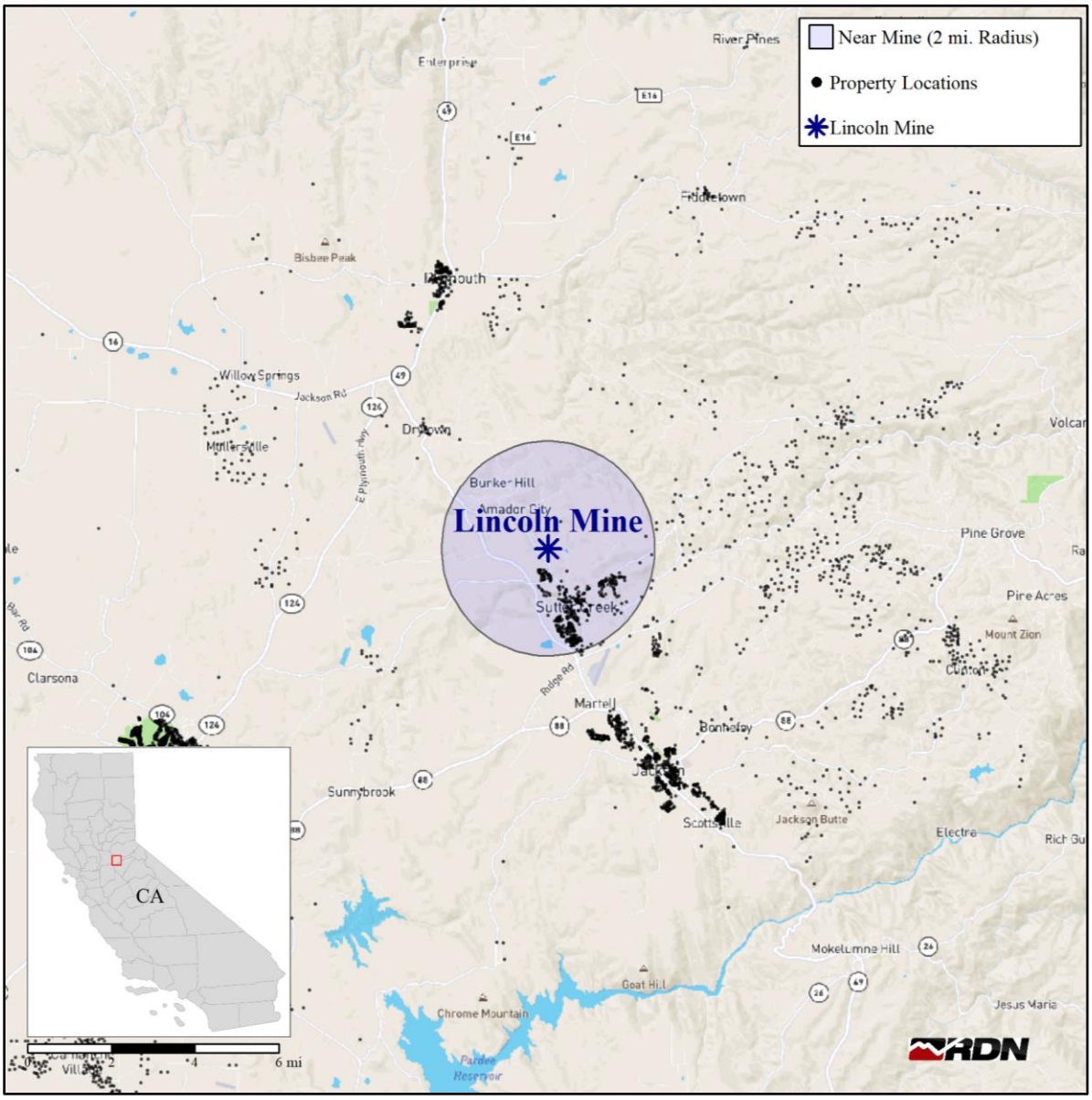
Variable	(n=1,598) Before Opening 2001Q1-2013Q1	(n=2,609) After Opening 2013Q2-2022Q1	Change
Sale Price (Adj.)	$324,172	$383,363	***$59,190
Price per Square Foot (Adj.)	$182.82	$224.32	***$41.50
Age (Sale Date – Year Built)	28	34	***6
Square Footage (Home)	1,738	1,785	*47
Square Footage (Land)	59,025	72,948	**13,923
Population Density (Pop./sq mi)	683	679	(4)
Distance to Nearest School (mi.)	0.92	0.98	**0.06

*Notes: *** p < 0.001; ** p < 0.01; * p < 0.05. All values are average estimates for properties within 10 miles of the mine. The opening of the mine is defined as 2013Q2. All prices in constant 2022 dollars.*

Sources: CoreLogic, 2022; Zillow, 2022; ESRI, 2022; and RDN estimates prepared for this study.

For the purpose of our analysis, properties within two miles of the Lincoln Mine are "near" the mine and all other properties are "far" from the mine. We chose this radius as the impact area because it is within the range of distances used in the literature and results in a similar number of observations that are inside or outside the impact area in our hedonic regression analysis, which increases the statistical power of our analysis. Figure 4-3 maps the Lincoln Mine, the impact area, and the locations of property sales observed between 2001 and 2022.

Figure 4-3: Lincoln Mine Impact Area and Residential Property Sales, Amador County, CA, 2001-2022



Case Study Methodologies

While the existing literature does not specifically address impacts to property values from underground mining, the same methodologies used to estimate the impacts of other activities on residential home prices are generally applicable. For a discussion of methodological approaches that may be used to estimate impacts of mining and other activities to property values, see *Appendix B—Literature Review: Methodologies for Estimating Impacts on Home Values*. The methodologies used for this case study analysis are summarized below.

Hedonic Pricing Multi-Event Analysis

Impacts on home values from an activity may vary based on the homes' distance from the activity and the stage of the activity. Using a hedonic pricing multi-event approach, RDN estimated whether, on average, the distance from a mine is associated with any premium or penalty on home values for the case-study locations. We do this at three different stages for each mine: pre-operation, ramp up, and an ongoing operation. Data used for the case study analysis includes property and location attributes. Table 4-5 includes a summary of the variables used for the analysis.

Table 4-5: Summary of Case Study Dataset Variables

Variable	Description
Mine Name	Designates if the property is near to the Haile Gold Mine, Coy Mine, or Lincoln Mine
Sale Amount	Transaction value of home (constant 2022Q1USD)
Sale Date	Date of transaction
Home Square Footage	Size of livable space in the home (square feet)
Age	Age of the home (years)
Population Density	Population density surrounding the home
Distance to Nearest School	Straight-line distance to the nearest school (miles)
Distance to Mine	Straight-line distance to the nearest mine (miles)

In order to define the development and operation stages for each of the three case study mines, RDN reviewed a combination of historical mine status and employment data from MSHA and, when available online, historical news articles about the development and operational status of the mines. This analysis considers mines to be inactive during periods the mine's status is recorded by MSHA as "abandoned" or "non-producing," or if the mine's status is "active" but the mine is not producing and does not show any significant employment. Non-producing mines are those where production has not yet begun or has ceased, but some minimal work occurs, such as safety inspections. Abandoned mines are those that are not only closed, but also no party is actively monitoring or maintaining the site. A mine can become active again when the existing or new operator decides to resume operations. This often requires a

transition period of construction, capital improvements, and hiring and training before the mine reaches full operational capacity.

RDN selected dates that best align with the following definitions of the various stages of development and operation:

- **Pre-operation Phase**: this is the period during which a prospective mine operator is working on obtaining project approval and necessary permits; during this period the general public learns about the upcoming project.
- **Ramp-up Phase**: this period includes construction activities, equipment procurement and upgrades, workforce training, and ramp up of mining activities to full operation; the mine begins operating (i.e., producing) part-way through this phase.
- **Ongoing Operation Phase**: this period includes ongoing full operation of the mine.

Table 4-6 summarizes the periods RDN selected for each mine's pre-operation, ramp-up, and ongoing operation phases.

Table 4-6: Quarterly Periods by Phase of Operation, Case Study Mines

Mine Name	Pre-operation	Ramp-up	Ongoing
Haile Gold Mine	2002Q1 - 2014Q3	2014Q4 - 2020Q3 (Mine open: 2016Q3)	2020Q4 – 2022Q2
Coy Mine	2002Q1 - 2006Q3	2006Q4 - 2013Q3 (Mine open: 2009Q3)	2013Q4 - 2022Q2
Lincoln Mine	2001Q1 - 2011Q3	2011Q4 - 2017Q2 (Mine open: 2013Q2)	2017Q3 - 2022Q2

Once all stages were defined for each mine, we pooled the data for each stage and performed statistical analyses to examine the relationship between a mine's location and phase of operation and the location and characteristics of homes sold in the surrounding area. Specifically, in each stage, we regressed the natural logarithm of the constant-dollar sale price on a variable measuring the straight-line distance to the mine in miles, our main variable of interest, and a set of additional covariates/control variables. Because we use the natural logarithm of the sale price, the coefficient on the distance-to-mine variable can be interpreted approximately as the percent change in the value of a home associated with an increase of one mile in the distance from the mine.

Fixed-Effects Difference-in-Differences Analysis

To further investigate whether the opening of the case study mines impacted home values in their respective areas, and whether any impact varied by proximity to the mines, we analyze whether, on average, home prices in the counties where the mines are located changed as a result of the mines opening and commencing normal operations. Further, we estimate whether homes considered to be near the mine experienced different impacts than other homes.

The fixed-effects difference-in-differences analysis uses two operational statuses: mine closed and mine open. This is different from the hedonic pricing multi-event analysis, which included three phases. For this binary indicator, RDN selected the quarter when the mine appears to have commenced or re-commenced production (i.e., mineral extraction), as opposed to exploratory drilling and mine construction leading up to operations. This date occurs part-way into the ramp-up phase, after construction and equipment procurement or upgrades. Based on available data, the dates at which the case study mines began operation were 2016Q3 for the Haile Gold Mine, 2009Q3 for the Coy Mine, and 2013Q2 for the Lincoln Mine (refer to Table 4-6).

For each mine location, RDN calculated an average quarterly price for homes classified as near or far from the mine using a large set of alternative distances as the cutoff point for being considered near the mine. These distances ranged from half a mile up to ten miles. For each mine, RDN then found which cutoff distance resulted in the largest number of same-quarter near-and-far averages. Under certain cutoff distances and periods, some counties only had home sales either near or far from the mine, but not both. In order to ensure the fixed effects regression has appropriate overlap of sales across groups (near and far) for each mine, we defined the cutoff as the distance that results in the largest number of same-quarter near-and-far averages. The resulting cutoff distances are three miles for the Haile Gold Mine, five miles for the Coy Mine, and two miles for the Lincoln Mine.

Once we determined the distances for each mine and created near/far indicators in each data set, we pooled the data for all three case study areas. We then regressed the natural logarithm of the constant-dollar sale price on key indicators: (1) *Mine Open*, for if the sale occurred while the mine was operating normally, and (2) an interaction term, *Mine Open*Near Mine*, for if the mine was operational during the sale and the property is close to the mine. Note that for any individual property its proximity to the mine does not vary over time (nor does its building area or land area). In the fixed effects model, it is impossible to estimate the impact of being near the mine, regardless of mine operation status, because the fixed effects already control for each property's unique physical characteristics. The main coefficients of interest in the fixed effects model are the coefficients for the indicators. The coefficient for *Mine Open* indicates the overall effect of the mine operating on all homes, whereas the coefficient for *Mine Open*Near Mine* indicates any additional effect of the mine operating on homes "near" the mine, specifically.

Results

Table 4-7 summarizes the regression results of both the multi-event hedonic regressions (Columns 1-3) and the fixed effects difference-in-difference regression (Column 4).

Table 4-7: Regression Analysis Results

	(1) Pre-operation	(2) Ramp up	(3) Ongoing	(4) Fixed Effects
Intercept	11.4405 ***	12.1788 ***	11.7750 ***	9.9694 ***
	(0.7274)	(0.3212)	(0.2133)	(0.4472)
Distance to Mine	-0.0108 ***	-0.0122 ***	-0.0117 **	
	(0.0029)	(0.0021)	(0.0037)	
Mine Open				-0.0108
				(0.0279)
Mine Open*Near Mine				0.0089
				(0.0423)
Building Area	0.0004 ***	0.0001 ***	0.0004 ***	
	(0.0000)	(0.0000)	(0.0000)	
Land Area	-0.0000 ***	0.0000 ***	0.0000 *	
	(0.0000)	(0.0000)	(0.0000)	
Age	-0.0200 ***	-0.0278 ***	-0.0168 ***	-0.0757 **
	(0.0015)	(0.0010)	(0.0014)	(0.0255)
Age Squared	0.0001 ***	0.0002 ***	0.0001 ***	0.0003 ***
	(0.0000)	(0.0000)	(0.0000)	(0.0001)
Population Density	-0.0001 ***	-0.0002 ***	-0.0002 ***	0.0005
	(0.0000)	(0.0000)	(0.0000)	(0.0003)
Observations	5,367	10,803	2,803	11,666
Adjusted R-squared	0.4697	0.4057	0.6132	0.5898

Notes: *** p < 0.001; ** p < 0.01; * p < 0.05. Columns 1 through 3 include mine and sale-date fixed effects, and controls for distance to nearest school. Column 4 includes a linear control variable for time.

Hedonic Pricing Multi-Event Analysis

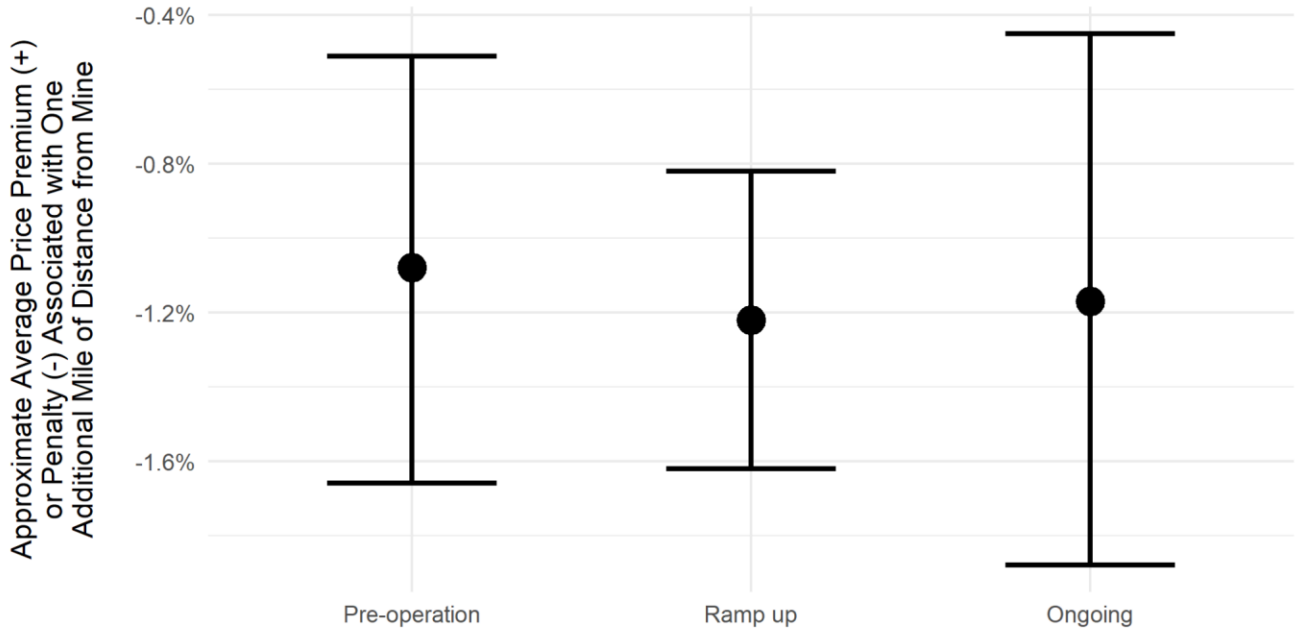
Columns 1 through 3 in Table 4-7 display the results of the hedonic pricing multi-event analysis. In all three columns, the coefficient on the distance-to-mine variable can be interpreted approximately as the percent change in the value of a home associated with an increase of one mile in the distance from the mine. The results of the analysis indicate that in our case study areas, throughout all three stages, distance from the mine results in a penalty, or negative premium, on home values at a rate of

approximately one percent per additional mile of distance. That is, controlling for observable characteristics, prices for homes closer to the mines are on average higher than for homes further away, with the price decreasing approximately one percent for every additional mile of distance from the mines.

Importantly, the coefficients on the distance-to-mine variable are stable across the three different stages, suggesting that any price premiums observed before the mine is fully approved and permitted are still observed during the ramp-up stage as well as the ongoing operation phase, which occurs after some of the uncertainty about the mines' spillover effects should have subsided.

Figure 4-4 displays the estimated home-value impacts of an increase of one mile in distance from the mines, with the corresponding 95 percent confidence intervals for the point estimates for all three stages. The clear overlap of the confidence intervals indicate that these estimates are indistinguishable from one another. That is, as indicated, we estimate that the impact is stable across time, suggesting that operations at the mines did not significantly change any pre-existing distance premiums or penalties.

Figure 4-4: Average Price Premium or Penalty associated with One Additional Mile from Case Study Mines

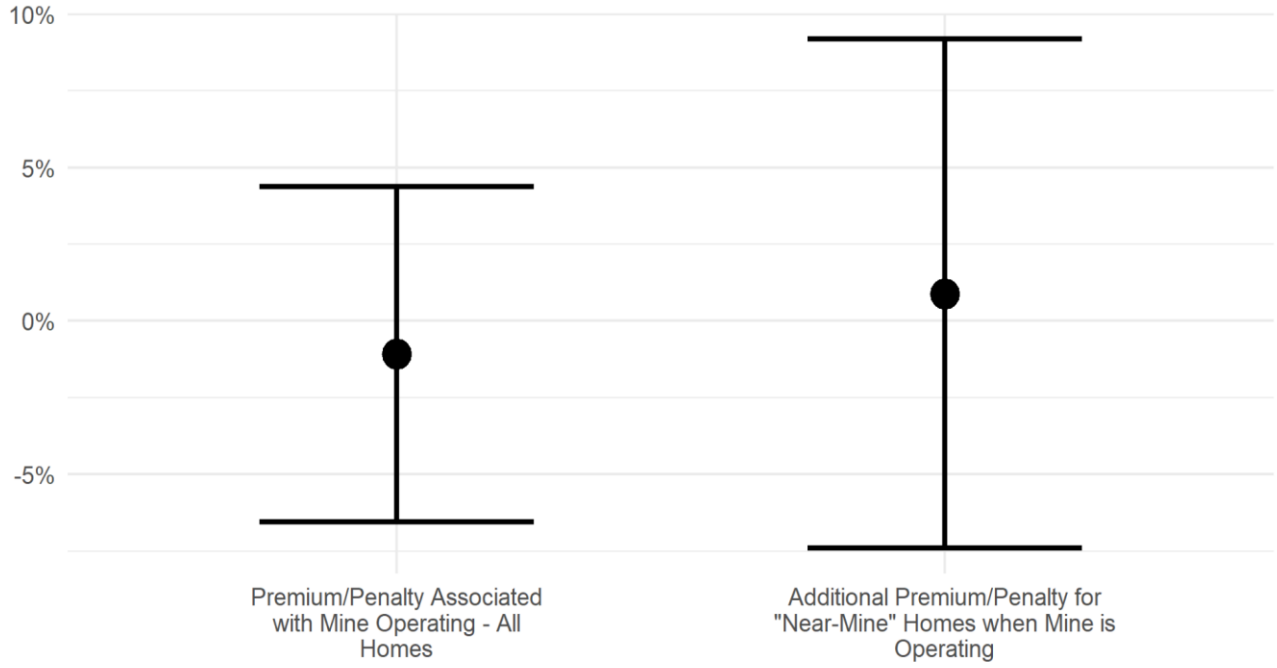


Fixed-Effects Difference-in-Differences Analysis

Column 4 in Table 4-7 displays the results of the fixed-effects difference-in-differences estimation. The small and negative coefficient on the *Mine Open* indicator variable is not statistically significant at the 95 percent level. What this means is that, at the chosen confidence level, the estimated effect is indistinguishable from a zero effect. The estimate and confidence interval on the left-hand side of Figure 4-5 displays this graphically, namely, that while the point estimate (which is a sample estimate) is approximately -1.0 percent, we are 95 percent confident that the true population parameter is between roughly -5.0 percent and +5.0 percent.

The coefficient on the *Mine Open*Near Mine* indicator variable is also statistically insignificant at the 95 percent level. Similar to the Mine Open indicator, what this means is that we are 95 percent confident that the true population parameter falls in a range that includes both positive and negative values. At the chosen confidence level, then, we cannot rule out that homes near the mine when the mine starts operating are not impacted, negatively nor positively, by the mine's operation. This is shown graphically on the right-hand side estimate and confidence interval in Figure 4-5.

Figure 4-5: Average Price Premium or Penalty associated with Location relative to Case Study Mines



Summary of Findings

Overall, the results of the regression analysis do not indicate a significant effect of comparable underground mining operations on property values. This result is consistent for both specifications; the first looking at the impact of distance to the mine as a continuous variable across different periods of operation and the second estimating if homes considered to be near the mine experienced different impacts than other properties. This impact is on aggregate, meaning that, on average, property values are not expected to be significantly impacted. However, this result is not an indication of a mine's impact on individual properties. For instance, certain homes may experience a reduction in value due to noise pollution, while others are sold at a premium due to increased demand for housing by workers of the mine and other households that move to the area for supporting jobs.

In addition to the results discussed above, RDN conducted several other analyses and specifications to account for biases in the selection of periods of operations, distances used to classify homes as near or far, and confounding variables. We also conducted sensitivity analyses to different model specifications by using spatial regression models that incorporate the location effects of surrounding properties, meaning that the sales price of a home could be partially impacted by the sale price of a home on the same street or block. All analyses pointed to the same conclusion that mining operations similar to the proposed project have not significantly impacted the home values of surrounding properties.

4.3 Survey of Local Real Estate Professionals

RDN assumes that real estate industry professionals based in western Nevada County have a better-than-average understanding of the major factors that determine home prices in the area. Because they work directly with prospective home buyers and sellers, they should also be attuned to the reasons why their clients want to buy or sell a property and how much clients think the properties are worth. As explained by Kiel and McClain (1995) and Taylor, Phaneuf, and Liu (2016), market expectations, speculation, and uncertainty can have a significant impact on property values. Real estate market participants assess value based on imperfect information, not only about the present, but also about what may or may not happen in the future.

RDN conducted several scoping interviews with local real estate professionals to understand local expectations for the Idaho-Maryland Mine's impacts to property values, if any. Following these interviews, RDN designed and distributed an online survey to 362 Realtors® based in western Nevada County. The survey prompted respondents to quantify and explain the magnitude and duration of the proposed project's impacts to property values for various areas. The following section summarizes the results of RDN's interviews and survey (the survey form is attached in *Appendix C—Realtor Survey*).

Scoping Interviews

Phone interviews were conducted with contacts selected from a list of local real estate industry professionals collected by RDN and reviewed by the County. This list includes Realtors®, brokers, general contractors, and rental property managers. Out of the approximately 30 contacts that RDN called, 11 agreed to an interview. Of the remaining 19 contacts, most simply did not answer or did not return RDN's voicemails. However, similar to our interviews with some business organizations, several contacts declined to be interviewed because they did not want to comment on what they perceive to be a controversial project despite assurances that their responses would be confidential.

Several interviewees said they do not expect that the mine would have any significant impact on property values. One respondent expects a moderate increase in sales prices and total sales due to the anticipated increase in population and jobs. Most interviewees, however, expect that the proposed project would negatively impact local property values. According to these respondents, Nevada County is a gateway to outdoor recreation and has long been a draw for retirees moving from the Bay Area or Los Angeles in search of a slower pace. Younger families have also been moving to the area, a trend that accelerated during the COVID-19 epidemic due to the proliferation of flexible work-from-home policies and people's increased desire for more space. A common thread between these groups is that many place a high value on natural spaces and resources. Thus, local preferences may be less accepting of large industrial or commercial developments as compared to communities in more developed areas. To support this notion, three real estate brokers interviewed for this study claimed they had first-hand experience with buyers who walked away from a potential sale due to concerns about the proposed project's environmental effects on the property. Though the homes ultimately sold, they either sold at lower prices or spent more days on the market than they otherwise would. According to one broker, information about the mine is one of the required disclosures when selling homes nearby.

RDN asked interviewees to explain the reasons why the proposed project would impact property values. While many cited the anticipated increases in traffic and noise along the proposed truck haul routes, the primary concern of those who expect large negative impacts is the possible draining or contamination of local wells and other water resources. Two interviewees specifically noted the case of the San Juan

Ridge Mine, located 7.5 miles north of Nevada City. In 1995, miners inadvertently drilled into an aquifer, flooding the mine. Ultimately, the accident drained and contaminated a dozen local wells (San Juan Ridge Taxpayers Assocation 2022). The EIR for the mine had not anticipated the possibility of such significant levels of flooding or its impact on local water resources. Some now see the Draft EIR for the Idaho-Maryland Mine within the context of the San Juan Ridge Mine and fear a similar outcome.

Some of the real estate professionals that RDN interviewed indicated that local fears about the mine's environmental impacts are likely overstated. Nonetheless, they acknowledged, the perceived increase in risk would impact local home sales, at least temporarily. Two interviewees opined that if the mine continued to operate without incident, eventually the risk premiums for the affected properties would subside and their values would recover. The exception would be properties directly next to or up to a few blocks from the truck haul routes, which most interviewees agreed would be negatively impacted due to the anticipated increase in traffic and noise.

Survey Population and Distribution

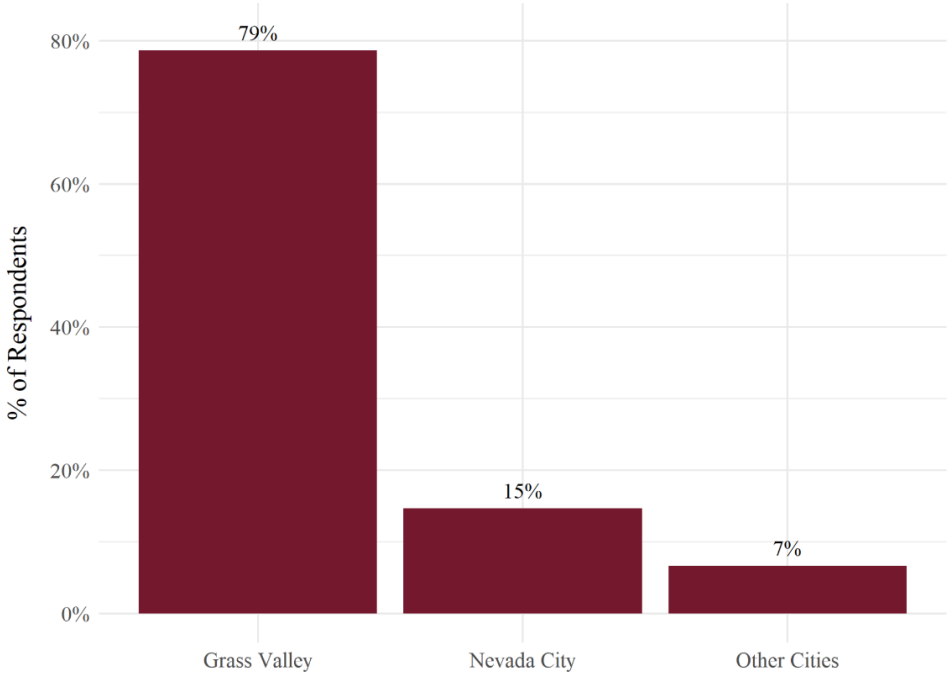
RDN collected office and email address information for 362 Realtors® who operate in western Nevada County by cross-referencing searches on Realtor.com with company websites and other sources. We decided to limit our survey to licensed Realtors® as a quality control measure, given that the broader real estate industry includes personnel with a wide range of experience and specialties. We distributed the online survey through the SurveyMonkey platform on 27 June 2022 using personalized email invitations. Reminder emails were sent to non-respondents on 30 June and 7 July. The survey closed on 9 July. Each email invitation included a unique survey URL linked to a specific respondent. To protect the integrity of the survey, we recorded only the first response from each unique URL.

RDN received a total of 75 responses from 362 potential respondents, which represents a 21 percent response rate. Of the 75 respondents, 87 percent fully completed the survey and the remaining 13 percent skipped one or more questions. Respondents were asked about their familiarity with the proposed project and the Draft EIR, as well as various questions related to their expectations regarding the project's impact to local property values. The following section summarizes the survey results for each and reflects only the aggregated opinions of those who volunteered to respond. It is important to note that that the opinions of those who responded to the survey may differ from those who did not respond to the survey.

Survey Results by Question

Figure 4-6 shows the distribution of respondents by city based on their office location as determined by RDN. The majority of respondents are based in Grass Valley (79 percent) or Nevada City (15 percent). Approximately 54 percent of respondents also indicated that they have 10 or more years of experience as a licensed real estate professional in Nevada County.

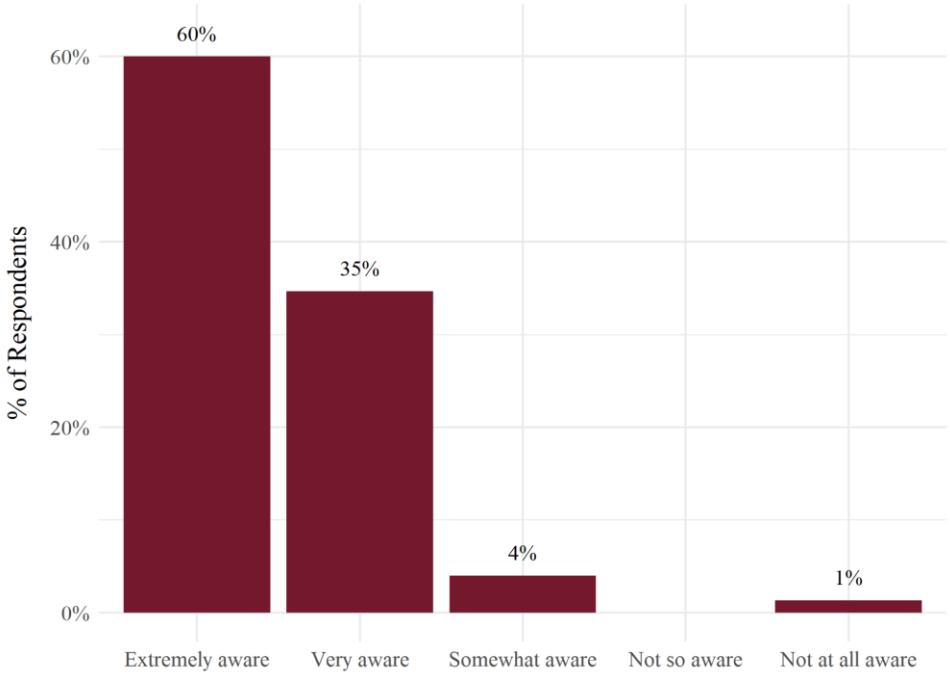
Figure 4-6. Respondents by City of Main Office



Note: numbers may not sum to 100 percent due to rounding.

Figure 4-7 displays respondents' self-reported level of awareness of the proposal to re-open the Idaho-Maryland Mine. A majority of respondents, 60 percent, reported being "extremely aware" of the proposed project, with 93 percent being at least "very" aware.

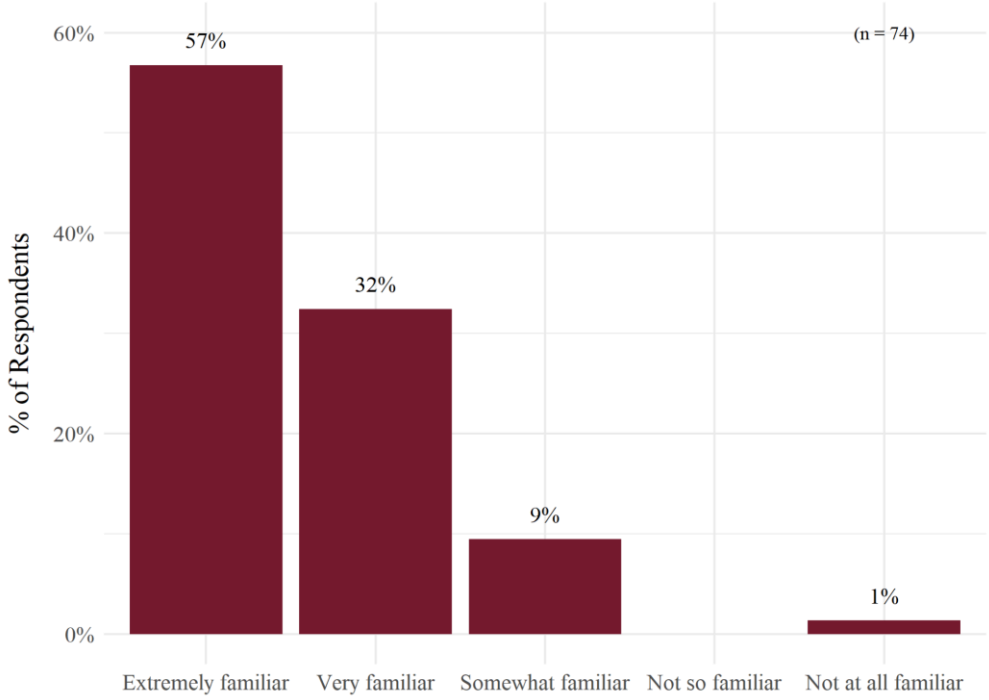
Figure 4-7. Are you aware of the proposal to re-open the Idaho-Maryland Mine?



Note: numbers may not sum to 100 percent due to rounding.

The majority of respondents also indicated that they are familiar with the project area (Figure 4-8).

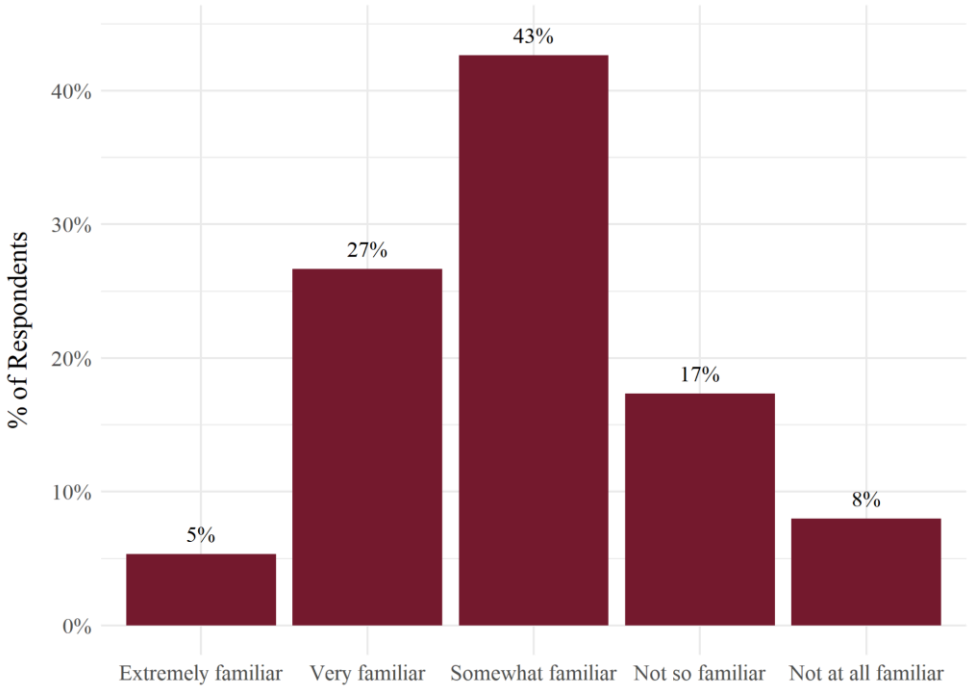
Figure 4-8. How familiar are you with the area around the proposed Idaho-Maryland Mine Project sites?



Note: numbers may not sum to 100 percent due to rounding.

Survey respondents were asked about their familiarity with the findings of the Draft EIR. Figure 4-9 summarizes this distribution, which indicates that 68 percent of respondents are at most "somewhat familiar" with the document, including 25 percent that are "not so familiar" or "not at all familiar." In contrast, 27 percent of respondents indicated that they are "very familiar" with the Draft EIR and only 5 percent said they are "extremely familiar." In contrast, approximately 60 percent of respondents said they were "extremely familiar" with the proposal to re-open the mine (Figure 4-7). Comparing these results, we can surmise that many people who are familiar with the proposed project are not familiar with the findings of the Draft EIR and are likely getting their information about the mine from other sources. As discussed in *Section 4.1: Literature Review*, the environmental impact of a site or speculation regarding its potential impacts can influence nearby property values.

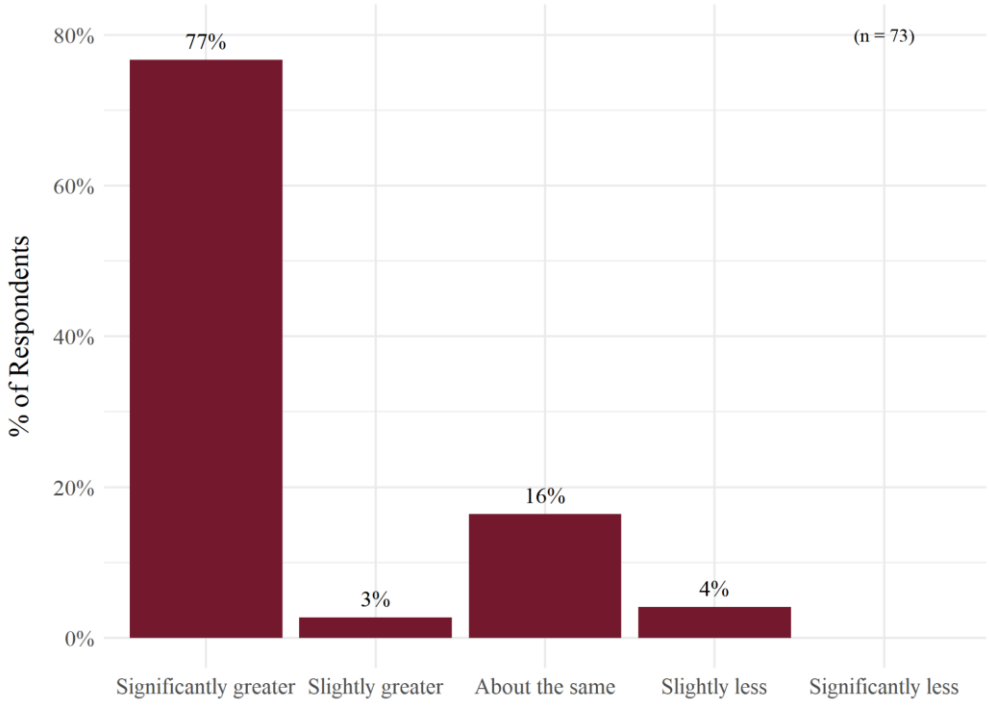
Figure 4-9. How familiar are you with the findings of the Draft Environmental Impact Report (EIR) on the Idaho-Maryland Mine Project?



Note: numbers may not sum to 100 percent due to rounding.

Respondents were also asked whether they believe the Draft EIR understates or overstates the environmental impacts of the proposed project. Figure 4-10 summarizes respondents' expectations relative to the document's findings. Approximately 77 percent of respondents speculate that the environmental impacts would be significantly greater than what is reported in the Draft EIR. This is a curious result given that only 32 percent of respondents claim to be "very familiar" or "extremely familiar" with the findings of the Draft EIR; it implies that many respondents may be forming their opinions on the Draft EIR based on secondary sources, which highlights the importance of these sources in shaping public perceptions of the Draft EIR and the proposed project.

Figure 4-10. Responses Summary: Do you believe the environmental impacts would be greater than or less than those stated in the Draft EIR?

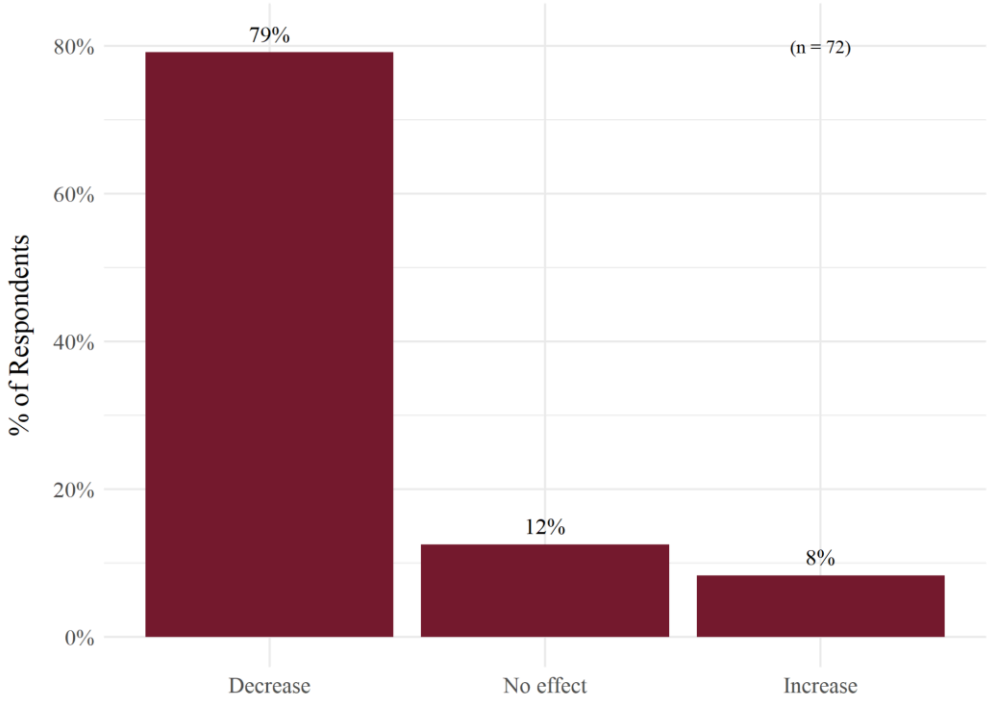


Note: numbers may not sum to 100 percent due to rounding.

The objective of RDN's literature review and case study analysis is to isolate the marginal effect of the proposed project on local property values while controlling for other factors. RDN similarly asked survey respondents to estimate the marginal impact that the proposed project would have on property values based on their local experience, assuming all other factors are held constant. Figure 4-11 reports the proportion of respondents that believe the mine would, on average, cause property values in Nevada County to increase, decrease, or neither (no effect).

Approximately 79 percent of respondents expect property values in Nevada County to decline if the Idaho-Maryland Mine re-opens. Only eight percent of respondents expect property values would increase. The remaining 12 percent do not expect the mine to impact property values. Of participants that included a written comment explaining their opinion, the most cited factor was the risk to water resources, which was mentioned by 37 percent of respondents. There is a strong presence of opinion that if water supply is impacted by the mine's activity, either by dewatering or pollutant run-off, property values would drop significantly. Increases in traffic and noise pollution were mentioned by 32 percent and 31 percent of respondents, respectively, as other causes for declines in property values. All respondents that expect increases in property values cited the increase in jobs and economic activity associated with the proposed project.

Figure 4-11. What would be the overall effect of the Project on the market value of residential properties in Nevada County?

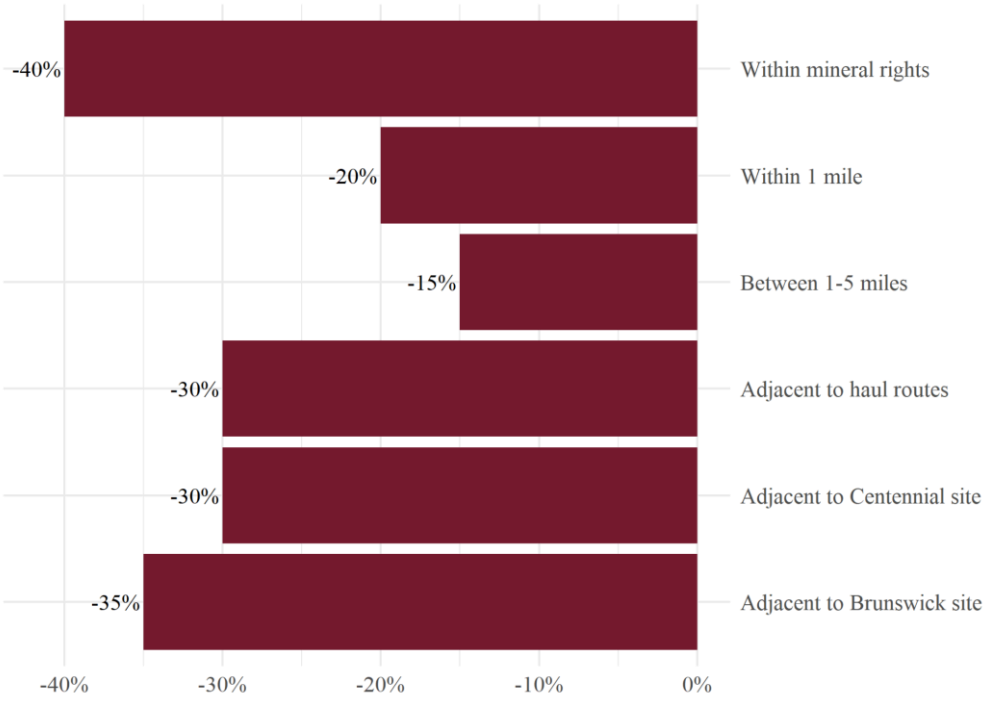


Note: numbers may not sum to 100 percent due to rounding.

RDN surveyed how real estate professionals expected property values to change in different areas near the mine, including properties on the proposed project's planned haul routes, near the Brunswick and Centennial sites, within the project's mineral rights boundary, within one mile of the project sites (e.g., Grass Valley), and between one and five miles of the project sites (e.g., Nevada City). When asked about specific areas, respondents overwhelmingly expect property values would decrease to some degree, with over 90 percent of respondents expecting some level of decrease in all defined impact areas.

Figure 4-12 summarizes the median estimated impact for the defined areas. The largest median decrease in property value is for properties within RGV's mineral rights boundary. (Note that the survey included reference maps of the proposed project's mineral rights boundary and hauling routes.)

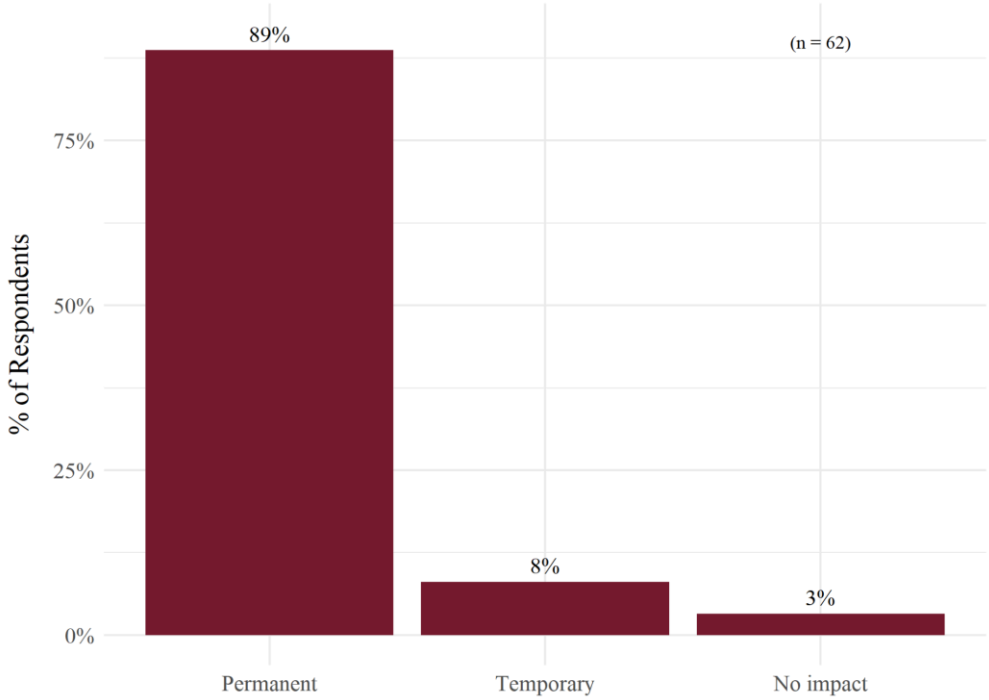
Figure 4-12. On average, how much do you believe residential property values in the following areas would change due to the Idaho-Maryland Mine Project?



Note: Reported numbers present the median, or middle, value of responses for each area.

Respondents were also asked whether they believe the anticipated change in property values caused by the proposed project would be temporary, permanent, or not applicable because they do not believe the mine would impact property values. Figure 4-13 charts the proportion of respondents who selected each answer choice. Overall, 89 percent of respondents expect that the proposed project would have a permanent impact on property values, whether positive or negative. However, of those who indicated the impact would be negative, 94 percent of respondents also indicated that the negative impact would be permanent.

Figure 4-13. In your opinion, do you expect the mine's impacts on property values would be temporary or permanent?



Note: numbers may not sum to 100 percent due to rounding.

For the final question of the survey, respondents were prompted to comment on why they believed the impacts would be temporary or permanent. Similar to previous comments, those who believe the impact would be negative and permanent cited degradation of water sources, increased traffic, and increased noise. In particular, respondents believe that damage to water resources would persist beyond the operational lifecycle of the mine. Consistent with their belief that the Draft EIR understates the environmental impacts, many respondents also believe that irreparable damage to water resources would permanently lower residential property values. Additionally, some respondents commented that these issues (traffic, noise, and potential well water contamination or depletion) would need to be disclosed to potential homebuyers, which would lower those properties' values to some extent regardless of whether these issues are ever realized.

Summary of Survey Results

The results of the Realtor® survey mirrored RDN's one-on-one interviews with local real estate professionals. If the proposed project moves forward, most respondents believe that home prices in nearby areas would decline. The estimated magnitude of the decline varies by area. The median expected change in property value ranged from -15 percent for properties between one and five miles away from the mine up to -40 percent for properties located within RGV's mineral rights' boundary. Respondents indicated that the negative impact would largely be the result of potential adverse environmental impacts to water quality and the increase in traffic and noise associated with the planned truck hauling routes.

Not all respondents expect that the proposed project would have a negative impact. Approximately 20 percent of respondents said that the proposed project would either have no impact or a positive impact

on property values in Nevada County. Most of these respondents cited the increased economic activity and jobs associated with the mine. Additionally, others noted that the haul route was already a busy road that potential buyers would already have accounted for in home purchases in the area.

The environmental concerns mentioned in our interviews and survey are discussed in the findings of the Draft EIR. However, respondents to the survey do not think that the Draft EIR adequately assesses the impacts of the proposed project. This result highlights the potential impact of market speculation on property values. Market speculation, or stigma, is discussed by Kiel and Williams (2007) as having a potential impact on property values that is highly dependent on the site in question. The results of the survey indicate that the expectations and public sentiment regarding the proposed project differ from the actual outcomes for those mines presented in the case study analysis.

4.4 Conclusion

Our review of the relevant literature found many studies on the environmental spillover effects of industrial developments on property values. Although most of these studies find net negative impacts on property values, none of them focus on the property value impacts from opening or reopening a modern, underground mineral mine. This limits our ability to use existing studies to draw conclusions about the likely impacts of the proposed project, as the environmental impacts of open pit or surface mines are generally considered more severe than those of underground mines. Additionally, new industrial sites in the United States, and especially in California, must comply with more stringent environmental safety requirements than some of the sites studied in the literature. According to the Draft EIR, the proposed project would implement mitigation measures that would reduce most of the potentially significant environmental impacts to an acceptable level. The long-term significant and unavoidable impacts that would remain relate to degraded views of the project site from public vantage points and traffic impacts at the Brunswick Road/SR 174 intersection.

RDN also performed interviews with real estate professionals and a survey of licensed Realtors® to better understand potential impacts of the proposed project to property values. The survey results indicate that most respondents believe that the proposed project would have large and permanent negative impacts, though the level of impact varies by area. Overall, the median respondent believes that the proposed project would cause an average 40 percent reduction in home values for properties located within RGV's mineral rights boundary. In contrast, the median respondent believes homes located farther away (1 to 5 miles) would see an average 15 percent reduction. In the case of the survey, almost all respondents who believe that the proposed project would have large negative impacts on property values also believe that the Draft EIR substantially understates the significance of its environmental impacts. Respondents were particularly concerned about permanent damage to local water resources. In contrast, the scope of this study is to evaluate the economic impacts of the proposed project assuming it operates as proposed by the applicant and documented in the project description in the Draft EIR. The Draft EIR indicates that most of the potentially significant environmental impacts would be mitigated such that the impact would be "Less than Significant," including potential impacts to water resources.

Given the lack of existing studies on the property value impacts of sites that are comparable to the proposed project, and that survey data is largely influenced by perceptions of the proposed project impacts rather than those defined in the Draft EIR, RDN performed our own study of modern mines in the United States that are reasonably similar to the proposed project. We identified three mines as viable case study locations, then acquired and analyzed residential sales transactions for parcels near these

locations over periods when the mines were both non-operational and operational. Overall, our analyses indicate that opening or recommissioning the selected mines did not have a statistically significant impact on nearby residential property values during the periods studied. Confidence intervals around the impact estimates, which are generally small, include both negative and positive values, and therefore contain the value of zero. A general interpretation of confidence intervals that contain zero is that, at the chosen confidence level, it is not possible to rule out the hypothesis that there is no effect (that the effect may in fact be zero).

As part of this analysis RDN planned to evaluate the total impact to property values and associated property taxes based on the anticipated average change in property values associated with the proposed project. Of the three types of research RDN performed for this analysis–the literature review, real estate industry survey, and case study analysis–the case study analysis strikes the balance of being the most robust and readily applicable for evaluating the proposed project. Therefore, RDN uses the results of the case study analysis to evaluate the proposed project. However, the results of the case study analysis are inconclusive regarding the magnitude, and even the direction, of any potential impacts. Because the results do not allow us to rule out the possibility that the operation of the mines in the case studies had no effect on surrounding property values, RDN is unable to rule out that this would also be the case for the proposed project. Accordingly, we do not estimate any anticipated average change in property values associated with the proposed project. This is not to say that we have certainty that the proposed project will not impact property values (positively or negatively), but rather that we do not have enough certainty to exclude the possibility of the project having no impact.

5. IMPACTS TO UTILITIES, PUBLIC SERVICES, AND THE GENERAL FUND

RDN conducted an analysis to estimate the impact of proposed project operations on utility providers, public services, and the County's General Fund. This analysis considers the ability of public providers to serve the proposed project's utility needs; potential increased costs to County departments that provide law enforcement, emergency, and administrative services; and potential impacts to public services provided by other jurisdictions and special districts. To understand the total fiscal impact of proposed project operations to the County's General Fund, this analysis evaluates anticipated costs to County departments and compares them to the estimated tax revenue associated with the proposed project.

5.1 Utility Providers

The proposed project would result in new demand for electricity, potable water, and waste disposal services to serve the project itself, new residents in the area, and households that switch from well water to municipal water supplied by the Nevada Irrigation District (NID). RDN conducted interviews with representatives at Pacific Gas and Electric (PG&E), NID, and Waste Management regarding the potential impacts to their services.

PG&E provides electrical service to almost the entire population of Nevada County and would serve the proposed project. Per the Draft EIR, operation of the proposed project would require an estimated total connected load of approximately 10 megawatts (MW), with a net load of approximately 6 MW. Although this would greatly increase electrical service demand in the area, PG&E would adjust their services to accommodate the change. PG&E operates a dynamic power grid that serves much of the State of California by transporting power from generation facilities to consumer. Through this system, PG&E would serve the increased demand for power from facilities throughout the state. Although the proposed project would require construction of onsite poles and a substation, it would not result in the need for substantial new infrastructure on public land that does not currently support PG&E infrastructure. Therefore, it likely would not change the amount of franchise taxes PG&E pays for the use of public land. Given PG&E is a private company with the capacity to serve the proposed project's electrical needs and that their franchise tax burden would not change, this activity would not financially affect the County.

NID is a multi-county water agency that provides water service to over 100,000 customers, including 700 in the Wolf Creek Area (i.e., the project area). According to the Draft EIR, the proposed project would increase water supplies by depositing an additional 1,000 acre feet of treated water into the Wolf Creek System, resulting in a net positive impact to water supply. Based on this finding and current supplies, NID has sufficient capacity to serve both the proposed project and an additional 30 residential properties along East Bennett Road that may transition from wells to their system. Although the Draft EIR finds the proposed project would not impact any additional wells, NID submitted comments on the Draft EIR suggesting that the County require RGV to supply a $14 million bond to ensure that costs for new pipelines and connection fees would be covered if the proposed project impacts any additional wells. Based on the findings of the Draft EIR and current conditions, NID has sufficient water supply to accommodate the proposed project and this activity would not financially affect the County.

Waste Management provides waste disposal services in the project area and would serve any new residents that move to the area. The proposed project would manage their own waste disposal and would not impact this service. Waste Management currently serves 44,000 residential properties in Nevada County, including 8,000 in the City of Grass Valley and 2,000 in Nevada City. Given the small

projected increase in new households, Waste Management would be able to absorb the additional demand from new residents without a substantial change to their service. Waste Management is a private company and changes to their service would not affect County finances.

5.2 Public Services

Operation of the proposed project involves industrial activities, including increased truck traffic, that may result in the need for additional public services, including law enforcement and emergency services. The costs for some of these services would be covered by funding provided by RGV through mitigation, while the rest would be supported by public funds. The proposed project would also draw new residents to the area to work at the mine and in jobs supported indirectly by the proposed project's local expenditures on payroll, supplies, and services. This additional population may also increase the need for public services. This section provides a discussion of anticipated impacts to public services provided by the County and other jurisdictions and special districts. The discussion of impacts to County departments also includes estimated costs for maintaining the existing level of service.

RDN conducted interviews with representatives at law enforcement agencies, fire districts, and County and city departments in Nevada County to understand each organization's anticipated changes in costs and employment related to (1) operation of the proposed project and (2) the anticipated increase in population. For these interviews, RDN directed stakeholders to consider the proposed project and potential impacts as presented in the Draft EIR when evaluating ways in which these operations could directly impact their agency or department. For impacts related to anticipated population growth, RDN inquired about potential impacts to the agency or department and whether costs would likely increase proportionally with population growth.

This analysis assumes the local population would grow by 240 residents, as presented in the Draft EIR. The Draft EIR estimates 99 workers would move to the area to work in the mine, each representing a new household. Since the average household size in Nevada County is 2.4 people, these new workers would result in approximately 240 new residents when accounting for family members that would move with them. When interviewing County and city departments, law enforcement agencies, and emergency services, RDN directed them to consider a population increase of 240 residents distributed in the areas surrounding the project site. Table 5-1 summarizes the estimated increase in population that would result from the proposed project in each jurisdiction.

Table 5-1. Projected Population Increase

Jurisdiction	Population[1]	New Residents	Percent of New Residents
Unincorporated Western Nevada County	67,506	191	80%
City of Grass Valley	14,016	40	17%
Nevada City	3,152	9	4%
Other (unimpacted) regions	14,743	0	0%
Total Nevada County	**99,417**	**240**	**100%**

[1] Population estimates from 2020 decennial census

Law enforcement agencies and emergency service providers indicated that operation of the proposed project would likely increase the need for their services. The primary factor that would drive this need is the projected increase in truck traffic on local roadways that would likely result in more vehicle accidents and associated calls to service. The anticipated increase in population would also result in

additional vehicles on the roadways, particularly during commute hours, which may also increase the need for law enforcement and emergency services. The costs for these agencies to maintain their existing levels of service while serving additional residents would likely increase proportionally to the increase in population in their service areas.

Most County and city departments expect little to no impact to their employment or annual operating expenses as a result of the proposed project. In most cases, they anticipate either (1) direct impacts from operation of the mine would be minimal and would not increase costs, or (2) the proposed project's mitigation measures would cover anticipated cost increases. In these cases, this analysis assumes there would be no impact to the County's General Fund. Some of these organizations cited potential increases in costs related to new residents moving to the area but generally concluded that 240 new residents would not substantially change their costs or employment. In these cases, RDN estimated the potential cost increase for County departments based on their current service population and budget.

County Departments

The County provides a variety of public services, many of which would be affected by the proposed project and associated increase in population. This section summarizes potential impacts during full operation of the proposed project to these services and estimates the resulting public costs to maintain these services at the existing level. Increased costs to these services that are not covered through mitigation measures or other fees would impact the County's General Fund.

The County Sheriff's Office provides law enforcement and coroner services, which include responding to calls for service in their service area and operating the coroner unit and County jail. This department anticipates the proposed project would result in additional calls for service due to increased traffic on local roads and associated vehicle accidents and deaths, as well other impacts related to new residents moving into the area. These additional service needs would increase the department's operational costs. The specific impact would be dependent on factors that are not entirely known, such as the character of new residents drawn to the area. The Sheriff's Office operates the County jail, which has high costs for each inmate (approximately $110,000 per year). To provide a general estimate of agency costs, this analysis assumes new residents drawn to the area by the proposed project have a similar incarceration rate to that of the existing County population. Given the anticipated need for increased services from the Sheriff's Office, this analysis assumes the department's operating costs would increase proportionally to the anticipated increase in population in unincorporated Western Nevada County.

The County provides disaster response services though their Office of Emergency Services (OES). In the case of large emergencies, OES manages the Emergency Operation Center, coordinates emergency response across agencies, and provides logistics and assistance to public agencies. OES expects the impact to their department to be minimal, assuming the mine complies with safety protocols and there are no unforeseen ancillary effects. The department would continue to provide services to the entire county, including new residents that move to the area as a result of the proposed project. Therefore, this analysis assumes the department's operating costs would increase proportionally to the anticipated increase in population in the county.

The primary County departments that would experience direct effects from the proposed project include Public Works, which is responsible for maintaining local roadways, and Planning, which is the primary department responsible for ensuring RGV complies with the conditions of project approval, including

implementation of the mitigation measures from the EIR process. Representatives from these departments indicated that anticipated costs associated with operation of the mine are being taken into consideration during the project approval process and would be covered through the proposed project's conditions of approval. These conditions include initial one-time payments toward roadway improvements as well as ongoing tonnage fees to cover the cost of roadway maintenance associated with the proposed project's trucking activity. RGV would also be required to reimburse the County for staff hours dedicated to monitoring the project's compliance with building codes and mitigation measures. Therefore, RGV would cover all of the direct costs to the Public Works and Planning departments related to the proposed project. These funds would be deposited to and withdrawn from the County's General Fund, thereby increasing the annual budget by the same amount as the increased cost. Therefore, the total impact to the General Fund associated with these public services would be $0.

The Public Works and Planning departments anticipate that increased costs related to an increase in population would either be negligible or covered by impact fees. An increase of 240 residents in the County represents a 0.2 percent increase in the population, which would not substantially affect department services. Additionally, if any new homes were constructed to accommodate the increase in population, these projects would be required to pay impact and permitting fees, which help support these departments' activities. Therefore, the increased population would not affect these departments such that they impact the County's General Fund.

The County's Transit Division and Housing and Community Services Department expect little to no impact to their annual budget from the proposed project. The project site is not currently served by public transit, and therefore the Transit Division does not anticipate any change to its operating costs. The Housing and Community Services Department anticipates a minimal increase in costs attributed to new residents, however, the department receives a minority of its funding from General Funds, with the majority sourced from grants. Therefore, the associated impact to the General Fund would be minimal.

Table 5-2 summarizes the estimated public cost impacts to County agencies and departments (i.e., those supported by the County General Fund). Departments with no anticipated cost increase or with all anticipated costs covered by mitigation reflect a $0 impact. For each department that expects a cost increase due to new residents associated with the mine, RDN used their latest annual budget and the county's population to calculate the per person budget and then multiplied it by the total projected population increase in the county.

Table 5-2. Annual Costs to County General Fund (rounded to thousands)

Agency/Department	Estimated Public Cost[1]
Nevada County Sheriff's Office	$141,000
Nevada County Office of Emergency Services	$8,000
Public Works (includes Solid Waste)[2]	$0
Planning Department[2]	$0
Transit Division[3]	$0
Housing & Community Services (County Funds)[3]	$0
Total Annual Impact to County General Fund	**$150,000**

[1] Numbers in 2022 dollars; numbers may not sum due to rounding
[2] Anticipated costs are covered by project mitigation
[3] Anticipated costs are below $500 per year
Source: Stakeholder interviews and calculations by RDN

City Departments and Special Districts

RDN conducted interviews with representatives at additional public agencies and special districts to understand their anticipated impacts associated with the proposed project at full operation. This section provides a discussion summarizing these impacts. Increased costs to the following departments and organizations would not impact the County's General Fund.

The law enforcement agencies that provide services to the areas surrounding the project site expect that the anticipated increase in population associated with the proposed project would increase the need for traffic enforcement and response to calls for services, thereby increasing their operating costs. The daytime population in the City of Grass Valley exceeds the residential population because the city serves as an economic hub that supports workers that commute into the city from other areas. Although the proposed project would primarily result in the reverse effect since the project site is located outside the city, the Grass Valley Police Department would support new residents of the city, mine workers commuting through the city to access the project site, and commuters coming to the city for jobs supported indirectly by project operation. Nevada City is located farther from the project site, so the Nevada City Police Department would primarily service new residents that move to the city. The California Highway Patrol (CHP) Grass Valley Area also expects a slight increase in calls for service to serve new residents. For each of these departments, the total cost for providing service would likely increase proportionally to the increase in population in their service area.

The fire districts that provide services to areas surrounding the project site expect additional costs related to the anticipated increase in population associated with the proposed project. The Ophir Hill Fire Department is responsible for fire protection services to the project site and surrounding area, and therefore anticipates increased service costs and staffing needs associated with the proposed project and associated population increase. However, the project's mitigation would cover these increased costs by funding three full-time firefighters for the life of the project and the purchase of a new fire engine for the district. The Nevada County Consolidated Fire District anticipates the impact to their budget directly related to the proposed project would be minimal because the primarily impacted roadways are not in their jurisdiction. However, the district may receive additional calls for aid from neighboring districts as well as increased costs associated with new residents. The Grass Valley Fire District (GVFD) expects increased service needs related to increased truck traffic and related traffic incidents, which may also result in a need for additional staff. The Nevada City Fire District, which has a contract with GVFD for services, expects a similar impact. With the exception of Ophir Hill Fire Department, whose service cost increase would be covered by mitigation, service costs for local fire districts would likely increase proportionally to the increase in their service populations.

The City of Grass Valley expects the proposed project would not increase annual costs for their Community Development Department but would substantially impact their Public Works Department. Representatives at the City cited concerns about increased traffic congestion necessitating intersection and roadway improvements and heavy truck traffic heightening pavement maintenance needs. The City also anticipates the need for new residential development to support population growth. Although development fees typically cover a portion of development support, other costs such as unallocated staff time, associated support for necessary improvement projects, and ongoing service costs would require additional staff or consultants. The proposed project would pay development impact fees to the City to help cover costs associated with specific intersection and roadway improvements. However, these one-

time fees do not account for costs associated with ongoing pavement maintenance. The City estimates ongoing annual costs to be $120,000 for a full-time engineer and $50,000 for a maintenance worker.

RDN made multiple attempts to contact the Grass Valley and Union Hill school districts but were unable to reach representatives who could answer questions about the potential fiscal impacts of the proposed project and associated population increase to their districts. According to the Draft EIR, schools in the project area have experienced declining enrollment and are projected to experience continued reductions. Based on 2019-2020 enrollment numbers, the primary and secondary school districts serving this portion of the County have capacity to accommodate the anticipated number of additional students. These districts would receive additional funding from the state based on these new students. The vast majority of funding for these districts is from the state, though approximately seven percent of their budget is locally funded through property taxes.

5.3 Tax Revenue

Tax revenue from property, sales, and other taxes paid by RGV and associated with the proposed project's local spending and related economic growth would benefit local jurisdictions and special districts in the county. This revenue includes property taxes on land, improvements, and mineral property paid directly by RGV; sales and other taxes paid by RGV; and property, sales, and other taxes paid by local businesses and residents supported by RGV's local expenditures.

RGV's mineral property tax would represent a large portion of anticipated tax revenue and depend on the value of the proposed project's mineral property, which is currently undetermined. Therefore, this analysis includes assumptions about the mine's anticipated production in order to provide a range of the potential impact of the proposed project on local tax revenue. The assumptions used to develop this estimate are described below.

This section presents estimates of the total tax revenue the proposed project would generate for local agencies, including the County and cities and special districts in the county. It also breaks out the portion of this revenue that would be allocated to the County in order to estimate the total impact of the proposed project to the County General Fund. The remaining tax revenue would be allocated to cities and special districts in the county.

Rise Grass Valley Property Taxes

RGV currently pays property tax on the two project sites and would pay additional taxes for any improvements (e.g., buildings) on these sites once they are completed. RGV would also pay property tax on their mineral reserves (i.e., property) at the time they begin extracting this material.

Land and Improvements

Property owners pay taxes based on the assessed value of a property, including the land and any improvements, such as utility services or buildings. The assessed values of the existing Brunswick and Centennial properties are based on the fair market values (sales price accepted) assigned to the parcels at the time of their acquisition in 2017 and 2018, respectively. Per California law, the assessed value has increased by either the CPI or two percent, whichever is lower, each year since. Based on a two percent increase from last year, the assessed values for 2022/2023 are $2.9 million for the Brunswick property and $1.3 million for the Centennial property.

RGV currently pays property taxes for the Brunswick and Centennial properties and would continue to pay them throughout their ownership of these properties. These taxes are based on the one percent tax levy authorized under Proposition 13 and any additional voter-approved debt or special taxes associated with the service areas in which each property lies. The County receives approximately 13.8 percent of all Proposition 13 taxes paid in the County, with the remaining portion going to other jurisdictions and special districts. Because voter-approved debt and special taxes do not affect the County General Fund, they are not included in this analysis.

Table 5-3 summarizes the assessed values for RGV properties, the associated Proposition 13 property taxes, and the portion of these taxes that would go to the County General Fund. The property tax for RGV's existing properties is $43,000, with $6,000 of this revenue going to the County.

Table 5-3. Property Tax from Existing Properties in 2022/2023 (rounded to thousands)[1,2]

Property	Assessed Value	Prop 13 Tax	County Tax Revenue
Brunswick Industrial Site	$2,936,000	$29,000	$4,000
Centennial Industrial Site	$1,326,000	$13,000	$2,000
Total	**$4,261,000**	**$43,000**	**$6,000**

[1] Numbers in 2022 dollars

[2] Numbers may not sum due to rounding

Upon completing construction of proposed improvements and facilities on the Brunswick Industrial Site, RGV would pay property tax on these improvements as well. According to the proposed schedule, this would occur 18 months after initiation of the proposed project. Because RGV was not able to provide anticipated construction costs, RDN estimated the value of these improvements based on the IMPLAN analysis output associated with 52 construction workers over the course of 18 months (refer to *Section 2.1: Project Location and Description*). The estimated value of site improvements, which represents the assessed value, is $12.5 million. The proposed improvements at the Brunswick site would thus result in additional estimated property tax of $125,000, with $17,000 of this revenue going to the County.

Mineral Properties

Upon commencing mineral extraction, RGV would also begin paying property taxes on the assessed value of their "proved reserves" of gold, which is the measured volume and weight of gold that is economically mineable. The process for assessing mineral property is detailed in the Assessors' Handbook Section 560 (California State Board of Equalization 1997). This process involves categorizing mines as investment properties that may be purchased and sold for the possibility of generating future income. Therefore, the County uses an income approach to assess mineral property values. This approach considers the aggregate present worth of the property's future net income when assessing the property's current value for tax purposes. This approach is complex and sensitive to the information included in the appraisal. RDN's analysis takes a simplified method to estimating the mine's expected cash flow. An in-depth assessment would require detailed financial information and current mineral exploration data beyond what is currently available.

In order to account for mining being a high-risk industry, mineral property in California is generally assessed using a high discount rate for estimating the current value of future cash flows. Per discussions with the Nevada County Assessor and her staff, in order to establish a specific discount rate and define other factors that would affect the mineral property assessment for the proposed project, they would

work closely with the California State Board of Equalization. Based on discount rates used for other projects in the county and for high-risk projects in neighboring counties, they estimated they would apply a discount rate around 15 to 19 percent to assess RGV's mineral property since the proposed project would be a high-risk venture. They indicated the base year for mineral property assessments is generally the first year of full production since ramp-up costs often outweigh revenue during the ramp-up period. Based on this information, this study uses 17 percent as the discount rate and Year 4 of the proposed project (i.e., the first year of full production) as the base year to provide a general estimate of the anticipated mineral property value and associated taxes for the proposed project.

The assessed value of the proved reserves would be based on the price of gold, anticipated production schedule, and amount of proved reserves. This analysis uses the three-year rolling-average price of gold as of January 1, 2022, which is $1,659 per ounce. RGV provided production data for four comparable underground gold mining operations that have similar throughputs to the proposed project and similar reserve grades to historic production at the Idaho-Maryland Mine. These mines maintain approximately 5 to 11 years of reserves with an average of 8 years. Therefore, this analysis assumes the mine extracts proved reserves over eight years. RGV does not have any proved reserves because they are currently in the process of performing the exploration work to quantify these resources. Therefore, this analysis provides the potential tax impact for a range of proved reserves by providing a high-end and low-end estimate.

The high-end estimate uses projected annual production of 108,400 ounces of gold per year and assumes the mine continually maintains eight years of reserves. This projected annual production was obtained from the 2021 economic impact report commissioned by RGV (Applied Economics LLC 2021). Based on these assumptions, the initial proved reserves would be 876,200 ounces of gold. This scenario assumes additional proved reserves are discovered and assessed each year in the same amount as was extracted that year. In reality, mine production and discovery of proved reserves would not be this consistent. However, this approach helps estimate the average effects that would occur if RGV continually discovers new reserves, as they currently anticipate.

Table 5-4 shows the net present value calculation for the estimated mineral property value for the high-end scenario in the base year (i.e., first year of full production).

Table 5-4. Base Year Mineral Property Value Assessment – High-end Scenario (in millions of 2022 dollars)

Year[1]	Yearly Production	Revenue	Expenses[2]	Net Income	Present Value[3]
4	108,400	$179.8	$68.3	$111.5	$111.5
5	108,400	$179.8	$68.3	$111.5	$94.5
6	108,400	$179.8	$68.3	$111.5	$80.1
7	108,400	$179.8	$68.3	$111.5	$67.9
8	108,400	$179.8	$68.3	$111.5	$57.5
9	108,400	$179.8	$68.3	$111.5	$48.8
10	108,400	$179.8	$68.3	$111.5	$41.3
11	108,400	$179.8	$68.3	$111.5	$35.0
Total[4]	**867,200**	**$1,438.4**	**$546.1**	**$892.3**	**$536.7**

[1] Analysis uses Year 4 of the proposed project (i.e., first year of full production) as the base year
[2] Annual expenses during full operation were provided by RGV
[3] Applies a discount rate of 17% to account for the high risk associated with the mining industry
[4] Numbers may not sum due to rounding

Under this scenario, the estimated assessed value would be approximately $536.7 million, resulting in $5.4 million in Proposition 13 property taxes, with $0.7 million going to the County General Fund in the first year of full operation. Although the mineral reserves would be depleted each year, this scenario assumes RGV continually discovers and establishes additional proved reserves, which would be assessed and taxed by the County. This new mineral property would be assessed according to the California State Board of Equalization terms for "new construction," which includes any addition to land or improvements. Generally speaking, as reserves decline, property taxes decline, and as more proved reserves are established, property taxes increase. Because this scenario assumes the mine establishes proved reserves in the same amount as the material they mine each year, keeping the price of gold constant, the assessed value and resulting taxes would remain the same as well. This effect is reflected in the yearly high-end mineral property tax estimates provided in *Section 5.4: Nevada County General Fund*.

This analysis establishes a low-end estimate based on historic proved reserves and the assumption that the mine would not discover any additional reserves. The Emgold Mining Corporation produced the last reported measured reserves for the Idaho-Maryland Mine in November 2002, which they estimated as 212,000 ounces of gold. Therefore, the low-end estimate assumes the mine produces 26,500 ounces of gold per year over approximately eight years. Under this scenario, the proved reserves would be depleted by 26,500 ounces per year until none are remaining.

Table 5-5 shows the net present value calculation for the estimated mineral property value for the low-end scenario in the base year (i.e., first year of full production) .

Table 5-5. Base Year Mineral Property Value Assessment – Low-end Scenario (in millions of 2022 dollars)

Year[1]	Yearly Production	Revenue	Expenses[2]	Net Income	Present Value[3]
4	26,500	$44.0	$16.7	$27.3	$27.3
5	26,500	$44.0	$16.7	$27.3	$20.8
6	26,500	$44.0	$16.7	$27.3	$15.9
7	26,500	$44.0	$16.7	$27.3	$12.1
8	26,500	$44.0	$16.7	$27.3	$9.3
9	26,500	$44.0	$16.7	$27.3	$7.1
10	26,500	$44.0	$16.7	$27.3	$5.4
11	26,500	$44.0	$16.7	$27.3	$4.1
Total[4]	**212,000**	**$351.6**	**$133.5**	**$218.1**	**$101.9**

[1] Analysis uses Year 4 of the proposed project (i.e., first year of full production) as the base year
[2] Annual expenses provided by RGV scaled by yearly production for this estimate relative to that for the high-end estimate
[3] Applies a discount rate of 17% to account for the high risk associated with the mining industry
[4] Numbers may not sum due to rounding

The estimated assessed value in the base year would be approximately $101.9 million under the low-end scenario. Based on this valuation, the associated Proposition 13 property tax would be $1.0 million, with $0.1 million going to the County General Fund in the first year of full operation. Because this scenario assumes the mine does not discover any additional reserves, the remaining mineral property is reduced after each year of operation. Therefore, the assessed value and associated property taxes would decline each year. These declines are reflected in the yearly low-end mineral property tax estimates provided in *Section 5.4: Nevada County General Fund*.

Tax Revenue from Increased Economic Activity

RGV's local spending on payroll and purchases of goods and services would generate increased economic activity, which would increase local tax revenue. RGV's payroll and local operational spending would support direct and indirect jobs in the area. The employees that fill these jobs would spend a portion of their income on property, sales, and other taxes, some of which would be allocated to the County's General Fund. Additionally, RGV's local spending would generate sales tax revenue. This study used the IMPLAN model to estimate the total property, sales, and other tax revenue associated with the indirect and induced impacts generated by the proposed project's local spending. Refer to *Section 3.1: Project Payroll and Expenditures* for a description of the methodology used for this analysis.

Table 5-6 shows the estimated property, sales, and other tax revenue that would be generated in the county and the portion that would be allocated to the County's General Fund due to indirect and induced impacts of the proposed project.

Table 5-6. Property, Sales, and Other Taxes Generated by Local Spending (rounded to thousands)[1]

Type of Tax	Year 1	Year 2	Year 3	Year 4+
All Agencies and Districts in Nevada County				
Property Tax	$20,000	$105,000	$187,000	$483,000
Sales Tax	$13,000	$69,000	$123,000	$318,000
Other Tax	$3,000	$17,000	$31,000	$80,000
Total Tax Revenue[2]	**$37,000**	**$191,000**	**$342,000**	**$881,000**
Nevada County General Fund				
Property Tax	$3,000	$14,000	$24,000	$63,000
Sales Tax	$3,000	$13,000	$23,000	$60,000
Other Tax	$1,000	$5,000	$9,000	$24,000
Total Tax Revenue[2]	**$6,000**	**$32,000**	**$57,000**	**$147,000**

[1] Numbers in 2022 dollars
[2] Totals may not sum due to rounding
Source: IMPLAN Analysis by RDN

The proposed project's spending on payroll and operational expenses during full operation would generate an estimated $881,000 per year in tax revenue to local agencies and districts, including local governments and fire protection, school, and other special districts. The portion of these funds that would be allocated to the County's General Fund is approximately $147,000 per year.

Summary of Tax Revenue

Table 5-7 presents the total estimated tax effect of the proposed project in Year 4, which is the first year it would be fully operational. These estimates account for the high-end and low-end scenarios, with the low-end estimates assuming the proposed project would operate at a reduced capacity. This summary scales down tax revenue resulting from increased economic activity under the low-end scenario to account for fewer people moving to the area and lower employment and operational spending by RGV.

Table 5-7. Estimated Tax Revenue in the First Year of Full Operation (rounded to thousands)[1]

	Total Tax Revenue		County Tax Revenue	
	Low	High	Low	High
Property Taxes Paid by RGV				
Assessed Property	$46,000	$46,000	$6,000	$6,000
Improvements (new facilities)	$125,000	$125,000	$17,000	$17,000
Mineral Property	$1,019,000	$5,367,000	$141,000	$742,000
Taxes from Increased Economic Activity				
Property Tax	$118,000	$483,000	$15,000	$63,000
Sales Tax	$78,000	$318,000	$15,000	$60,000
Other Taxes	$19,000	$80,000	$6,000	$24,000
Total[2]	**$1,405,000**	**$6,418,000**	**$200,000**	**$912,000**

[1] Numbers in 2022 dollars

[2] Totals may not sum due to rounding

The total estimated tax effect in the first year of full operation is $1.4 to $6.4 million to local agencies and districts, including local governments and fire protection, schools, and other special districts. The County General Fund would receive a portion of these tax receipts, amounting to $200,000 to $912,000.

5.4 Nevada County General Fund

Operation of the proposed project would impact the Nevada County General Fund by increasing costs to some county services while also increasing the County's tax revenue. RGV's mineral property tax represents a sizable portion of the potential General Fund revenue. However, this analysis cannot provide a specific estimate for this revenue because the amount of gold reserves that are available and economically viable is unknown. This analysis, therefore, considers a range of potential impacts by evaluating the high-end and low-end scenarios outlined in *Section 5.3:Tax Revenue*.

Based on the estimated public costs and tax revenues, the anticipated net fiscal impact to the Nevada County General Fund of either the high-end or low-end scenario would be negative in Years 1 and 2 and positive from Year 3 onward through the productive life of the mine. Under the high-end scenario, the estimated net fiscal impact would be $763,000 in Year 4, which would be the first year of full operations, and decline to somewhere between $760,000 and $741,000 per year for as long as the mine continues to discover and produce approximately 108,400 ounces of gold per year, up to the 80-year permit period. At the time when the mine's reserves and productivity start to decline, the associated costs and revenues to the County General Fund would also decline.

Under the low-end scenario, the net fiscal impact would be approximately $163,000 in Year 4, and then decline through the eight-year productive life of the mine. Because all reserves would be exhausted by

the end of Year 11, this analysis assumes the mine would suspend operations in Year 12 and public costs and benefits would no longer accrue, with the exception of tax revenue associated with the property and improvements. Although the property would likely change ownership sometime after the mine's closure, the new assessment value and resulting tax revenue accruing to the County General Fund would reflect the value of any improvements that remain on the property (e.g., industrial buildings, roadways, etc.).

Table 5-8 and Table 5-9 present the estimated costs and revenues to the County General Fund that would result from the proposed project under the high-end and low-end scenarios, respectively. All values are adjusted to reflect current (2022) dollar values using historic and projected Consumer Price Index for all Urban Consumers (CPI-U) data from the Congressional Budget Office. These tables follow the anticipated project schedule, with construction and initial ramp-up occurring in Years 1-3 and full operation commencing in Year 4. Many of the costs and tax revenues in the table remain the same each year because they are reported in constant 2022 dollars. For the low-end scenario, this analysis scales down public costs and tax revenue resulting from increased economic activity to account for fewer people moving to the area and lower employment and operational spending by RGV. In both scenarios, construction workers were treated as new temporary residents who would increase public costs during the construction period since it is currently unknown if they would be hired locally or from outside the county.

Table 5-8. High-End Estimate of Fiscal Impacts from Proposed Project Operation on the County General Fund[1]

Year[2]	1	2	3	4	5	6	7	8	9	10	11	12+[6]
Annual Public Costs[3]												
Sheriff's Office	$37,000	$47,000	$55,000	$141,000	$141,000	$141,000	$141,000	$141,000	$141,000	$141,000	$141,000	$141,000
Office of Emergency Services	$2,000	$3,000	$3,000	$8,000	$8,000	$8,000	$8,000	$8,000	$8,000	$8,000	$8,000	$8,000
Total Cost	**$39,000**	**$49,000**	**$58,000**	**$150,000**	**$150,000**	**$150,000**	**$150,000**	**$150,000**	**$150,000**	**$150,000**	**$150,000**	**$150,000**
Annual Tax Revenue												
Property Taxes Paid by RGV												
Assessed Property[4]	$6,000	$6,000	$6,000	$6,000	$6,000	$6,000	$6,000	$6,000	$6,000	$6,000	$6,000	$6,000 to $4,000
Improvements[4]	-	$9,000	$17,000	$17,000	$17,000	$17,000	$17,000	$17,000	$17,000	$17,000	$17,000	$17,000 to $13,000
Mineral Property[5]	-	-	-	$742,000	$742,000	$742,000	$742,000	$742,000	$742,000	$742,000	$742,000	$742,000
Taxes from Increased Economic Activity												
Property Tax[4]	$3,000	$14,000	$24,000	$63,000	$62,000	$62,000	$62,000	$62,000	$61,000	$61,000	$61,000	$61,000 to $46,000
Sales Tax	$3,000	$13,000	$23,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000
Other Taxes	$1,000	$5,000	$9,000	$24,000	$24,000	$24,000	$24,000	$24,000	$24,000	$24,000	$24,000	$24,000
Total Revenue	**$12,000**	**$46,000**	**$80,000**	**$912,000**	**$912,000**	**$912,000**	**$911,000**	**$911,000**	**$911,000**	**$910,000**	**$910,000**	**$910,000 to $890,000**
Net Revenue or Cost												
High-End Estimate	**($27,000)**	**($3,000)**	**$22,000**	**$763,000**	**$762,000**	**$762,000**	**$762,000**	**$761,000**	**$761,000**	**$761,000**	**$760,000**	**$760,000 to $741,000**

[1] Numbers presented in 2022 dollars rounded to thousands; totals may not sum due to rounding

[2] Based on the anticipated project schedule, construction and initial ramp-up would occur in Years 1-3 and full operation would start in Year 4; Year 1 = FY 2023/2024

[3] The Public Works, Planning, and Housing and Community Services departments do not anticipate substantial costs that would impact the General Fund

[4] Property assessments are capped at a 2.0% increase each year, so tax revenue may not increase proportionally to inflation; therefore, this analysis shows a gradual decline over time

[5] The high-end mineral property value is based on extraction of 108,400 ounces of gold per year, continual discovery of new reserves (maintaining 8 years), and an average price of $1,659

[6] The 12+ column presents costs and revenues for as long as the mine continues to discover and produce approximately 108,400 ounces of gold per year, up to the 80-year permit period

Table 5-9. Low-End Estimate of Fiscal Impacts from Proposed Project Operation on the County General Fund[1]

Year[2]	1	2	3	4	5	6	7	8	9	10	11	12+[7]
Annual Public Costs[3,4]												
Sheriff's Office	$37,000	$26,000	$13,000	$35,000	$35,000	$35,000	$35,000	$35,000	$35,000	$35,000	$35,000	-
Office of Emergency Services	$2,000	$1,000	$1,000	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000	-
Total Cost	**$39,000**	**$27,000**	**$14,000**	**$37,000**	**$37,000**	**$37,000**	**$37,000**	**$37,000**	**$37,000**	**$37,000**	**$37,000**	**-**
Annual Tax Revenue												
Property Taxes Paid by RGV												
Assessed Property[5]	$6,000	$6,000	$6,000	$6,000	$6,000	$6,000	$6,000	$6,000	$6,000	$6,000	$6,000	$6,000 to $4,000
Improvements[5]	-	$9,000	$17,000	$17,000	$17,000	$17,000	$17,000	$17,000	$17,000	$17,000	$17,000	$17,000 to $13,000
Mineral Property[6]	-	-	-	$141,000	$123,000	$105,000	$87,000	$69,000	$52,000	$34,000	$17,000	-
Taxes from Increased Economic Activity												
Property Tax[5]	$3,000	$3,320	$5,937	$15,306	$15,246	$15,186	$15,126	$15,067	$15,007	$14,948	$14,890	-
Sales Tax	$3,000	$3,204	$5,729	$14,771	$14,771	$14,771	$14,771	$14,771	$14,771	$14,771	$14,771	-
Other Taxes	$1,000	$1,284	$2,297	$5,921	$5,921	$5,921	$5,921	$5,921	$5,921	$5,921	$5,921	-
Total Revenue	**$12,000**	**$22,000**	**$37,000**	**$200,000**	**$182,000**	**$164,000**	**$146,000**	**$128,000**	**$110,000**	**$93,000**	**$75,000**	**$22,000 to $17,000**
Net Revenue or Cost												
Low-End Estimate	**($27,000)**	**($5,000)**	**$23,000**	**$163,000**	**$145,000**	**$127,000**	**$109,000**	**$91,000**	**$74,000**	**$56,000**	**$39,000**	**$22,000 to $17,000**

[1] Numbers presented in 2022 dollars rounded to thousands; totals may not sum due to rounding

[2] Based on the anticipated project schedule, construction and initial ramp-up would occur in Years 1-3 and full operation would start in Year 4; Year 1 = FY 2023/2024

[3] The Public Works, Planning, and Housing and Community Services departments do not anticipate substantial costs that would impact the General Fund

[4] Anticipated costs for 240 new residents were scaled down by production under the low-end relative to the high-end estimate to account for the commensurate reduction in jobs

[5] Property assessments are capped at a 2.0% increase each year, so tax revenue may not increase proportionally to inflation; therefore, this analysis shows a gradual decline over time

[6] The low-end mineral property value is based on proved reserves of 212,000 ounces of gold, an extraction period of 8 years, average gold price of $1659, and no additional reserves

[7] The 12+ column presents costs and revenues following the 8-year productive life of the mine, which amounts to the tax revenue associated with the property and improvements

6. SUMMARY OF IMPACTS

This study evaluates the total economic impact of the proposed project and its anticipated impact to industries, residential property values, utility providers, public services, tax revenues, and the County General Fund. Given the uncertainty regarding the mine's production and resulting economic impact, these results require careful interpretation.

Although this study includes information about the economic impacts of the proposed project during multiple phases—construction, ramp up, and ongoing operation—the most critical impacts are those related to ongoing operation. These impacts are critical because they would be long term, lasting for the operational period of the proposed mining operations, up to the 80-year permit period. Therefore, this summary focuses on ongoing project operation.

Based on the assumption that the proposed project would operate as proposed by the applicant and documented in the project description in the Draft EIR, and that the projections for employment, payroll, and operational expenditures on goods and services that are presented in this study are accurate, the proposed project's anticipated long-term annual effects include the following:

- **Output**: The proposed project would generate total annual output of $202.8 million in Nevada County. This includes the direct impact of an estimated $179.8 million in revenue by RGV and $23.0 million in increased economic activity at local businesses (i.e., indirect and induced impacts) due to the multiplier effect. The portion of this impact that would affect the local community are the indirect and induced impacts and RGV's payroll spending, which combined total $61.1 million.

- **Employment and Labor Income**: The proposed project would directly employ an estimated 312 workers and generate an additional 163 indirect and induced jobs at local businesses, thereby supporting 475 local jobs. Total anticipated labor income includes RGV's anticipated payroll of $38.1 million and $7.3 million in indirect and induced labor income, for a total of $45.4 million. All employment and labor income would be local effects.

- **Commercial Businesses**: RGV expenditures on payroll and procurement of goods and services would increase economic activity at local businesses, with the largest impacts in terms of output occurring in the Retail Sales, Wholesale Suppliers, and Healthcare Services sectors. In terms of employment and labor income, the largest impacts would occur in the Retail Sales, Restaurants and Drinking Places, and Healthcare Services sectors.

- **Property Values:** RDN performed an extensive case study analysis of mining operations similar to the proposed project. The results of this analysis are inconclusive regarding the magnitude and direction of impacts to nearby property values. Thus, RDN is unable to rule out the possibility that the proposed project would have no effect on property values in Nevada County. Accordingly, we do not estimate any anticipated aggregate impact to property values associated with the proposed project.

- **Utility Providers**: The proposed project would result in new demand for electricity from PG&E, potable water from NID, and waste disposal services from Waste Management to serve the project itself, new residents in the area, and households that switch from well water to municipal

water. These utility providers confirmed that they would be able to accommodate these changes in demand and this activity would not financially impact the County.

- **Public Services and Costs**: The proposed project and associated increase in local population would increase demand and associated costs for public services, particularly law enforcement and emergency services due to the likely increase in vehicle accidents resulting from increased traffic. The estimated cost increase for County departments is $150,000 per year.

- **Tax Revenue**: The proposed project would result in tax revenue from property, sales, and other taxes paid by RGV and associated with the project's local spending and related economic growth. RGV's mineral property tax represents a sizable portion of potential tax revenue generated by the proposed project but cannot be precisely estimated because the amount of economically viable gold reserves is unknown. Using a range based on a low-end and high-end scenario, the anticipated tax effects in the first year of full operation would be $1.4 to $6.4 million to local agencies and districts, including local governments and fire protection, school, and other special districts, with $200,000 to $912,000 of these tax receipts going to the County General Fund.

- **County General Fund**: Based on the estimated public costs and tax revenues, the estimated net fiscal impact to the Nevada County General Fund of the high-end scenario, which assumes ongoing discovery of new gold reserves, is $763,000 per year in the first year of full operation, declining gradually to somewhere between $760,000 and $741,000 per year for as long as the mine is fully operational and continues discovering new reserves at the same rate. Under the low-end scenario, the net fiscal impact would be $163,000 in the first year of full operation, and then gradually decline over an eight-year productive life of the mine to somewhere between $22,000 and $17,000 per year after exhausting mineral reserves.

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APPENDIX A—LITERATURE REVIEW: IMPACTS OF MINING AND INDUSTRIAL ACTIVITIES ON HOME VALUES

There is an extensive body of literature about the potential spillover effects of adverse environmental impacts on home prices. As an example, a 2011 meta-analysis focusing on the effect of waste sites on nearby home prices found 70 articles (Braden, Feng and Won 2011). Studies have also evaluated a wide range of other types of sites broadly considered to have a negative impact on home prices, including airports (Affuso, et al. 2019; Friedt and Cohen 2021), shale energy extraction operations (Gopalakrishnan and Klaiber 2013; Muehlenbachs, Spiller and Timmins 2015), power plants (Davis 2011), and crime hotspots (Linden and Rockoff 2008).

Focusing specifically on mining and its impact on home prices, there are relatively few rigorous, well-executed studies, and these studies cover a range of mining operations and locations. Williams (2011) and Fitzpatrick and Parmeter (2021) study the impacts of surface coal mines; Neelawala, Wilson, and Athukorala (2012) study the impact of mining and smelting on home prices in Queensland, Australia, where the production consists of lead, copper, silver, and zinc; Malikov, Sun, and Hite (2017) study the impacts of rock mining; while Ford and Seals (2018) focus on the operation of quarries. A 2020 article by Rivera explores the impact of mineral mining on rental prices in Chile.

However, our review of the academic literature did not yield any significant research on the impact to home values of mines that closely resemble the proposed project. Most studies focus on more visibly impactful activities, such as open pit mining or other major industrial activities, rather than underground mineral mining. The following discussion summarizes the results of those studies that RDN found most relevant to the proposed project. Please see *Section 7: References* of the main report for the complete list of papers RDN reviewed for this study.

Studies on the Impacts of Mining and Drilling Sites

RDN reviewed several studies on the impacts of mining or drilling operations on local property values. Ford and Seals (2018), using a variety of methods and examining multiple study areas in the United States, conclude that rock quarries do not have a statistically significant impact on nearby residential home prices. However, this study appears to be one of the few exceptions. Most studies that examine mining or similar operations, including coal mining, rock quarries, and shale gas drilling, conclude that the activity had a negative, statistically significant impact on nearby residential home values. Fitzpatrick and Parmeter (2021) examined surface coal mines in two Appalachian counties, reporting a 15.5 percent decrease in home value when the home is within 2.3 kilometers of an active mine. Malikov, Sun, and Hite (2017) estimated the impact of surface rock mining on home prices in Delaware County, Ohio. For homes within 10 miles of rock mining activity, they observed a 2.3 to 5.1 percent reduction in home price per mile closer to the mine, which they associate with elevated noise and dust levels from dynamite blasting and increased truck traffic.

Muehlenbachs, Spiller, and Timmins (2015) studied shale gas development in Pennsylvania and found a 9.9 to 16.5 percent reduction in home prices within 1.5 kilometers of shale gas drilling operations compared to homes further away. Noting the heated debate surrounding the potential for water contamination from shale gas development, the authors also found that nearby homes with wells saw large negative impacts while homes with piped water exhibited small positive impacts. Neelawala, Wilson, and Athukorala (2012) examined the impact of mining and smelting related pollution in

Australia, finding that homebuyers within four kilometers were willing to pay approximately AUS $13,947 more for each kilometer the home was farther away from the pollution source.

Lastly, Rivera (2020) used data on thousands of mines in Chile to estimate that cities where new mines opened between 2011 and 2016 exhibited 10.4 to 17.2 percent lower rental prices relative to cities that did not have any new mine openings, depending on the model specification. However, the results vary under different robustness checks, including a comparison of open pit versus underground mine openings. Controlling for other factors, the author found that new open pit mine openings exhibited over twice as large negative impacts to rent than new underground mine openings across several model specifications.

Studies on the Impacts of other Heavy Industry Sites

The vast majority of studies focusing on other industrial activities, such as incineration plants, power plants, and natural gas facilities, find the impact to residential home values is negative. An exception to these findings comes from Bakker (2021), who examined the impacts of industrial site development on home values in the Netherlands. The main result shows that homes within two kilometers of one of several industrial sites sold for an average 3.8 percent higher price after the sites were developed as compared to homes within the same radius that sold before site development and homes sold post-development but further away. However, in a sensitivity analysis that looked at only heavy industrial sites (e.g., large manufacturing parks), this positive impact was smaller and not statistically significant. Similarly, reducing the impact radius from 2 to 1.6 kilometers also yielded non-significant impacts. Kiel and Williams (2007), who examined changes in property values around 57 Superfund sites in the U.S., also found mixed results. Overall, 32 Superfund sites did not appear to have any statistically significant impact on the value of nearby homes, whereas 7 were associated with higher property values closer to the site, and the remaining 18 were associated with lower property values closer to the site. These results suggest that the magnitude and direction of an industrial project's impact on home values depends on both the particular characteristics of the industrial project and the characteristics of the surrounding area.

Despite the aforementioned exceptions, most industrial activities studied in the literature were found to negatively impact nearby residential property values. Boxall, Chan, and McMillan (2005) concluded that there is an approximately four to eight percent decline in property value in rural residential homes that are located within four kilometers of oil and gas facilities in Central Alberta, Canada. Brasington and Hite (2005) estimate that homes in U.S. metropolitan areas decrease in price by 0.03 percent for every 1.0 percent closer they are to the nearest perceived hazard (abandoned factories, landfills, etc.). Currie, et al. (2015) examined the opening and closing of 1,600 industrial plants in the United States, observing a 9.6 to 10.7 percent decline in home prices within 0.5 miles of toxic air emissions after a plant opens. Davis (2011) estimated that U.S. neighborhoods within 2 miles of a power plant had 4.1 to 7.1 percent lower sales prices than homes in comparable areas without power plants. Additionally, the magnitude of the difference was directly related to the size of the plants.

Using a similar methodology to other studies but including information about proximity to commercial and industrial sites, Taylor, Phaneuf, and Liu (2016) determined that proximity to an uncontaminated site reduces neighboring home values by 2.5 percent within 0.3 miles, while proximity to a site contaminated by hazardous waste reduces values by approximately 7.9 percent within 0.5 miles. Lastly, Kiel and McClain (1995) estimated changes in nearby home prices during various stages of the opening of an incinerator plant in Massachusetts. Relative to the average sales price for the area, they found that

home prices increased by 1.7 percent per mile away from the plant during construction, 3.2 percent per mile during early operation, and 2.7 percent per mile after four years of continued activity. Results from these last two studies suggest that uncertainty and risk aversion play a role in sites' impacts on local home values. A project that is perceived to have negative environmental impacts can cause decreases in home values even when there is no evidence of environmental contamination.

Summary Results of Key Studies

Table A-1 summarizes the findings of the key studies identified in RDN's literature review based on the type of site, the study area, and the direction and magnitude of the impact. The literature presents a wide range of impacts, from a positive impact of 3.8 percent for home sales within two kilometers of industrial sites in the Netherlands to a negative impact of up to 17.2 percent on rental prices in Chilean cities where new mines opened. For the studies RDN reviewed, the distance of measurable impacts ranged from 0.3 miles away for general hazardous waste sites to 10 miles away for open pit rock mines.

Table A-1: Summary of Key Study Findings

Author(s)	Site Type	Impact Area	Impact on Residential Property Values
Bakker (2021)	Industrial sites	2 kilometers (1.2 miles)	Premium of 4% for homes near an industrial site (i.e., homes cost more closer to the site)
Boxall, Chan, and McMillan (2005)	Natural gas facilities	4 kilometers (2.5 miles)	4% to 8% decline in value for homes near natural gas facilities
Brasington and Hite (2005)	General environmental hazards	Not applicable; study estimates a distance-to-hazard price elasticity	3% increase in home prices when distance from the nearest environmental hazard increases by 10%
Currie, et al. (2015)	Toxic plants	1 mile	11% decline in home prices within a half mile of a source of toxic air emissions; negative impact may remain even after closure of the source of pollution
Davis (2011)	Power plants	2 miles	Reduction between 3% and 7% for homes near power plants
Fitzpatrick and Parmeter (2021)	Coal mining	2.3 kilometers (1.4 miles)	15.5% decline in value for homes near coal mining
Ford and Seals (2018)	Rock quarries	In some specifications they estimate elasticities, so they do not use a specific distance; in other specifications they use	Finds no compelling statistical evidence that either the anticipation of, or the ongoing operation of, rock quarries negatively impact home prices

Author(s)	Site Type	Impact Area	Impact on Residential Property Values
		2 miles	
Kiel and McClain (1995)	Incinerator Plant	Not applicable; study estimates a distance-to-hazard price elasticity over a 28-square-mile area	Home prices increased by 1.7% per mile away from the plant during construction, 3.2% per mile during early operation, and 2.7% per mile after four years of continued activity
Malikov, Sun, and Hite (2017)	Rock mining	10 miles for near-zero effect (effects dissipate with distance)	2.3% to 5.1% reduction per mile closer to rock mining activity
Muehlenbachs, Spiller, and Timmins (2015)	Shale gas	1.5 kilometers (0.9 miles)	Reductions in value between 10% and 17% for homes near shale gas development
Neelawala, Wilson, and Athukorala (2012)	Mining of different resources	4 kilometers (2.5 miles)	6% to 7% increase in willingness to pay per kilometer of distance from mine/smelting operation
Rivera (2020)	Mining of different resources	Not applicable; study evaluates city-level data	10% to 17% reduction in rents in cities with new mine openings
Taylor, Phaneuf, and Liu (2016)	Contaminated and clean commercial/ industrial sites	Home impacted by a contaminated site if within 0.5 miles, and by a clean site if within 0.3 miles	Proximity to clean sites reduces neighboring home values by 2.5%; proximity to a contaminated site reduces values by about 8%; remediation of a contaminated site increases values by as much as 5%

APPENDIX B—LITERATURE REVIEW: METHODOLOGIES FOR ESTIMATING IMPACTS ON HOME VALUES

Establishing the factors that determine the prices of goods is challenging, especially in industries like residential real estate that are competitive (many buyers and sellers) but where the products are differentiated (each home being a unique product). Ultimately, prices represent the intersection of supply and demand for these goods. Both supply and demand can change at the same time, making it difficult to identify the specific determinants of observed prices. Despite these limitations, well-established methodologies exist for estimating the relationship between residential home values and their various determinants. The following sections discuss the primary methodologies used in the literature to estimate the impact of adverse environmental spillovers on residential home values.

Pricing Methods

Hedonic Pricing Method

The hedonic pricing method, based on the work of Lancaster (1966) and Rosen (1974), refers to the idea that a product's overall sale price is determined by adding up the value of all aspects or characteristics of that product. This methodology can be used to evaluate how specific aspects or characteristics of a good affect the price.

Real estate markets are often competitive with differentiated products, so they are a prime area in which to use hedonic pricing models. As Monson (2009) explains, one can think of a property as a collection of goods that determine its overall value. Home characteristics that are commonly used for this approach include, among others, property attributes (e.g., age of the home, square footage) and locational attributes (e.g., distance to amenities, such as the nearest school). Data from many real estate transactions, such as those found on sites like Zillow, can be used to estimate the value of each of these home attributes, which can in turn be used to predict total transaction prices.

A review of the literature using hedonic pricing in real estate markets revealed that this methodology is used extensively for many applications, including as a method to develop measures of environmental quality based on proximity to desirable or undesirable environmental features (Malpezzi 2003). A number of the papers in RDN's literature review used hedonic pricing models for this purpose, including estimating the impact of mining on housing prices in Queensland, Australia (Neelawala, Wilson and Athukorala 2012), and the impacts of traffic noise on housing values (Ozdenerol, et al. 2015).

The key feature of the hedonic pricing method is that home prices can be partially determined by the absence or presence of certain characteristics if the value of those characteristics can be estimated. Studies that use this approach to estimate impacts of some activity or industry often use distance to an activity (e.g., distance to a mine) or a discrete near-or-far classification as a characteristic for which the value can be estimated.

Repeated Sales Price Method

An alternative approach to estimate residential home value changes is the construction of repeated sales prices indices. This method looks at the difference in sale prices of the same home over time to assess how prices change, assuming characteristics of the home do not change between sales. A well-known example of this is the widely published set of Case-Shiller indices, based on the work of Case and Shiller (1987). Repeated sales price indices are best suited for estimating changes in prices rather than

estimating price levels. Also, they do not provide estimates of the value of the characteristics or features of homes. Nevertheless, since this methodology does not require detailed lists of home characteristics, it avoids biases related to omitting some important variable(s) from the estimation, which can be an issue in the hedonic pricing methodology (Malpezzi 2003). Using the repeated sales methodology, it is possible to compare price changes for homes defined as "near" the activity and price changes for homes that are "far" from the activity.

Methodological Improvements to Pricing Methods

Fixed Effects Model

The repeated sales methodology described earlier can be seen as a specific case of more general fixed effects models. In the context of estimating residential property values, fixed effects are variables that do not change over time for individual homes. These variables include attributes like building square footage or lot size, which can reasonably be assumed to remain constant throughout a home's lifespan. Fixed effects estimation allows a model to implicitly control for characteristics that are, when available, explicitly considered in a hedonic pricing approach , and isolate the impact of characteristics that change over time (e.g., specific market conditions). Fixed effects estimation has the additional advantage of accounting for unobserved characteristics that do not change over time. Currie, et al. (2015) uses a fixed effects model for this purpose to control for time-invariant characteristics of properties.

Difference-in-Differences Model

As Ford and Seals explain (2018), both hedonic pricing and repeated sales methods used for estimating potential impacts of a mine or other activity can suffer from selection bias, which broadly refers to any bias introduced by data that are not properly randomly selected. The reason is that, generally, the location of a mine is not chosen randomly. Factors that determine where mining or other activity takes place may also cause differences in home prices. Ideally, a study that seeks to estimate the impact of a particular activity should compare price differences between the areas believed to be impacted relative to other areas, both before the activity is in place and once the activity exists. Comparing the differences before and after allows for estimation of the causal effect of the activity on price differences. This methodology is generally known as difference-in-differences.

In their analysis of the impact of quarry operations on home prices, Ford and Seals (2018) address selection bias issues by combining hedonic pricing with a difference-in-differences approach. Effectively, this evaluates whether the hedonic price of being near a quarry before the quarry is operating is different from this same hedonic price when the quarry is operating. Other recent studies that use a combination of hedonic pricing and difference-in-differences include estimates of the impacts on home prices of environmental contamination (Taylor, Phaneuf, and Liu 2016), industrial site development (Bakker 2021), and estimates of the impact to rental prices in Chile from mining operations (Rivera 2020). Currie, et al. (2015) use a difference-in-differences approach to estimate the impact on housing values from exposure to environmental health risks. They are able to use this approach because their home sales transaction data covers periods and geographies in which a number of toxic plants open and/or close.

Similarly, a difference-in-differences approach can be combined with a repeated sales price method to identify causal relationships between a mine and changes in home prices. This approach offers the advantage of not requiring a rich dataset in terms of housing characteristics, though it relies on the

assumption of constant-quality of the housing units included in the analytical sample. Currie, et al. (2015) use this approach as a robustness check in their evaluation of home price impacts from exposure to environmental health risks. Similarly, Taylor, Phaneuf, and Liu (2016) complement their analysis of the impact of environmental contamination with estimates combining a repeated sales method with difference-in-differences.

Key Definitions

Impact Area Definition

A common consideration in evaluating the impact that the presence of an industry or activity has on real estate prices is defining the potentially impacted area. Fitzpatrick and Parmeter (2021) indicate that this often comes down to judgment by the analyst and that different definitions of the impact area may lead to different results.

To test the sensitivity of results to the definition of near and far areas, researchers often perform their analysis using different boundaries, where the boundaries may be set based on different criteria. Currie, et al. (2015) use U.S. Environmental Protection Agency data on hazardous air pollution and find that pollution levels fall quickly as distance from the polluting plant increases, with most pollutants being detectable only within one mile of a plant. This informs their use of radii of half a mile and one mile for classifying homes as near or far from a plant in the two specifications they use, with the comparison groups being homes between half a mile and one mile or between one mile and two miles from a plant, respectively.

Taylor, Phaneuf, and Liu (2016) prepare a first set of estimates using intervals of distance (bins) to determine the maximum distance at which homes may be impacted by their proximity to a hazardous waste site that is either contaminated or uncontaminated (clean). They use the evidence from these estimates to classify homes that are within half a mile of a contaminated site as being near the contaminated site and homes that are within one third of a mile of a clean site as being near the clean site. Using a somewhat similar approach, Bakker (2021) prepares a first set of estimates to determine a target distance for the impact of industrial sites, but rather than using distance bins, he uses a continuous distance variable, and finally settles on a model specification that defines being near a site as a distance of up to two kilometers.

Concerns about the arbitrary nature of defining impact areas have prompted research that attempts to provide more flexible ways of estimating impacts as well as more robust methods for determining what an impact area should be. Malikov, Sun, and Hite (2017) estimate the effect of rock mining on home prices using a methodology that does not require pre-specifying a distance threshold and that allows estimation of effects that dissipate with distance in a non-linear way. Fitzpatrick and Parmeter (2021) provide another alternative that focuses on determining optimal “treatment buffers” in hedonic models.

Multi-Event Definition

Another consideration explored by Kiel and McClain (1995) is that the impact of undesirable activities or land uses may not be constant through all stages of a project. Their study estimated the effect on property values of the construction and operation of an incinerator in North Andover, Massachusetts, from 1974 to 1992 through five stages of the project: (1) pre-rumor, (2) rumor, (3) construction, (4) online, and (5) ongoing operation. Their results indicated that real estate prices near the incinerator declined once construction, or a “ramp up” in activity, began. This finding indicates that undesirable

activities can influence home buyers and sellers in the local community even before operations commence, based only on expectations of adverse environmental or other impacts.

Kiel and McClain also considered an adjustment period, dubbed "ongoing operation," after which sufficient knowledge of the adverse impact should be known and real estate prices are no longer impacted by uncertainty about the plant's impacts. The inclusion of this period assumes that a significant contributor to the change in property values is the expectation of negative consequences, even if those consequences never materialize. Taylor, Phaneuf, and Liu (2016) support this notion by concluding that property values decrease near both contaminated and uncontaminated hazardous waste sites, indicating that the risk of future contamination is a consideration for homebuyers. A general use of the multi-event approach is limited by the difficulty of defining cutoff dates that determine the stages of the process. Kiel and McClain (1995) rely on local newspaper articles and contracts to specify key dates. Alternatives for determining cutoff dates may include using employment or production.

APPENDIX C—REALTOR SURVEY

RDN

Projected Impacts of the Idaho-Maryland Mine on Local Property Values

Purpose of this Survey

Robert D. Niehaus, Inc. (RDN) is an economic consulting firm. We have been hired by Nevada County to conduct an independent study of the economic impacts of the proposed Idaho-Maryland Mine Project near Grass Valley, CA.

We are surveying local real estate professionals to better understand their perspectives on how the Project would affect local property values. The following survey is 10 questions and takes an estimated five to eight (5-8) minutes to complete.

We understand that the Idaho-Maryland Mine Project is controversial. Project proponents emphasize its anticipated benefits, including local jobs, operational spending, and tax revenues. Project opponents emphasize its anticipated costs, including adverse impacts on the local environment and residents' quality of life.

This survey is completely confidential; RDN will anonymize and aggregate your response with others when we report our findings. The raw data will not be shared with anyone outside of RDN's project team. For questions or technical support, please contact us at survey@rdniehaus.com. Please press "NEXT" to continue.

ADN

Projected Impacts of the Idaho-Maryland Mine on Local Property Values

Your Experience and Familiarity with the Project

1. How many years of experience do you have working as a licensed real estate professional in Nevada County?

- ◯ 0-2 Years
- ◯ 3-5 Years
- ◯ 6-9 Years
- ◯ 10+ Years

2. Are you aware of the proposal to re-open the Idaho-Maryland Mine?

- ◯ Extremely aware
- ◯ Very aware
- ◯ Somewhat aware
- ◯ Not so aware
- ◯ Not at all aware

3. How familiar are you with the area around the proposed Idaho-Maryland Mine Project sites?

- ◯ Extremely familiar
- ◯ Very familiar
- ◯ Somewhat familiar
- ◯ Not so familiar
- ◯ Not at all familiar

4. How familiar are you with the findings of the Draft Environmental Impact Report (EIR) on the Idaho-Maryland Mine Project?

- ◯ Extremely familiar
- ◯ Very familiar
- ◯ Somewhat familiar
- ◯ Not so familiar
- ◯ Not at all familiar

ADN

Projected Impacts of the Idaho-Maryland Mine on Local Property Values

Draft EIR Findings

5. Summary of Draft EIR Findings (from Nevada County Planning Department): "The EIR identifies significant impacts for the following California Environmental Quality Act (CEQA) environmental topic areas: Aesthetics; Air Quality and Greenhouse Gas Emissions; Biological Resources; Cultural and Tribal Cultural Resources; Geology and Soils; Hazards and Hazardous Materials; Hydrology and Water Quality; Noise and Vibration; Transportation; and Wildfire.

However, the EIR includes mitigation measures that would reduce project impacts related to Air Quality and Greenhouse Gas Emissions; Biological Resources; Cultural and Tribal Cultural Resources; Geology and Soils; Hazards and Hazardous Materials; Hydrology and Water Quality; Noise and Vibration (off-site haul truck traffic noise; operational noise and vibration); Transportation (hazards related to construction traffic); and Wildfire to less-than-significant levels.

The EIR determined that the project would have certain impacts to Aesthetics; Noise (temporary construction noise along East Bennett Road); and Transportation (e.g., intersections) that would remain significant and unavoidable even after implementation of the feasible mitigation measures set forth in the EIR."

Do you believe the environmental impacts would be greater than or less than those stated in the Draft EIR?

- ◯ Significantly greater
- ◯ Slightly greater
- ◯ About the same
- ◯ Slightly less
- ◯ Significantly less

ADN

Projected Impacts of the Idaho-Maryland Mine on Local Property Values

Overall Impact

6. There are many factors that affect property values, but we want to estimate the "marginal effect" of the Idaho-Maryland Mine Project specifically, i.e. how the Project would affect property values assuming all other factors are held constant.

In your professional opinion, what would be the overall effect of the Project on the market value of residential properties in Nevada County? Would it cause a net INCREASE or DECREASE in property values?

- ◯ Increase
- ◯ Decrease
- ◯ No effect

7. Please help us understand why you selected the answer above:

RDN

Projected Impacts of the Idaho-Maryland Mine on Local Property Values

Location and Size of Impacts

8. On average, how much do you believe residential property values in the following areas would change due to the Idaho-Maryland Mine Project?

For each area, select the percent (%) change in the first column and "Increase" or "Decrease" in the second column. For reference, please scroll down to see maps from the Draft EIR.

	% Change	Increase or Decrease
Properties adjacent to the Project's haul routes		
Properties adjacent to the Project's Brunswick site		
Properties adjacent to the Project's Centennial site		
Properties under which the Project has mineral rights		
Properties within 1 mile of Project sites, excluding those in the areas above (e.g., Grass Valley)		
Properties between 1 and 5 miles of Project sites (e.g., Nevada City)		

Figure 3-13
Project Haul Routes

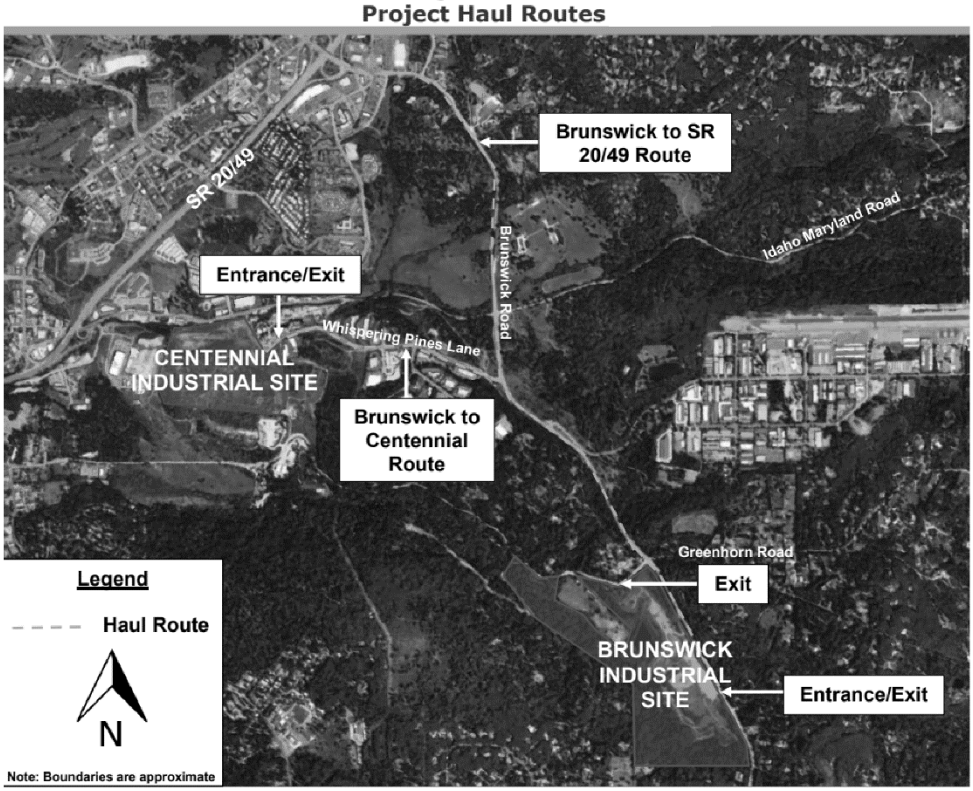
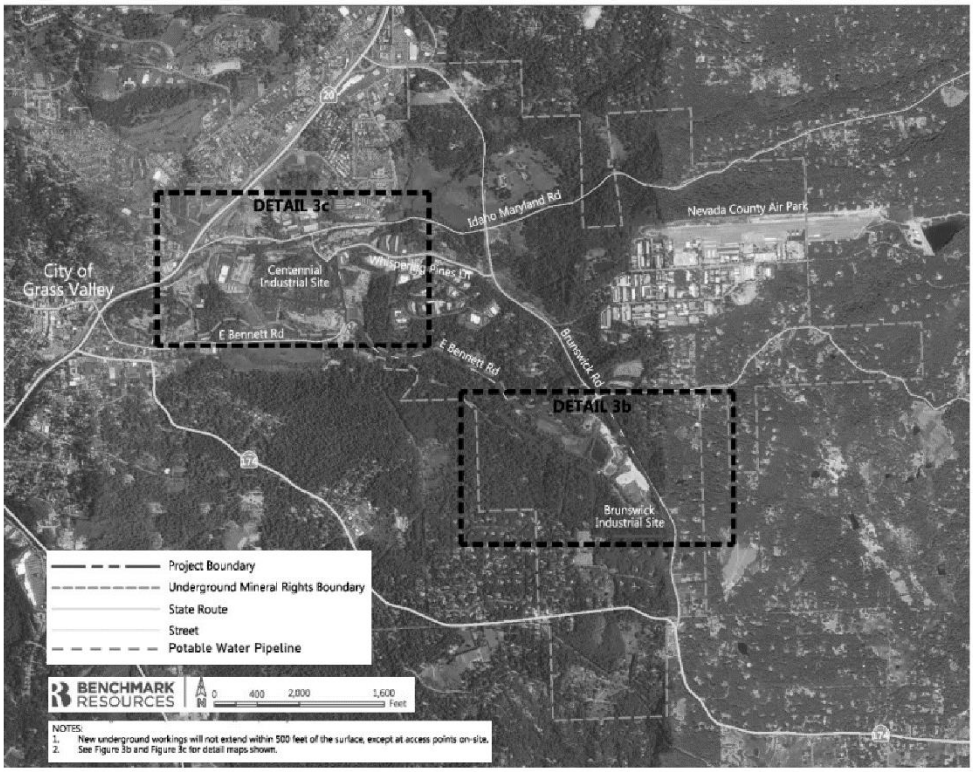


Figure 3-2
Project Location Map - Overview



RDN

Projected Impacts of the Idaho-Maryland Mine on Local Property Values

Duration of Impacts

9. In your opinion, do you expect the mine's impacts on property values would be TEMPORARY or PERMANENT?

- ◯ TEMPORARY, i.e. during construction or ramp-up of operations only
- ◯ PERMANENT, i.e. for as long as mine is active or longer
- ◯ No impact on property values

10. Please briefly explain what factors you are considering in your assessment of the location and duration of the Idaho-Maryland Mine Project's impacts on property values.