4.3 NEEDS AND WELFARE OF THE PEOPLE—SOCIOECONOMICS

This section addresses direct, indirect, and cumulative effects on the regional and state economy, education and infrastructure, cost of living, and population characteristics. Potential direct, indirect, and cumulative effects on commercial fishing and recreational tourism are discussed in Section 4.6, Commercial and Recreational Fisheries. Although subsistence activities are an indispensable component of the socioeconomic system of rural Alaska communities, this section addresses the monetized economy. Subsistence activity and the importance of subsistence as it relates to income and its support in stabilizing communities during economic downtimes are discussed in Section 4.9, Subsistence. Potential impacts to the socioeconomic environment include changes to economy and income, regional education and infrastructure, cost of living, and population. In addition, cultural ties to the area can impact the socioeconomic welfare of a community. The sociocultural dimensions are also discussed in Section 4.9, Subsistence.

The Environmental Impact Statement (EIS) analysis area for this section includes the state of Alaska, regions, and potentially affected communities where aspects of the monetized economy (including population, employment and income, government revenue, housing, and education) would likely be impacted by construction, operations, and closure of all components of each alternative of the project. Relevant effects on the state of Alaska are also discussed. The boroughs and communities included in the EIS analysis area for the socioeconomic analysis are:

- Lake and Peninsula Borough (LPB)
  - Igiugig
  - Iliamna
  - Kokhanok
  - Levelock
  - Newhalen
  - Nondalton
  - Pedro Bay
  - Port Alsworth
- Dillingham Census Area
  - Dillingham
  - Ekwok
  - Koliganek
  - New Stuyahok
- Kenai Peninsula Borough (KPB)
- Bristol Bay Borough
- Anchorage
- Alaska

Scoping comments related to socioeconomics focused on beneficial impacts of additional employment opportunities, economic benefits to the state of Alaska, and concerns regarding short-term benefits versus long-term risks. The following sections assess potential impact to these and other issues.

The magnitude of impact is discussed in terms of communities impacted or monetary implications (e.g., employment/income, potential revenue generated/lost, or cost of living). The duration and geographic extent of impacts would depend on the location and season in which the disturbance occurred. The potential of impacts is an assessment of how likely the impact would be.

Mitigation measures and actions designated to reduce or eliminate project impacts on socioeconomics are provided in Chapter 5, Mitigation.

4.3.1 Summary of Key Issues

Table 4.3-1: Summary of Key Issues for the Socioeconomic Environment

Project Impact	Alternative 1a	Alternative 1 and Variants	Alternative 2 and Variants	Alternative 3 and Variant
Population	Communities may see a small increase in population, especially communities near the project components (i.e., Newhalen, Iliamna, Nondalton, and Kokhanok), primarily due to new employment opportunities.	Same as Alternative 1a.	Same as Alternative 1a, except that impacts would be less likely to occur to Kokhanok because this community would not be on the transportation corridor and would instead occur in Pedro Bay. There would be no difference in impacts from variants.	Same as Alternative 1a, except that impacts would be less likely to occur to Kokhanok and more likely to occur in Pedro Bay. There would be no difference in impacts from the variant.
Economy and Income	This alternative would provide year-round employment, a positive impact that would help reduce the impacts of the seasonal fluctuations in employment. During construction, there would be an estimated 2,000 direct jobs, and during operations there would be an increase of direct employment by 850 people, plus indirect employment related to support services. Communities nearest the project components (i.e., Newhalen, Iliamna, Nondalton, and Kokhanok) would likely see the greatest impacts to employment and income.	Same as Alternative 1a. The Summer-Only Ferry Operations Variant would result in less year-round employment and greater seasonal employment, with less income remaining in the potentially affected communities.	Same as Alternative 1a, except that impacts would be less likely to occur to Kokhanok and more likely to occur in Pedro Bay. The impacts of the Summer-Only Ferry Operations Variant would be the same as those described for the variant for Alternative 1.	Same as Alternative 1a, except that impacts would be less likely to occur to Kokhanok and more likely to occur in Pedro Bay. The total number of employees needed during operations would likely be less. The Concentrate Pipeline Variant would have fewer employment opportunities, which would decrease overall income.
Tax Revenue and Other Fiscal Effects	Alternative 1a would generate: • $25 million annually in state taxes (in 2011 dollars) during construction • $64 million annually from state corporate	Same as Alternative 1a.	Same as Alternative 1a.	Same as Alternative 1a. The Concentrate Pipeline Variant would have greater impact on property taxes for KPB than Alternative 1a.

Table 4.3-1: Summary of Key Issues for the Socioeconomic Environment

Project Impact	Alternative 1a	Alternative 1 and Variants	Alternative 2 and Variants	Alternative 3 and Variant
	taxes during the operations phase • $20 million annually (2011 dollars) from state royalty payments during the operations phase • $27 million annually in severance taxes for LPB • Annual property taxes to the KPB based on the assessed value of project-related real property			
Cost of Living	Reduced transportation costs would likely lower the high cost of living for the communities near the transportation corridor (i.e., Newhalen, Iliamna, Nondalton, and Kokhanok). The natural gas pipeline would also provide opportunities for adjacent communities to lower their winter heating costs, a positive impact.	Same as Alternative 1a. The Summer-Only Ferry Operations Variant would likely have less impact than Alternative 1 because transportation costs would only be reduced in the summer.	Same as Alternative 1a, except that impacts would occur to Pedro Bay and not to Kokhanok. The Summer-Only Ferry Operations Variant would likely have less impact than Alternative 1 because transportation costs would only be reduced in the summer.	Same as Alternative 1a, except that impacts would occur to Pedro Bay and not to Kokhanok. The Concentrate Pipeline Variant would be the same as Alternative 1a. except that impacts would occur to Pedro Bay and not to Kokhanok.
Regional Infrastructure	Alternative 1a would increase the infrastructure in the region. The impact of the transportation corridor depends on the access afforded to communities. Communities along the natural gas pipeline may also benefit from the infrastructure.	Same as Alternative 1a.	Same as Alternative 1a, except that impacts would be less likely to occur to Kokhanok and more likely to occur to Pedro Bay. There would be no difference in impacts from variants.	Same as Alternative 1a, except that impacts would be less likely to occur to Kokhanok and more likely to occur to Pedro Bay. There would be no difference in impacts from the variant.

Notes:
KPB = Kenai Peninsula Borough
LPB = Lake and Peninsula Borough

4.3.2 No Action Alternative

Under the No Action Alternative, federal agencies with decision-making authorities on the project would not issue permits under their respective authorities. The Applicant's Preferred Alternative would not be undertaken, and no construction, operations, or closure activities specific to the Applicant's Preferred Alternative would occur. Although no resource development would occur under the Applicant's Preferred Alternative, Pebble Limited Partnership (PLP) would retain the ability to apply for continued mineral exploration activities under the State's authorization process (ADNR 2018-RFI 073) or for any activity not requiring federal authorization. In addition, there are many valid mining claims in the area, and these lands would remain open to mineral entry and exploration by other individuals or companies.

It would be expected that current State-authorized activities associated with mineral exploration and reclamation, as well as scientific studies, would continue at levels similar to recent post-exploration activity. The State requires that sites be reclaimed at the conclusion of their State-authorized exploration program. If reclamation approval is not granted immediately after the cessation of activities, the State may require continued authorization for ongoing monitoring and reclamation work as it deems necessary. Therefore, although there may be some decrease in the current level of economic activity generated by exploration of the project, exploration could continue; no changes in future direct or indirect effects to existing socioeconomics would be expected, and existing trends would continue.

4.3.2.1 Regional Setting

Regional Economy

The PLP employed approximately 100 to 150 local community members annually at the site during the pre-development phase of the project, which ended in 2012 (Loeffler and Schmidt 2017). Since then, PLP has had a minimal number of workers at the site for exploration and maintenance activities; this has supported some indirect jobs in the region. Under the No Action Alternative, it is anticipated that State-authorized activities associated with mineral exploration and reclamation, as well as scientific studies, would continue at levels similar to recent exploration activity. As a result, the current number of direct and indirect jobs would remain roughly the same and there would be no impact to the regional economy. Under the No Action Alternative, state and local government revenue sources, amounts, and fiscal characteristics would stay in the current range. Section 4.6, Commercial and Recreational Fisheries, addresses state and local government revenue associated with commercial fishing and tourism.

Cost of Living

The No Action Alternative is not anticipated to result in changes to the current activities, or to infrastructure associated with the Pebble deposit or regional infrastructure. As a result, the No Action Alternative would have no effect on the cost of living in potentially affected communities.

Regional Infrastructure

No additional impacts to the regional infrastructure would be anticipated as a result of the No Action Alternative. Because of the remoteness and small workforce, pre-development work has had little impact on the regional public infrastructure. The No Action Alternative would not affect the current or projected infrastructure trends; these trends would continue, including those related to education, health services, water, transportation, sewer, and solid waste operations.

4.3.2.2 Potentially Affected Communities

It is anticipated that PLP would continue current activities in an effort to identify future opportunities under the No Action Alternative; therefore, the current number of direct and indirect jobs would not be expected to change. Under the No Action Alternative, population trends in communities would continue. Declining populations in some smaller communities could lead to school closures and other loss of services.

4.3.3 Alternative 1a

4.3.3.1 Regional Setting

Regional Economy

Loeffler and Schmidt (2017) found that during the pre-development phase of the project (2009 to 2012), community members from the region accounted for about 43 percent of the project's seasonal workforce. Since then, PLP has had a minimal number of workers at the site for exploration and maintenance activities. Under Alternative 1a, the magnitude of the project's impact on local employment would be an increase of 2,000 direct hires during the construction phase, and 850 during the operations phase. The duration of these impacts would be short-term for construction employees and long-term for operations employees. PLP has stated that its objective is to maximize opportunities for local hire: first, directly to residents of the EIS analysis area, or those with close ties to the area; and second to Alaska residents in general. It is estimated that during operations, 250 employees would come from surrounding communities and the remaining 600 from Anchorage or Kenai. However, it is likely that during the construction phase, non-Alaskan labor would be required to fill the anticipated 2,000 jobs, potentially as high as 50 percent of hires (PLP 2018-RFI 027). In addition, indirect employment opportunities would increase from the services that would be needed to support construction and operations activities (e.g., air services, goods, and supplies). These activities could potentially create a large number of direct and indirect jobs in the region relative to the population, providing a measurable beneficial impact over both the short-term construction phase and the long-term operations phase of the project. Employment would decrease at mine closure.

Alternative 1a would provide year-round operations employment, which would help reduce the impacts of the seasonal employment fluctuations that are prevalent in the region. Depending on the construction schedule and nature of activities, some construction employment (although beneficial to the local economy) may be short-term and/or seasonal in nature.

Loeffler and Schmidt (2017) also found during the pre-development phase that communities near the mine site provided a much higher percentage of local labor than more distant communities, such as those in the Dillingham Census Area or other coastal communities. In addition, opportunities and incomes from other sources of employment (e.g., commercial fishing) were greater in distant communities. Therefore, the impact on employment and income during the exploratory phase had a much higher magnitude of impact on the communities closest to the mine site than on more distant communities. It can be anticipated that the same pattern would occur during the operations phase; communities near the mine site and ferry/port terminals would see a greater employment impact than communities farther away.

Because most of the state's professional and business service firms, including PLP's office, are based in Anchorage, the Anchorage region would be anticipated to see an increase in jobs. However, the increase would be minor in relation to the larger and more diverse economy of Anchorage (with approximately 130,000 employed workers in 2016). The extent of impacts from additional employment opportunities due to construction of the natural gas pipeline could reach

to the Kenai Peninsula, with its oil services support industry. Similarly, services (particularly transportation and lodging) based in Iliamna and to a lesser extent in Homer, would also be anticipated to see an increase in jobs. These increases would be higher over the short-term construction phase, and would be expected to occur if the project is permitted and built.

Although the project would provide a more stable employment base in the region, it should be noted that the actual number of direct and indirect jobs in any given year could fluctuate based on economic conditions and/or business decisions.

Cost of Living

As described in Chapter 2, Alternatives, Alternative 1a would result in construction of the mine and port access roads, spur roads, ferry terminals, and a port. Although some components are described as private, PLP has stated that they would work with all local communities to identify the best solutions for use of the access roads and ferry for community transportation (PLP 2018-RFI 027). Because the higher cost of living in rural areas is primarily associated with the high transportation cost of food, fuel, and other supplies (ADOL 2008, 2017a), Alternative 1a has the potential to reduce transportation costs to communities near the transportation corridor, should arrangements be made to allow controlled public use of the mine and port access roads and spur roads. It should be noted that state and local authorizations may affect final road alignment and uses. Reduced transportation costs would lower the high cost of living for the communities near the transportation corridor, specifically Kokhanok, Iliamna, Newhalen, and potentially Nondalton. This would be a beneficial long-term impact, lasting the life of the project or until roads are decommissioned. It is possible that PLP, landowners, and the LPB could agree on continued use of project transportation infrastructure after project closure and continue the beneficial contribution.

Communities adjacent to the natural gas pipeline (i.e., Kokhanok, Newhalen, and Iliamna) would have the opportunity to connect to the pipeline, depending on arrangements made with PLP. Natural gas would likely be less expensive than diesel heating oil. This impact could lower cost of living once community-based equipment (e.g., furnace, water heater) is converted to natural gas. However, communities would be responsible for funding the connections and conversions. After mine closure, the pipeline would be decommissioned and there would no longer be natural gas available for community use, unless otherwise negotiated between the communities and utility providers.

Regional Infrastructure

The temporary construction and long-term operations camps used to house workers would be self-contained, and operated and maintained by PLP throughout the project. The work camps would be in remote areas, and employees would not have access to services in local communities. Therefore, local community services would not be adversely impacted by additional workforce population needs. In addition to housing facilities, the camps would be equipped with appropriate emergency medical facilities, electrical power generation, fuel storage, and facilities for sewage treatment and solid waste disposal and management. Potable water for the camps would be trucked in or sourced from on-site wells.

The direct effects of all phases of the project on public utilities in communities in the EIS analysis area would not be apparent, except for effects on communities along the corridor of the natural gas pipeline, which may develop infrastructure to take advantage of the supply of natural gas or experience reduced costs of goods and services through access to the project transportation system. However, local employment opportunities could offset current trends of outmigration in some communities and provide service fee revenue to maintain or even improve community

infrastructure. These beneficial impacts would last the life of the project, decrease at mine closure, and extend to communities in the EIS analysis area.

The following sections address the direct and indirect impacts to the regional infrastructure from activities associated with Alternative 1a; however, these sections do not address changes in the regional infrastructure associated with potential decisions made by LPB or the State of Alaska related to the use of increased tax revenues. An increase in tax revenues may lead to an increase in spending on regional infrastructure, which would improve infrastructure for the population of the region.

Education

The PLP has supported training and education programs in Alaska, such as the Alaska Native Science and Engineering Program, Teacher Industry Externship Program, and Alaska Resource Education (PLP 2018e). These activities would be anticipated to increase with Alternative 1a as the needs of the workforce expand. Conversely, some cultural education opportunities would be displaced, such as the current cultural activities and camps held at the site of the Amakdedori port, Groundhog Mountain, Frying Pan Lake, Upper Talarik Creek and Koktuli River watersheds, and a cultural site of cottonwoods (Alaska Heritage Resources Survey site ILI-00254) (NTC 2018). This would be an adverse impact, lasting the duration of the project if suitable alternatives cannot be found. The extent of impacts would be to communities in the EIS analysis area.

Although the project is not anticipated to result in an increased number of schools in the region, it may benefit educational opportunities for some communities through an increased revenue stream to the LPB and access to PLP-supported education programs. Because of declining population (i.e., out-migration) in some communities, schools are at risk of closing (LPB 2012). The project could reduce or eliminate this decline, allowing local schools to remain open and continue to serve local communities. It may also allow the school district to offer expanded services, such as the expansion of vocational education. The LPB's Large Project Ordinance would require that any expansion of school facilities due to the project be paid for by the project through increased tax revenues. Conversely, steady employment and income may provide some families with the ability to move to other areas, which may decrease the population of some communities.

Transportation

Alternative 1a would expand transportation infrastructure in the region once the transportation corridor and ferry/port facilities are complete. Although the mine and port access roads and port are described as privately owned, it is expected that a road management agreement involving all of the landowners would allow controlled use of the access roads and ferry for community transportation needs (PLP 2018-RFI 027). This would help reduce the local cost of living, including the crossings of the Newhalen and Gibraltar rivers. The State of Alaska and Alaska Native Claims Settlement Act (ANCSA) corporation land owners may also provide conditions on permit approval for the portion of the transportation route on their lands. Access to the infrastructure would be limited to local residents and businesses; it would most likely consist of escorted, scheduled convoys for private vehicle transport, and require coordination with PLP for third-party commercial-haul traffic. Road traffic would be coordinated with scheduled third-party transportation by the ferry. When mining operations cease, the road would stay in place as needed for post-closure activities and would be reclaimed when it is no longer needed. Agreements may be made between relevant parties for the road to remain in place.

Because many of the workers and supplies would be transported to the region by air, the Iliamna Airport and local airfields would see increased use. Although no direct impacts are expected to

airport infrastructure, the airport would likely see indirect impacts, such as an increase in fuel sales and maintenance activities related to increased air traffic. In turn, this could create additional indirect employment and economic activity at Iliamna and other airport hubs. The impacts would be long term, lasting for the life of the project, but would be greater during the construction phase. Section 4.12, Transportation and Navigation, describes the impacts to air, surface, and water transportation systems.

With port and ferry features removed at closure, only the access roads and shallow draft barge facilities would remain for use in transporting bulk supplies associated with the closure operations, unless an agreement could be reached for a third party to take over ferry operations. Access to the remaining infrastructure would likely be similar to that described above.

Health Services

The mine site would have on-site medical facilities to support workers. Many of the workers would be trained in emergency response and first aid. Most immediate care operations would be handled internally. Patients may be transported to a local clinic or airlifted to larger regional hospitals if needed. Therefore, existing health services are not anticipated to be directly impacted by the project. However, depending on the level of development associated with support services, there may be indirect beneficial or adverse impacts on these facilities. The extent of any indirect impacts would be anticipated in the communities nearest the mine site (i.e., Iliamna and Newhalen), which may have the highest level of indirect development to support the mining operations. In addition, an increased revenue stream to the LPB, along with stabilization of population levels attributable to employment opportunities, could result in improvements to community health care facilities throughout the borough.

Water, Sewer, and Solid Waste

The project would construct temporary water and wastewater facilities at various sites used for project construction camps, and at the mine site, ferry terminals, and Amakdedori port during operations. In addition, project-generated solid waste would be addressed on site or removed from the area. As a result, existing community water, sewer, and solid waste facilities would not be directly impacted by the project. However, depending on the level of indirect activity associated with support services, there may be indirect beneficial or adverse impacts on these facilities. The extent of indirect impacts would be the communities nearest the mine site. Similarly, an increased revenue stream to the LPB and stabilization of population levels attributable to employment opportunities could result in improvements to community water, wastewater, and solid waste services and facilities throughout the borough.

4.3.3.2 Potentially Affected Communities

Construction and operations would have direct and indirect impacts to local and regional socioeconomic conditions, described below.

Population

As discussed in Section 3.3, Needs and Welfare of the People—Socioeconomics, the population of some of the potentially affected communities has been declining, particularly in the LPB. Much of this decline has been associated with the lack of employment opportunities in the communities and closing of schools.

Alternative 1a would result in direct creation of an estimated additional 2,000 jobs during the construction phase and 850 during the operations phase. It is estimated that during operations, 250 employees would come from surrounding communities, and a majority of the remaining 600

would be from Anchorage or Kenai (PLP 2018-RFI 027). Employment would decline after mine closure. Workers would be transported from multiple locations (including from local communities) to the mine site via aircraft or other approved transport such as local roads, and would stay in work camps during their shifts. Therefore, workers could live throughout the state or in other states and still have the ability to work at the mine. As a result, the local communities would not be anticipated to see a large increase in population from the project, particularly from in-migration. The largest impacts could occur in Iliamna, Kokhanok, Newhalen, and potentially Nondalton, which may see an increase in population related to any businesses that are developed to support the project.

Although a large in-migration of population is not anticipated, Alternative 1a may lead to changing population patterns in the region. The population in some potentially affected communities has been declining due to out-migration. The project could reduce or eliminate this population decline because of the increase in employment opportunities and indirect effects on education and infrastructure; it could also lead some prior residents to return to communities. Therefore, the population of some communities is anticipated to increase slightly. This anticipated small increase in population is consistent with a study conducted by LPB (InterGroup 2019) that forecasted a small increase in population in the EIS analysis area for the same reasons described previously. In addition, communities near the Red Dog Mine experienced small increases in population during the period from pre-mine into operations, primarily due to natural increases (Tetra Tech 2009). The Tetra Tech (2009) study found that there was no reason to believe that the population increase in Kotzebue (the rural hub serving as the gateway to the region and support for the Red Dog Mine) was the result of an influx of outside individuals related to the mine. Conversely, steady employment and income may provide some families with the ability to move to other areas, which may decrease the population of some communities. Therefore, the impacts on population for individual communities are difficult to anticipate.

Economy and Income

Estimating how many local community members would obtain work through the project (or would be interested in obtaining work) is difficult, but any increase in the number of jobs would help the local communities. Loeffler and Schmidt (2017) found that during the pre-development phase of the project (2009 to 2012), community members from the region accounted for about 43 percent of the project's seasonal workforce. Communities near the mine site were found to provide a much higher percentage of local labor than more distant communities, where opportunities and incomes from other sources of employment (e.g., commercial fishing) were greater. Therefore, the impact on employment and income during the exploratory phase had a much higher magnitude of impact on the communities closest to the mine site than on more distant communities.

PLP has stated that its objective is to maximize opportunities for local hire; first, directly to residents of the EIS analysis area or those with close ties to the area; and second to Alaska residents in general. However, it is likely that during the construction phase, substantial labor from outside the region and outside Alaska would be required to fill the anticipated 2,000 jobs, potentially as high as 50 percent of hires (PLP 2018-RFI 027).

A majority of jobs would be taken by Alaskans during operations. PLP has estimated that 250 employees would come from the surrounding communities, with 50 of these employees coming from communities connected to the project site by road (PLP 2018-RFI 027). The majority of the remaining 600 employees would likely be from the Anchorage and Kenai areas. Therefore, the extent of beneficial impacts would reach beyond the communities in the EIS analysis area. A similar pattern of employment occurs at the Red Dog mine (Berman, Loeffler, and Schmidt 2020). Operations jobs would last for the life of the project.

The direct jobs created by the project would be attractive to many residents with the requisite skills. In general terms, developments like the project provide economic benefits to individuals, families, and communities in increased and steady income. Many of the communities in the region, especially those in the LPB, have a lower median household income and a higher unemployment rate than Anchorage or Alaska as a whole. Therefore, employment through the project would have an impact on income levels in the local communities.

The exploratory phase of the project revealed that the income earned by residents employed by the project was an important part of the total income earned in local communities, especially those communities close to the mine site (Loeffler and Schmidt 2017). The income earned by residents close to the mine working for PLP was greater than the income earned for commercial fishing, indicating that even the limited employment during the exploratory phase had large impacts on the communities. In communities that were farther from the mine site, commercial fishing was a larger part of total income. Indirect employment developed to support the construction and operations of the project would provide additional opportunities for community residents.

On average, wages for mining jobs are much higher than those for most industry categories. The average monthly wage in Alaska for the mining industrial classification in the third quarter of 2017 was $9,047, and mining support activities was $7,855, which was higher than the average for Alaska of $4,414 (ADOL 2017b). It should be noted that this average wage is likely for mine operations; construction wages would likely be lower. Because these figures are an average of all people employed in that classification, the monthly wage includes executives, specialized experts, and low-skill positions. Not all local residents would make the average wage. However, wages earned would likely be higher than the median household incomes of the potentially affected communities (see Section 3.3, Needs and Welfare of the People—Socioeconomics), which would be an improvement to the welfare of the community members. Similar income patterns are found at the Red Dog mine in western Alaska (Berman, Loeffler, and Schmidt 2020). For example, income from mining could be twice the median household income in the LPB of about $45,000. In addition, construction and operations of the mine would likely create opportunities for support services, creating indirect employment and income. This would most likely occur in support and transportation hubs, such as Iliamna and Port Alsworth, and in larger communities such as Anchorage and the KPB. McDowell (2018c) estimates that modeling an employment multiplier of approximately 2.0 accurately captures the magnitude of total direct and indirect employment of the mining industry in Alaska (McDowell 2018c).

Overall, the project would provide long-term beneficial impacts to the economy from employment and income in the region and state. Although the project would provide a more stable employment base, it should be noted that the actual number of direct and indirect jobs in any given year could fluctuate based on economic conditions and/or business decisions.

Tax Revenue and Other Fiscal Effects

Project construction and operations would generate revenues for local governments and the state of Alaska. The revenue sources would potentially include mining license taxes, corporate income taxes, property taxes, sales taxes, borough severance taxes, and production royalty payments, depending on the nature of mining production, real property value, and taxation measures authorized by statute or ordinance. The duration of revenues to state and local governments would begin during the construction phase; it would escalate during the operations phase, when mining license taxes, production taxes, severance taxes, and corporate income taxes would become effective. At the time the mine ends operations/production, buildings, foundations, pipelines, and other infrastructure facilities would be removed or reclaimed and these revenues would end unless reuse of some of these facilities was negotiated with another party.

Mining License Tax and Corporate Income Tax

Alaska levies a mining license tax and corporate income tax on net income received in connection with mining properties and activities in the state. The collection of mining license tax and corporate income tax on project net income would have a beneficial effect on state government revenues. The magnitude and extent of the state revenue were estimated based on analyses conducted by IHS (2013). The estimates from the IHS report were adjusted to the current design by scaling for the smaller workforce; however, the estimates were not adjusted for inflation and are in 2011 dollars. It is estimated that the proposed project could generate $25 million annually in state taxes during the construction phase, and an estimated $64 million annually in state corporate taxes during the operations phase. It was estimated that the operations phase could also generate $41 million annually from State mining license taxes (IHS 2013).

Corporate income tax may increase further through the indirect and induced impacts of mine construction and operations.

State Royalty Payments

Alaska requires holders of State mining locations to pay a production royalty on all revenues received from minerals produced on State land, in accordance with the Production Royalty Law, which applies to all revenues received from minerals produced from a State mining lease (Section 38.05.212). The production royalty is 3 percent of net income generated (ADNR 2015).

The collection of state royalty payments on project net income would have a beneficial long-term effect (extending for up to decades over the life of the project) on state government revenues. Based on the same adjustments made to the IHS (2013) analyses as described above, the project could generate $20 million annually (in 2011 dollars) in state royalty payments during the operations phase.

Borough Severance Taxes

Mining operations are subject to severance taxes on resource extractions in a taxing jurisdiction, which would be the LPB. Based on the same adjustments made to the IHS (2013) analyses as described above, the proposed project could generate $27 million annually (2011 dollars) in severance taxes paid to LPB during the operations phase. The estimated severance tax would represent a significant increase in revenue for LPB (>500 percent) compared to the estimated total revenue from external sources of approximately $5 million for fiscal year 2019 (LPB 2018d). Another potential source of revenue available to local governments is Payment in Lieu of Taxes (PILT), which is available to local governments as an alternative to property or severance taxes; the Northwest Arctic Borough currently receives PILT from the operation of the Red Dog mine.

Borough Property Taxes

Real property can be subject to property taxes. The LPB does not have a property tax (LPB 2018d), but the KPB has a borough property tax of 4.7 mills[1], plus any other taxes assigned in accordance with the Tax Authority Group (e.g., hospital or road maintenance taxes). The mill rate for the KPB is 4.70, meaning that for every $1,000 of assessed taxable property value, the KPB receives $4.70 in revenue.

Real property, including the Amakdedori port facilities and any other infrastructure in the KPB, would be taxed at a rate of 4.7 percent of its assessed taxable value. This includes the assessed

[1] A mill represents 0.1 percent of $1, equal to $1 of tax revenue for each $1,000 of assessed taxable property value.

value of the infrastructure itself, as well as a portion of the assessed land value (subject to lease terms). Mill rates are set annually by the borough assembly, municipalities, and service area boards. Beneficial impacts of increased property taxes to all boroughs affected would last through the life of the project.

Right-of-Way Acquisition

The right-of-way (ROW) for the transportation corridor connecting Amakdedori port to the mine site could be another fiscal element of the project. The State of Alaska would own 63 percent of the corridor, and 37 percent would be owned by ANCSA village corporations. Based on costs for a similar mine ROW and the value of State lands (ADNR 2008), a preliminary estimate of the magnitude of ROW costs for the transportation corridor ranged between $1 million and $1.5 million, which would be paid to the state government and to the Native corporations, creating a long-term beneficial economic effect.

The pipeline corridor would cross State and federal waters, as well as State and ANCSA village corporation lands. Historically, ROW costs account for approximately 7 percent of the total construction cost of a pipeline (Rui et al. 2011).

Housing

Staff working at the mine would be housed in on-site facilities (i.e., work camps) and would follow a fly-in/fly-out or local road commute work arrangement. Therefore, there would not be an increase in housing demand in communities related to an influx of the direct employment of workers. However, employment opportunities could slow or reverse the decline in some communities, or encourage former residents to move back. This would affect the demand for local housing.

Communities closest to the mine and ferry terminals (i.e., Iliamna, Newhalen, Kokhanok, and potentially Nondalton) may see changes to the population as a result of support activities, which may lead to an increase in demand for housing. As described in Section 3.3, Needs and Welfare of the People—Socioeconomics, vacant housing units are available in these communities. Although the condition of the vacant units is not known, some of the units could accommodate at least a portion of any increase in population. Housing is also available in the larger communities in the region where workers may reside. Overall, adverse impacts to housing availability would not be expected.

Education

Although the project is not likely to result in substantive demographic increases that would support an increase in the number or capacity of schools in the potentially affected communities, an increase in tax revenue to the LPB and the education programs supported by PLP could benefit schools and the student population. In addition, local employment opportunities associated with the project could reduce population decline in some communities, which could allow schools at risk of closing to remain open.

As with other mining operations in Alaska, employment at the mine would require at least a high school education or general education diploma (GED). Therefore, students may see employment opportunities provided by the mine as an incentive to complete at least a basic level of education, which could increase high school graduation rates in the potentially affected communities. Similar to the experience with other Alaska mining projects, it might also provide opportunities for participating in vocational training, particularly if PLP, the LPB, and Alaska Native organizations provide support.

4.3.3.3 Changes in Sociocultural Dynamics

As discussed in Section 4.9, Subsistence, there is an interplay between socioeconomics and subsistence. Cash income (often from employment) is necessary to pay for subsistence equipment, supplies, and operating costs; increased incomes from project employment for local employees may be partially invested in subsistence activities. At the same time, subsistence activities are labor intensive and require large investments of time and effort. Many subsistence resources are available only at certain times of the year. To the extent that project-related employment reduces the time available for these employees to participate in subsistence activities and to pass on skills and knowledge to the next generation, harvest effectiveness may decline. Proposed shift-work schedules with 2 weeks at the project site and 2 weeks off in the community would likely reduce, but not eliminate, the conflict between project employment and subsistence activities.

Out-migration of mine project employees from local communities has been identified as an adverse sociocultural effect on subsistence and cultural continuity if high-harvesting households relocate. Similarly, increased availability of jobs for local residents could lead some prior residents to return to communities. Although a large in-migration or out-migration of population is not anticipated, Alternative 1a may lead to changing population patterns in the region. The population in some potentially affected communities has been declining due to out-migration. The project could reduce or eliminate the decline because of the increase in employment opportunities and indirect effects improving education and infrastructure.

At closure, both time commitments for and cash income from project employment would decline, depending on local employment opportunities associated with closure and monitoring activities. Households would have to adjust to reduced cash income to support the maintenance and operating costs of a subsistence lifestyle. Some residents may move away as job opportunities cease. The beneficial and adverse indirect effects of mine employment and income on subsistence practices would decrease. Some long-term impacts may include loss of subsistence knowledge and skills and/or decrease in participation during mine operations continuing after closure.

4.3.4 Alternative 1

4.3.4.1 Regional Setting

Regional Economy

Although the alignment of the mine access road and natural gas pipeline would change, Alternative 1 would have the same overall impacts to the regional economy as Alternative 1a.

Cost of Living

For the region as a whole, the impacts on the cost of living of Alternative 1 would be largely the same as the impacts of Alternative 1a and would likely lower the high cost of living for the communities near the transportation corridor.

Regional Infrastructure

Although the alignment of the mine access road and natural gas pipeline would change, Alternative 1 would have the same overall impacts to the region as Alternative 1a.

4.3.4.2 Potentially Affected Communities

Although the alignment of the mine access road and natural gas pipeline would change, Alternative 1 would have the same overall impacts to socioeconomic indicators of the potentially affected communities as Alternative 1a.

Revenues from the ROW acquisition for the transportation corridor and the natural gas pipeline would be similar to Alternative 1a and would impact the State (which would own 63 percent of the corridor) and ANCSA village corporations (37 percent). Because of the different access routes on the northern side of Iliamna Lake, there would be some difference in Alaska Native corporation land ownership that would affect the specific distribution of ROW revenues.

4.3.4.3 Changes in Sociocultural Dynamics

Impacts to the sociocultural dimension of subsistence and the cash economy would be the same as discussed for Alternative 1a.

4.3.4.4 Alternative 1—Kokhanok East Ferry Terminal Variant

The Kokhanok East Ferry Terminal Variant would result in impacts similar to those described above for all project components. For this variant, the State would own 65 percent of the Kokhanok East Ferry Terminal Variant, and ANCSA village corporations would own 35 percent.

4.3.4.5 Alternative 1—Summer-Only Ferry Operations Variant

Regional Economy—Alternative 1 includes a variant for summer-only ferry operations, where the transportation corridor would only operate during the open water season (PLP 2018-RFI 065). As a result, more employment opportunities for truck drivers and ferry/terminal workers would be needed during summer operations, but fewer would be needed during winter operations, leading to less year-round employment opportunity and a larger number of seasonal employees. Therefore, this impact would be less beneficial than that described for Alternative 1 without the variant.

Cost of Living—Under the Summer-Only Ferry Operations Variant, communities that would rely on the project transportation system may opt to stockpile food, fuel, and other supplies or receive shipments via air when the ferry is not operating. Overall, the variant would likely lower the high cost of living for the communities near the transportation corridor, but not to the extent of the Alternative 1 year-round ferry operations.

Economy and Income—Under the Summer-Only Ferry Operations Variant, the transportation corridor would only operate during the open-water season. As a result, more employees (e.g., truck drivers or ferry/terminal workers) would be needed during summer operations, but fewer would be needed during winter operations (PLP 2018-RFI 065). This would lead to a smaller number of year-round employees and a large number of seasonal employees. Due to the small populations of the potentially affected communities, it is less likely that the communities would be able to meet all of the demand for the increased number of seasonal employees (in addition to the year-round employees), requiring more employees to come from outside the region for the seasonal work. In addition, other employment opportunities are available to local residents during the summer (e.g., construction, tourism and commercial fishing), whereas fewer opportunities exist during the winter months. Therefore, the variant would likely shift some of the positions held by community members from year-round to seasonal, which would also lower the overall income that is earned by community members and decrease the incentive to retain population in the region compared to year-round employment under year-round ferry operations.

4.3.4.6 Alternative 1—Pile-Supported Dock Variant

The Pile-Supported Dock Variant would result in impacts similar to those described above for all components of Alternative 1 (without variants).

4.3.5 Alternative 2—North Road and Ferry with Downstream Dams

4.3.5.1 Regional Setting

Regional Economy

Although the alignment of the transportation corridor and natural gas pipeline would change, Alternative 2—North Road and Ferry with Downstream Dams would have the same overall impacts to the regional economy as Alternative 1a, but would have a different level of effects on specific communities due to differences in transportation corridor routes. Impacts to specific communities are discussed below.

Cost of Living

For the region as a whole, the impacts on the cost of living under Alternative 2 would be largely the same as the impacts of Alternative 1a, and would likely lower the high cost of living for the communities near the transportation corridor. However, because of the different alignments of the transportation corridor and natural gas pipeline, Pedro Bay would likely experience greater beneficial impacts, while Kokhanok would likely see fewer beneficial impacts.

Regional Infrastructure

Although the alignment of the transportation corridor and natural gas pipeline would change, Alternative 2 would have the same overall impacts to the region as Alternative 1a. However, Pedro Bay would experience more direct impacts, and Kokhanok would be impacted to a lesser extent.

4.3.5.2 Potentially Affected Communities

Although the alignment of the transportation corridor and natural gas pipeline would change, Alternative 2 would have the same overall impacts to the socioeconomic indicators of the potentially affected communities as Alternative 1a. However, Pedro Bay would experience greater impacts and Kokhanok would be less impacted.

Revenues from the ROW acquisition for the transportation corridor and the natural gas pipeline would be similar to Alternative 1a and would impact the State (which would own 40 percent of the transportation corridor), ANCSA village and regional corporations (57 percent and 1 percent, respectively), and Native Allotment owners (2 percent). Compared to Alternative 1a, there would be some difference in the specific land ownership by ANCSA village corporations, affecting where ROW revenue would accrue.

4.3.5.3 Changes in Sociocultural Dynamics

Impacts to the sociocultural dimension of subsistence and the cash economy would be the same as discussed for Alternative 1a, except that potential effects would be more pronounced around Pedro Bay, and less around Kokhanok.

4.3.5.4 Alternative 2—Summer-Only Ferry Operations Variant

Regional Economy—Alternative 2 includes a variant for summer-only ferry operations. The impacts of the variant would be similar to those described in the similar Alternative 1 variant, except that potential effects would be more pronounced around Pedro Bay, and less around Kokhanok.

Cost of Living—Alternative 2 includes a variant for summer-only ferry operations. The impacts of the variant would be the same as described in the similar variant for Alternative 1.

Potentially Affected Communities—Alternative 2 includes a variant for summer-only ferry operations. The variant would be the same as described for Alternative 2 without the variant.

4.3.5.5 Alternative 2—Pile-Supported Dock Variant

The Pile-Supported Dock Variant would result in impacts similar to those described above for all project components.

4.3.5.6 Alternative 2—Newhalen River North Crossing Variant

The Newhalen River North Crossing Variant would result in impacts similar to those described above for all project components.

4.3.6 Alternative 3—North Road Only

4.3.6.1 Regional Setting

Regional Economy

Although the alignment of the transportation corridor and natural gas pipeline would change, and there would be no ferry operations on Iliamna Lake, Alternative 3 would have the same overall impacts to the regional economy as Alternative 1a. The distribution of effects between communities would be similar to Alternative 2.

Cost of Living

For the region as a whole, the impacts on the cost of living for Alternative 3 would be largely the same as the impacts of Alternative 1a; the magnitude of the impact would lower the high cost of living for the communities near the transportation corridor, similar to Alternative 2. However, because of the different alignments of the transportation corridor and natural gas pipeline, Kokhanok would likely experience less of a benefit, while Pedro Bay would likely experience more of a benefit over the long term.

Regional Infrastructure

Although the alignment and components of the transportation corridor and natural gas pipeline would change, Alternative 3 would have the same overall impacts to the region as Alternative 1a, except that there would be no ferry terminals. However, Kokhanok would experience fewer impacts, while Pedro Bay would experience more. One potential benefit of the alternative is that it would be more likely that regional governments and/or the State would maintain the access roads (the Williamsport-Pile Bay Road) for public use following closure of the mine.

4.3.6.2 Potentially Affected Communities

Although the alignment and components of the transportation corridor and natural gas pipeline would change, Alternative 3 would have the same overall impacts to the socioeconomic indicators of the potentially affected communities as Alternative 1a. However, Kokhanok may experience fewer impacts, while Pedro Bay would experience greater impacts.

Revenues from the ROW acquisition for the transportation corridor and the natural gas pipeline would be similar to Alternative 1a and would impact the State (which would own 30 percent of the transportation corridor), ANCSA village and regional corporations (70 percent and >1 percent, respectively), and Native Allotment owners (1 percent). Compared to Alternative 1, there would be some difference in the specific land ownership by ANCSA village corporations, affecting where ROW revenue would accrue.

4.3.6.3 Changes in Sociocultural Dynamics

Impacts to the sociocultural dimension of subsistence and the cash economy would be the same as discussed for Alternative 1a, except that Kokhanok may experience fewer impacts, while Pedro Bay would experience greater impacts.

4.3.6.4 Alternative 3—Concentrate Pipeline Variant

Regional Economy—The magnitude of impacts of this variant would be decreased employment of truck operators and increased employment at the dewatering facility. Overall, the total number of employees needed during operations would likely decrease, which would decrease overall income and employment in the region. It could potentially increase property taxes for KPB more than Alternative 1, depending on final footprint and project specifics.

Regional Infrastructure—The magnitude of impact of this variant would be the construction of the pipeline(s) and a dewatering facility near the port, which would likely be of no value and/or benefit to the potentially affected communities or the region as a whole, other than potential property tax revenue.

Potentially Affected Communities—The magnitude of impacts of this variant would be decreased employment of truck operators and increased employment at the dewatering facility. Overall, the total number of employees needed during operations would likely decrease, which would decrease the overall income and employment in the potentially impacted communities. However, the KPB would receive an increase in property taxes levied on the assessed value of the portion of the concentrate pipeline located in the borough.

4.3.7 Cumulative Effects

Potential impacts to the socioeconomic environment include changes to economy and income, regional education and infrastructure, cost of living, and population. In addition, cultural ties to the area can impact the socioeconomic welfare of a community. Potential cumulative effects on commercial fishing and recreational tourism are discussed in Section 4.6, Commercial and Recreational Fisheries. Subsistence activity and the importance of subsistence as it relates to income and its support in stabilizing communities during economic downtimes are discussed in Section 4.9, Subsistence. The sociocultural dimensions are discussed in Section 4.7, Cultural Resources, and Section 4.9, Subsistence.

The cumulative effects analysis area includes the region around the potentially affected communities, and to a lesser extent, the state of Alaska. Similar to the project, opportunities would also exist for employment for people living across a broad area of Alaska. Potential cumulative

effects could occur on the regional and state economy, infrastructure, cost of living, government revenue, and population characteristics.

All of the actions identified in Section 4.1, Introduction to Environmental Consequences, are considered to have the potential to contribute to cumulative effects on the needs and welfare of the people of Alaska.

4.3.7.1 Past and Present Actions

The categories of past and present actions that have contributed to the existing socioeconomic conditions of potentially affected communities include commercial and subsistence harvest of fish and wildlife, commercial recreation and tourism, community development and infrastructure, mining exploration activities, the Williamsport-Pile Bay Road, and the Diamond Point Quarry. Changes in fishing technology and the variability of fish returns have changed the regional economy from year to year. The trend of declining local ownership of fishing permits has decreased the amount of local employment and income in some parts of the region, notably the area around Iliamna Lake. Fluctuations in oil prices have affected the availability of state and local revenue, affecting capital improvement projects and services in the region. When major projects are developed, there is often high employment associated with construction cycles, which then drops during operation cycles. In addition, seasonal employment fluctuation exists at the regional level, largely due to seasonality of the commercial fishing, construction, and tourism industries. Limited transportation infrastructure keeps cost of living high, which is offset somewhat by subsistence hunting and fishing. Declining population in some communities of the LPB have resulted in school closures when the number of students drops below 10, the state minimum to keep a school open.

4.3.7.2 Reasonably Foreseeable Future Actions

The reasonably foreseeable future actions (RFFAs) identified in Section 4.1, Introduction to Environmental Consequences, that could contribute to the regional and state socioeconomic cumulative impacts are carried forward in this analysis in Table 4.3-2.

The No Action Alternative would not contribute to adverse or beneficial cumulative effects on the regional and state economy, infrastructure, cost of living, and population characteristics. Although there may be some decrease in the current level of economic activity generated by exploration of the Pebble Project, exploration activities could continue.

Collectively, the Project Alternatives with RFFAs' contribution to cumulative effects on the socioeconomic environment are summarized in Table 4.3-2.

Table 4.3-2 Contribution to Cumulative Effects on Socioeconomics

Reasonably Foreseeable Future Actions	Alternative 1a	Alternative 1 and Variants	Alternative 2 and Variants	Alternative 3 and Variant
Pebble Project expansion Scenario	**Mine Site:** The Pebble Project expansion scenario would likely increase the beneficial and adverse impacts realized from the project. Mineral processing is estimated to increase nearly 40 percent. Employment and income opportunities realized from the expansion, as well as tax revenue and cost of living reductions, would continue and potentially increase through the 78-year expansion period. If a severance tax on production was imposed by the LPB, increased production would generate additional local tax revenue. **Other Facilities:** A north access road, concentrate pipeline, and diesel pipeline would be constructed along the Alternative 3 road alignment from Eagle Bay to a new deepwater port site at Iniskin Bay. Pipeline construction would provide additional employment opportunities. Construction of the port and north access road would also provide an additional route to ship goods into the region and contribute to reductions in transportation costs. The new deepwater port and pipeline facilities would generate additional tax revenue for the KPB. Due to the proximity of the new transportation corridor, the community of Pedro Bay would benefit more, and Kokhanok less. **Magnitude.** The operation of the mine during the extended period would have socioeconomic impacts similar to those from operation of the proposed project. With the transition for trucking concentrate to shipment via concentrate pipeline, there could be fewer long-term employment opportunities associated with truck drivers, but additional construction, and potentially operations employment, with mine expansion. **Duration/Extent**: The duration/extent of cumulative impacts to Socioeconomics would vary from temporary (e.g., jobs created during construction) to long term (e.g., jobs created during operations). Effects on	**Mine Site:** Identical to Alternative 1a. **Other Facilities:** Alternative 1 would be similar to Alternative 1a, except that the portion of the access road from the Eagle Bay ferry terminal to the existing Iliamna area road system would not already be constructed. The complete north access road would be constructed from the mine site to the Pile Bay terminus of the Williamsport-Pile Bay Road. Concentrate and diesel pipelines would be constructed along the Alternative 3 road alignment and extended to a new deepwater port site at Iniskin Bay. **Magnitude:** The magnitude of cumulative impacts to socioeconomics would be similar to that under Alternative 1a. **Duration/Extent:** The cumulative impacts to socioeconomics would be similar in duration and extent to Alternative 1a. **Contribution:** The contribution to cumulative effects would be slightly more than under	**Mine Site:** Identical to Alternative 1a. **Other Facilities:** The north access road would be extended east from the Eagle Bay ferry terminal to Iniskin Bay. Concentrate and diesel pipelines would be constructed along the Alternative 3 road alignment and extended to a new deepwater port site at Iniskin Bay. **Magnitude:** Beneficial cumulative impacts to income and infrastructure from Alternative 2, combined with those from the Pebble Project expansion scenario, would be less than those under Alternative 1a because the south transportation system/ferry would not be in place. **Duration/Extent:** The cumulative impacts to socioeconomics would be similar in duration and extent to Alternative 1a. **Contribution:** Employment opportunities would be lower because employees would not be required at two transportation corridor/port locations, and the additional	**Mine Site:** Identical to Alternative 1a. **Other Facilities:** Overall expansion would use the existing north access road; concentrate and diesel pipelines would be constructed along the existing road alignment and extended to a new deepwater port site at Iniskin Bay. **Magnitude:** Cumulative tax revenue generation and reduction in cost of living would be similar to those under Alternative 2. Beneficial cumulative impacts to employment, income and infrastructure from Alternative 3, combined with those from Pebble Project expansion scenario, would be less than under the other alternatives because no ferry operation would be in place, and the north access road system used for the Pebble Project expansion scenario would already be built under Alternative 3. **Duration/Extent:** The cumulative impacts to socioeconomics would be

Table 4.3-2 Contribution to Cumulative Effects on Socioeconomics

Reasonably Foreseeable Future Actions	Alternative 1a	Alternative 1 and Variants	Alternative 2 and Variants	Alternative 3 and Variant
	regional population (such as reduction of out-migration and any in-migration associated with job opportunities) and reductions in cost of living would be extended during mine expansion. Generation of state and local revenue would also be extended over the life of operations. **Contribution:** Additional and extended employment opportunities could affect regional population; impacts to cost of living, housing, community services and generation of state and local revenue would be anticipated to remain the same as experienced during operation of the project, but would extend for the longer period of expansion. However, Pedro Bay would experience beneficial impacts from use of the transportation corridor under the Pebble Project expansion scenario than under the project as proposed.	Alternative 1a, but less than under Alternatives 2 and 3.	facilities would not generate taxable income.	similar in duration and extent to Alternative 1a. **Contribution:** Employment opportunities associated with the south access road and truck traffic would be lower because employees would not be required at those locations, and the facilities would not generate additional taxable income.
Other Mineral Exploration and Development Projects	**Magnitude:** The RFFAs related to continuing mining exploration activities would provide some additional employment and support service activities during exploratory phases, primarily through direct employment and support service activities. Although the proposed Donlin Gold Project could potentially create statewide demand for skilled workers, it would be in a different region and would have little contribution to the regional socioeconomic effects. From a statewide perspective, both the Donlin Gold Project and the Pebble Project expansion could create a competing need for support services and secondary/indirect jobs associated with such services. **Duration/Extent:** Exploration activities typically occur at a discrete location for one season, although a multi-year program could expand the geographic area affected in a specific mineral prospect. (See Section 4.1, Introduction to Environmental Consequences, which identifies seven mineral	Similar to Alternative 1a. **Contribution:** Because most mineral exploration activities would be limited to summer, the contribution to cumulative effects would be greater with the Summer-Only Ferry Operations Variant.	Similar to Alternative 1a. **Contribution:** Because most mineral exploration activities would be limited to summer, the contribution to cumulative effects would be greater with the Summer-Only Ferry Operations Variant.	Similar to Alternative 1a.

Table 4.3-2 Contribution to Cumulative Effects on Socioeconomics

Reasonably Foreseeable Future Actions	Alternative 1a	Alternative 1 and Variants	Alternative 2 and Variants	Alternative 3 and Variant
	prospects in the EIS analysis area where exploratory drilling is anticipated [four are in relatively close to the Pebble Project].) **Contribution:** The combination of projects would contribute to the seasonal work imbalance and further increase the demand for summer employees. This would likely require more employees from outside the region for seasonal work.			
Oil and Gas Exploration and Development	**Magnitude:** Oil and gas exploration and development would likely create some measurable cumulative effects to the socioeconomic characteristics of the potentially affected communities during the exploratory phases. Effects of onshore and offshore exploration would be seasonal and geographically limited. If offshore projects are developed, they could create a competing need for direct employees, support services, and secondary/indirect jobs associated with such services, but offshore exploration and operations activities would be supported both within and outside of the KPB, where there is a mature oil support service industry. **Duration/Extent:** Seismic exploration and exploratory drilling are typically single-season, temporary activities. Offshore resources would constitute a southern extension of existing offshore production for roughly 10 to 20 years if they were developed. **Contribution:** Any continuing onshore oil and gas exploration on the Alaska Peninsula would be small in scale and supported out of King Salmon rather than Iliamna Lake communities. Any offshore development in Cook Inlet would likely extend existing oil industry employment and generate state revenue during the period of production, with operations support out of Anchorage and the KPB.	Similar to Alternative 1a.	Similar to Alternative 1a.	Similar to Alternative 1a.

Table 4.3-2 Contribution to Cumulative Effects on Socioeconomics

Reasonably Foreseeable Future Actions	Alternative 1a	Alternative 1 and Variants	Alternative 2 and Variants	Alternative 3 and Variant
Road Improvement and Community Development Projects	**Magnitude:** Transportation and infrastructure improvements, as well as renewable resource energy projects, could have an impact on the potentially affected communities. The projects could create small-scale construction and operations employment opportunities, improve services, and potentially lower the cost of living. It is possible that such projects would support additional business development, taking advantage of the infrastructure and energy improvements. Community construction projects are a particularly important source of seasonal employment and income for small communities. Continued operation of the Diamond Point rock quarry has the potential to provide additional employment opportunities and generate revenues for the village corporation landowner. Development of two proposed community hydroelectric projects (Knutson Creek and Igiugig) would create some short-term construction employment opportunities and lower the cost of power generation during operations. **Duration/Extent:** Disturbance from road construction would typically occur over a single construction season. Geographic extent would be limited to the vicinity of communities and Diamond Point; however, labor could come from a greater distance. **Contribution:** Cumulative impacts from project road construction would be anticipated to be greater if the project is implemented, which could increase development as support-related businesses take advantage of the additional employment and service opportunities provided by the mine.	Similar to Alternative 1a and Alternative 2; greater than Alternative 3.	The footprint of the Diamond Point rock quarry under Alternative 1a coincides with the Diamond Point port footprint in Alternative 2 and Alternative 3. Cumulative impacts would likely be less under Alternative 2 due to commonly shared project footprints with the quarry site.	Similar to Alternative 2; less than Alternative 1a.

Table 4.3-2 Contribution to Cumulative Effects on Socioeconomics

Reasonably Foreseeable Future Actions	Alternative 1a	Alternative 1 and Variants	Alternative 2 and Variants	Alternative 3 and Variant
Summary of Project contribution to Cumulative Effects	Overall, the contribution of Alternative 1a to cumulative effects on socioeconomics, taking other past, present, and reasonably foreseeable future actions into account, would be minor to moderate in terms of magnitude, duration, and extent, given the jobs and tax revenues generated by the project.	Similar to Alternative 1a.	Similar to Alternative 1a.	Similar to Alternative 1a.

Notes:
EIS = Environmental Impact Statement
KPB = Kenai Peninsula Borough
LPB = Lake and Peninsula Borough
RFFA = reasonably foreseeable future action