3.19 ENVIRONMENTAL JUSTICE

SYNOPSIS

This section addresses Environmental Justice, or the possibility that impacts of a proposed action might disproportionately affect minority and low-income communities. The regulatory framework is first described, and demographic and economic data from Section 3.18, Socioeconomics, is examined to determine whether minority and low-income communities are potentially affected by the Donlin Gold Project. Each alternative is then evaluated for possible disproportionate impacts to minority and low-income communities using socioeconomic, human health, and subsistence impacts, and determinations are made on if an environmental justice concern would be raised. Project components (Mine Site, Transportation Corridor, and Pipeline) are grouped for the analysis.

EXISTING CONDITION SUMMARY

Most communities in the EIS Analysis Area are low-income and minority communities, as defined under the Council on Environmental Quality (CEQ) guidelines and shown on Figure 3.18-1 (Section 3.18, Socioeconomics). This includes the Yukon-Kuskokwim (Y-K) region and the Native Village of Tyonek. These communities have greater proportions of low-income and minority populations as compared to those for the state of Alaska, and merit consideration of disproportionate impacts from the proposed Donlin Gold Project. Communication and outreach with these communities occurred throughout the scoping process, the public meetings on the Draft EIS, and in government-to-government consultation with Tribes, since community outreach is an important part of the EIS process. Sections 6.2 and 6.3 of Chapter 6, Consultation and Coordination, discuss these outreach and consultation efforts. This outreach effort identified many concerns, which are catalogued in the Scoping Report and the Comment Analysis Report. Many of the issues selected for further analysis in Chapter 6, Consultation and Coordination, reflect concerns raised by communities included in the environmental justice analysis.

EXPECTED EFFECTS SUMMARY

Alternative 1 - No Action

Under this alternative, the proposed project would not proceed. Socioeconomic impacts including employment and income from Donlin Gold exploration activities, which were realized in the Y-K region over approximately the previous decade, would cease. Increased time and labor may be available for subsistence, and subsistence resources and subsistence access would return to pre-project conditions. Under the No Action Alternative, Calista Corporation (Calista) and The Kuskokwim Corporation (TKC) would not achieve the mandate of Alaska Native Claims Settlement Act (ANCSA) that Calista develop its resources for the benefit of ANCSA shareholders. With the loss of previous income, Alternative 1 would cause a disproportionate adverse impact to minority and low-income communities of the Y-K region, raising an environmental justice concern.

Alternative 2 - Donlin Gold's Proposed Action

Alternative 2 would provide employment and income to the low-income and minority communities of the Y-K region, along with other revenues to ANCSA landowners, boroughs, and the State of Alaska.

Employment and income generated by the project may be used to support subsistence activities. Crooked Creek and Aniak residents would see displacement of access to subsistence uses at the Mine Site and in the Crooked Creek drainage. Migratory waterfowl users on the Bering Sea coast may perceive contamination of waterfowl accessing the tailings pond and pit lake. Subsistence fishing may be displaced or disrupted in the narrow reaches of the Kuskokwim River from project-related barging. Increased hunting activity in the vicinity of the Farewell Airstrip may also affect subsistence uses by McGrath and Nikolai residents.

New employment may increase access and affordability of healthcare, and food security would improve. There could be potential adverse human health effects in the low-income and minority communities of the EIS Analysis Area from increases in rates of accidents and injury, exposure to potentially hazardous materials, and increases in infectious diseases. There could also be both adverse and beneficial human health impacts from an increase or decrease in psychosocial stress and substance abuse.

While there would be beneficial effects from the project, adverse impacts would disproportionately impact minority and low-income populations, and Alternative 2 would raise an environmental justice concern. Alternative 2-North Option impacts would be the same as Alternative 2.

OTHER ALTERNATIVES - This section discusses differences of note between Alternative 2 and the following alternatives, but does not include a comprehensive discussion of each alternative's impacts if they are the same as or similar to Alternative 2 impacts.

Alternative 3A - LNG Powered Trucks

Alternative 3A would reduce fuel barging and impacts to subsistence fishing in the narrow reaches of the Kuskokwim River. There would be small decreases in total project employment and expenditures. There would be decreased potential for water transport injury, and a reduction of hazardous contaminants in the air and surface water.

Alternative 3B - Diesel Pipeline

Alternative 3B would eliminate diesel fuel barging after the construction phase and there would be small decreases in total project employment and expenditures due to reduced barging requirements. The potential expansion of the existing Tyonek North Foreland Barge Facility would create job opportunities in Tyonek. There would be limited adverse impacts to subsistence harvest of marine mammals near Tyonek, decreased potential for water transport injury, and a reduction of hazardous contaminants in the air and water. More extensive infrastructure required for spill response capacity would result in more access and potential out-of-region competition for subsistence users. The Port MacKenzie Option would result in impacts similar to Alternative 3B, though the location of impacts would shift away from Tyonek. The Collocated Natural Gas and Diesel Pipeline Option would result in larger employment levels and purchases of equipment and supplies during the Construction Phase, while other impacts would be similar to those of a single diesel pipeline.

Alternative 4 - Birch Tree Crossing (BTC) Port

Alternative 4 would reduce river barging distance and require construction of a longer mine access road to the upriver barge landing. There would be slight increases in employment and expenditures for a longer road. Impacts to subsistence fishing would be reduced in minority and low-income communities in the narrow reaches of the Kuskokwim River above Birch Tree Crossing (BTC). There may be small increases in impacts to subsistence from the access road, such as displacement of moose and black bear, and displacement of some subsistence activities for Aniak and Chuathbaluk residents. There would be reduced risks of water transportation injuries, but increased risks of surface transportation injuries.

Alternative 6A - Dalzell Gorge Route

Alternative 6A would require larger workforce and higher expenditures due to more horizontal directional drilling (HDD) than Alternative 2. Enhanced economic benefits may facilitate subsistence activities and healthcare access.

3.19.1 REGULATORY ENVIRONMENT

Executive Order (EO) 12898 (1994) requires federal agencies to identify and address disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on low-income populations and minority communities, including Alaska Native populations.

"Minority community" and "low-income" are defined for the purposes of analyzing the effects of the agencies' actions on potentially affected populations. A minority is any individual self-identified as American Indian, Alaska Native, Asian or Pacific Islander, African American, or Hispanic (of any race). A minority community is defined for this project as a community with a majority (50 percent or greater) minority population. This threshold is specified by the Council on Environmental Quality's (CEQ) 1997 Environmental Justice Guidance under the National Environmental Policy Act (NEPA).[1] A low-income population is a community or group with a median household income at or below the U.S. Department of Health and Human Services poverty guidelines.[2]

"Disproportionate high and adverse human health or environmental effects" are defined when the health effects of an action are significant or above generally accepted norms (e.g., infirmity, illness, or death); the risk or rate of hazard exposure is significant and exceeds the rate to the

[1] Low-income populations and minority communities are defined as any readily identifiable group of minority or low-income persons who live in geographic proximity and their population percentage is meaningfully greater than the low-income/minority population percentage in an appropriate geographic unit of analysis (CEQ 1997).

[2] Alternatively, low-income populations can be identified with poverty data from the U.S. Census Bureau. To determine who is considered low-income, the U.S. Census Bureau uses a set of monetary income thresholds that vary by family size and composition. Poverty thresholds do not vary geographically; however, they are updated annually for inflation using the consumer price index. Poverty guidelines are an administrative tool that determines financial eligibility for certain programs and are comparable to the poverty thresholds calculated by the U.S. Census Bureau for statistical purposes.

general population; or the population is exposed to cumulative or multiple adverse exposures to environmental hazards.

In addition, impacts to Alaska Native populations may be different from impacts on the general population due to a community's distinct cultural practices (CEQ 1997). Therefore, agencies would consider impacts to subsistence as a component of the environmental justice analysis.

The Alaska Native Claims Settlement Act (ANCSA) forms an important part of the context for the Donlin Gold Project on lands owned by ANCSA corporations, Calista and TKC. Congress enacted ANCSA in 1971 to settle unresolved claims of aboriginal title to lands traditionally used throughout Alaska, and to convey title to land and compensation funds to Alaska Natives, through their village and regional corporations. The settlement was intended to advance the self-determination and socioeconomic interests of Alaska Natives.

3.19.2 AFFECTED ENVIRONMENT

The project's potentially impacted population includes those who live, work, subsist, or recreate within the vicinity of the EIS Analysis Area, and shareholders in the Alaska Native regional and village corporations who live outside the immediate project area. Regional corporations include Calista, Doyon Limited (Doyon), Cook Inlet Region Inc. (CIRI), and village corporations such as TKC. The Mine Site is within the Y-K region. This region includes 56 villages within the Bethel Census Area, the Kusilvak[3] Census Area, and parts of the Yukon-Koyukuk Census Area, as well as the Native Village of Tyonek, Beluga, and Unalaska. These regions are described in Section 3.18, Socioeconomics. Figure 3.18-1 and Figure 3.18-2 in Section 3.18, Socioeconomics, map the Y-K region and Kuskokwim River communities. Figure 3.19-1 shows minority and low-income communities, which includes the communities of the Y-K region. The ethnicity and poverty characteristics for the EIS Analysis Area are displayed in Table 3.19-2. Statistics for the state of Alaska are provided as a reference population.

3.19.2.1 MINORITY POPULATION STATUS

The population that would be affected by the mine site infrastructure and employment, transportation infrastructure, and a portion of the pipeline lives in the Bethel, Kusilvak, and Yukon-Koyukuk census areas. In the 2010 Census, the Bethel Census Area population was 89 percent minority (87 percent Alaska Native). The Kusilvak Census Area population was 97 percent minority (97 percent Alaska Native), and the Yukon-Koyukuk Census Area population was 78 percent minority (71 percent Alaska Native). In contrast, the state of Alaska population was 33 percent minority (19.5 Alaska Native) (USCB 2010). Anchorage, the Kenai Peninsula Borough, and the Matanuska-Susitna Borough (MSB) do not have minority population status. However, the Native Village of Tyonek within the Kenai Peninsula Borough is a predominantly Alaska Native community. Section 3.18, Socioeconomics, provides more detailed demographic

[3] As footnoted in Section 3.18 Socioeconomics, the Kusilvak Census Area is formerly known as the Wade Hampton Census Area. The name change was effective July 1, 2015, and is noted on the U.S. Census Bureau website at: http://www.census.gov/geo/reference/county-changes.html. There was only a change in name, and there was no change to the boundary of the census area.

information about the populations within the EIS Analysis Area. Table 3.19-1 provides a brief overview of ethnicity characteristics by region or census area within in the EIS Analysis Area.

Table 3.19-2 displays the percent Alaska Native populations and percent of persons below poverty level at the community level for the 56 communities of the Y-K region. The percent American Indian and Alaska Native alone or in combination with one or more other races is taken from the 2010 Census. The 2010 Census did not record persons below poverty level at the community scale. While having a wide range of a margins of error, the best available estimates for poverty at the community scale are the Census 2011 to 2015 American Community Survey 5-Year Estimates. Data are included for the communities of the Y-K region where available from these two sources, and the State of Alaska is provided as a reference population.

The Native Village of Tyonek is considered a minority and low-income community in the EIS Analysis Area, but is located outside of the Y-K region. In the Native Village of Tyonek, 89 percent of the population is American Indian and Alaska Native alone or in combination with one or more other races (USCB 2010), and an estimated 21.0 percent of the population is below poverty level (USCB 2015). The community of Beluga is also located outside of the Y-K region in the Kenai Peninsula Borough. It is not a minority community, but is a low-income community. Unalaska is outside of the Y-K region in the Aleutians West Census Area. Unalaska has a high proportion of Asian residents, and is a minority community. Unalaska is not considered a low-income community. The Native Village of Tyonek, Beluga, and Unalaska are included in Table 3.19-2.

The communities of the Y-K region, the Native Village of Tyonek, and Unalaska meet the minority status definition (Table 3.19-2). This factor alone requires an environmental justice analysis under Executive Order 12898.

3.19.2.2 LOW-INCOME POPULATION STATUS

The October 2013 issue of Alaska Economic Trends focused on the Y-K Delta region, which was defined as the Bethel and Kusilvak census areas. It explains that the Y-K Delta resembles other rural areas in the state in several ways, but economically it is the most challenged area.

Rates of poverty and unemployment in the Y-K region (described in Section 3.18, Socioeconomics), excluding Bethel, are among the highest in the nation. Similarly, average wages per job and per capita incomes are among the lowest. The Kusilvak Census Area's per capita income was $12,000 in 2015 (ADOL 2016) with 33 percent of the population below the poverty level (USCB 2015). This is one of the lowest census area per capita incomes in Alaska, and is less than half the statewide average of $33,400. The Bethel Census Area ranked sixth-lowest at $17,700 (ADOL 2016) with 25 percent of residents below poverty thresholds (USCB 2015). The Yukon-Koyukuk Census Area per capita income was $21,000 with 22 percent below poverty, compared to a statewide average of approximately 10 percent.

Table 3.19-1: Ethnicity Characteristics of the EIS Analysis Area 2015

	White[2]	Black or African American[3]	Alaska Native and American Indian[3]	Asian[3]	Native Hawaiian and Other Pacific Islander[3]	Some Other Race[2]	Hispanic or Latino[4]	Total Minority[5]	Living in Poverty
	Percent of Total Population								
Y-K region[1]	4.3	0.3	95.3	0.3	0.1	0.1	0.3	95.6	NA
Yukon-Koyukuk Census Area	21.8	1.2	75.0	0.6	0.1	0.2	1.9	76.3	22.4
Bethel Census Area	11.3	1.2	85.0	1.7	0.5	0.4	1.8	88.3	25.2
Kusilvak Census Area[6]	4.5	0.8	94.3	0.5	.02	0	1.0	95.5	33.3
City of Bethel	25.5	2.9	65.7	3.6	1.4	.09	3.6	73.6	NA
City of Unalaska	28.7	5.9	5.8	48.3	2.9	6.6	11.4	64.7	NA
Kuskokwim River Communities[1]	4.2	0.3	95.5	0.2	0.1	0.1	0.3	95.8	NA
Kenai Peninsula Borough	81.7	1.2	12.1	2.4	0.4	0.9	3.7	17.4	10.0
Native Village of Tyonek	1.9	0.9	97.7	0.0	4.7	0.0	5.3	98.1	NA
Matanuska-Susitna Borough	80.8	2.1	10.6	2.6	0.7	0.9	4.5	18.3	10.0
Municipality of Anchorage	60.3	8.5	12.3	11.4	3.0	2.5	8.6	37.2	8.2
State of Alaska	62.4	5.2	19.3	7.7	1.7	1.7	6.5	35.9	10.2

Notes:

1 Excluding City of Bethel. (Refer to Section 3.18, Socioeconomics for further definitions of this region).
2 Alone, non-Hispanic.
3 Alone or in combination with one or more other races.
4 Of any race.
5 Minority population = Total population – (White, non-Hispanic population + Some Other Race Alone, non-Hispanic population).
6 The Kusilvak Census Area is formerly known as the Wade Hampton Census Area. The name change was effective July 1, 2015, and is noted on the U.S. Census Bureau website at: http://www.census.gov/geo/reference/county-changes.html.

Source: USCB 2015

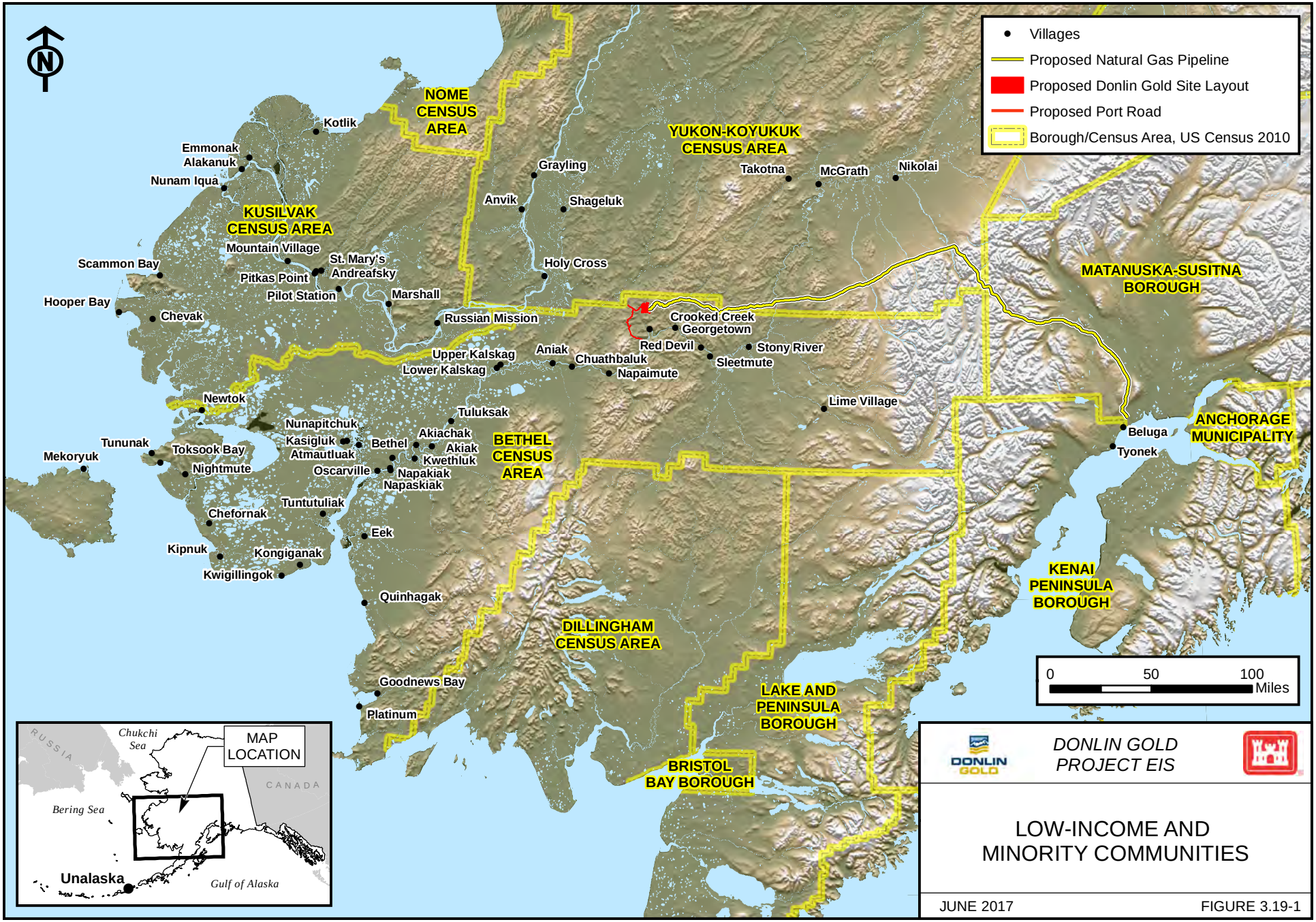
Villages
Proposed Natural Gas Pipeline
Proposed Donlin Gold Site Layout
Proposed Port Road
Borough/Census Area, US Census 2010
NOME CENSUS AREA
YUKON-KOYUKUK CENSUS AREA
KUSILVAK CENSUS AREA
BETHEL CENSUS AREA
DILLINGHAM CENSUS AREA
BRISTOL BAY BOROUGH
LAKE AND PENINSULA BOROUGH
KENAI PENINSULA BOROUGH
MATANUSKA-SUSITNA BOROUGH
ANCHORAGE MUNICIPALITY
Kotlik
Emmonak
Alakanuk
Nunam Iqua
Grayling
Takotna
McGrath
Nikolai
Anvik
Shageluk
Mountain Village
Scammon Bay
St. Mary's
Andreafsky
Pitkas Point
Pilot Station
Marshall
Holy Cross
Hooper Bay
Chevak
Russian Mission
Crooked Creek
Georgetown
Red Devil
Stony River
Sleetmute
Upper Kalskag
Lower Kalskag
Aniak
Chuathbaluk
Napaimute
Newtok
Tuluksak
Lime Village
Nunapitchuk
Akiachak
Kasigluk
Bethel
Akiak
Atmautluak
Kwethluk
Tununak
Toksook Bay
Mekoryuk
Nightmute
Oscarville
Napakiak
Napaskiak
Beluga
Tyonek
Tuntutuliak
Chefornak
Eek
Kipnuk
Kongiganak
Kwigillingok
Quinhagak
Goodnews Bay
Platinum
0
50
100
Miles
MAP LOCATION
Chukchi Sea
RUSSIA
CANADA
Bering Sea
Unalaska
Gulf of Alaska
DONLIN GOLD
DONLIN GOLD PROJECT EIS
LOW-INCOME AND MINORITY COMMUNITIES
JUNE 2017
FIGURE 3.19-1

Table 3.19-2: Ethnicity and Poverty Level of the EIS Analysis Area, by Community

Community	Census Area or Borough	Incorporation Type	Percent American Indian and Alaska Native Alone or Combo[1]	Percent Persons Below Poverty Level[2]
Alakanuk	Kusilvak Census Area	City	95.1	44.6
Emmonak	Kusilvak Census Area	City	96.3	25.8
Kotlik	Kusilvak Census Area	City	97.1	31.6
Nunam Iqua	Kusilvak Census Area	City	91.6	16.3
Mountain Village	Kusilvak Census Area	City	91.7	29.0
Saint Mary's	Kusilvak Census Area	City	91.9	20.8
Pitkas Point	Kusilvak Census Area	Unincorporated Census Designated Place	97.3	25.7
Pilot Station	Kusilvak Census Area	City	98.1	39.3
Marshall	Kusilvak Census Area	City	94.8	20.3
Russian Mission	Kusilvak Census Area	City	95.9	33.3
Scammon Bay	Kusilvak Census Area	City	99.4	44.1
Hooper Bay	Kusilvak Census Area	City	94.7	40.9
Chevak	Kusilvak Census Area	City	94.7	32.8
Nikolai	Yukon-Koyukuk Census Area	City	82.9	21.1
McGrath	Yukon-Koyukuk Census Area	City	46.0	16.8
Takotna	Yukon-Koyukuk Census Area	Unincorporated Census Designated Place	37.9	32.7
Grayling	Yukon-Koyukuk Census Area	City	87.4	42.0
Anvik	Yukon-Koyukuk Census Area	City	93.2	16.3
Shageluk	Yukon-Koyukuk Census Area	City	90.9	25.6
Holy Cross	Yukon-Koyukuk Census Area	City	91.9	13.1
Bethel	Bethel Census Area	City	66.2	11.4
Mekoryuk	Bethel Census Area	City	93.4	18.4
Toksook Bay	Bethel Census Area	City	92.2	14.6
Tununak	Bethel Census Area	Unincorporated Census Designated Place	94.6	32.9
Nightmute	Bethel Census Area	City	94.7	26.6
Newtok	Bethel Census Area	Unincorporated Census Designated Place	96.1	42.3
Nunapitchuk	Bethel Census Area	City	95.8	43.9
Atmautluak	Bethel Census Area	Unincorporated Census Designated Place	97.8	25.6
Napaskiak	Bethel Census Area	City	96.6	28.3

Table 3.19-2: Ethnicity and Poverty Level of the EIS Analysis Area, by Community

Community	Census Area or Borough	Incorporation Type	Percent American Indian and Alaska Native Alone or Combo[1]	Percent Persons Below Poverty Level[2]
Napakiak	Bethel Census Area	City	97.2	53.1
Tuntutuliak	Bethel Census Area	Unincorporated Census Designated Place	95.9	42.0
Chefornak	Bethel Census Area	City	95.7	18.4
Kipnuk	Bethel Census Area	Unincorporated Census Designated Place	97.7	35.1
Kongiganak	Bethel Census Area	Unincorporated Census Designated Place	95.8	26.2
Kwigillingok	Bethel Census Area	Unincorporated Census Designated Place	95.1	21.5
Quinhagak	Bethel Census Area	City	93.7	38.0
Goodnews Bay	Bethel Census Area	City	94.7	36.2
Platinum	Bethel Census Area	City	89.1	46.8
Oscarville	Bethel Census Area	Unincorporated Census Designated Place	91.8	27.3
Kasigluk	Bethel Census Area	Unincorporated Census Designated Place	94.8	35.8
Akiachak	Bethel Census Area	Unincorporated Census Designated Place	95.1	26.1
Akiak	Bethel Census Area	City	92.9	31.3
Kwethluk	Bethel Census Area	City	93.9	28.3
Eek	Bethel Census Area	City	97.6	21.2
Tuluksak	Bethel Census Area	Unincorporated Census Designated Place	95.0	74.7
Lower Kalskag	Bethel Census Area	City	92.6	35.2
Upper Kalskag	Bethel Census Area	City	82.1	18.3
Aniak	Bethel Census Area	City	72.2	19.0
Chuathbaluk	Bethel Census Area	City	88.9	50.5
Napaimute	Bethel Census Area	Unincorporated Census Designated Place	N/A	N/A
Crooked Creek	Bethel Census Area	Unincorporated Census Designated Place	85.1	39.8
Red Devil	Bethel Census Area	Unincorporated	57.6	31.8

Table 3.19-2: Ethnicity and Poverty Level of the EIS Analysis Area, by Community

Community	Census Area or Borough	Incorporation Type	Percent American Indian and Alaska Native Alone or Combo[1]	Percent Persons Below Poverty Level[2]
		Census Designated Place		
Georgetown	Bethel Census Area	Unincorporated Census Designated Place	N/A	N/A
Sleetmute	Bethel Census Area	Unincorporated Census Designated Place	76.7	33.7
Stony River	Bethel Census Area	Unincorporated Census Designated Place	84.8	62.5
Lime Village	Bethel Census Area	Unincorporated Census Designated Place	93.3	85.7
Native Village of Tyonek	Kenai Peninsula Borough	Unincorporated Census Designated Place	89.0	21.0
Beluga	Kenai Peninsula Borough	Unincorporated Census Designated Place	10.0	33.3
Unalaska	Aleutians West Census Area	City	6.1[3]	7.6
State of Alaska	Reference Population	State	19.5	10.2

Notes:

1 Source of the data for this column is the 2010 Census, where statistics are available at the community level.
2 Source of the data for this column is the 2010 Census Bureau's 2011-2015 American Community Survey 5-Year Estimates, where available at the community level.
3 While Unalaska does not have a large American Indian and Alaska Native population, it has a 66.2 percent minority population largely due to the high proportion of Asian community members as shown in Table 3.19-1.

Source: USCB 2010, 2015

Income and unemployment statistics are not consistently available for the Kuskokwim River communities. The 2010 Census did not record persons below poverty level at the community scale. While having a wide range of a margin of error, the best available estimates for poverty at the community scale are the Census 2011 to 2015 American Community Survey 5-Year Estimates, as shown in Table 3.19-2. Based on the census area data, it is likely that unemployment rates in these communities are among the highest in the state and per capita incomes are among the lowest.

The communities of the Y-K region, the Native Village of Tyonek, and Beluga meet the definition of low-income populations (Table 3.19-3). Thus, an environmental justice analysis is required for the Donlin Gold Project.

Table 3.19-3: Minority and Low-Income Evaluations for Determining Communities with Environmental Justice Concerns

	Total Minority[2]	Poverty Rates in excess of Poverty Rate for the State of Alaska	Meets Minority or Low-Income Definitions for Environmental Justice
Y-K region [1]	Yes	Yes	Yes
Yukon-Koyukuk Census Area	Yes	Yes	Yes
Bethel Census Area	Yes	Yes	Yes
Kusilvak Census Area	Yes	Yes	Yes
City of Bethel	Yes	Yes	Yes
City of Unalaska	Yes	No	Yes
Kuskokwim River Communities[1]	Yes	Yes	Yes
Kenai Peninsula Borough	No	No	No
Native Village of Tyonek	Yes	Yes	Yes
Beluga	No	Yes	Yes
Matanuska-Susitna Borough	No	No	No
Municipality of Anchorage	No	No	No
State of Alaska	No	No	No

Notes:

1 Excluding City of Bethel. (Refer to Section 3.18, Socioeconomics for further definitions of this region).
2 Minority population = Total population – (White, non-Hispanic population + Some Other Race Alone, non-Hispanic population).

Source: USCB 2016

3.19.2.3 RELATIONSHIP TO SUBSISTENCE, HEALTH, AND ENVIRONMENT

Environmental justice analysis is an intersection between several resource topics. The relationship includes subsistence users, subsistence resources, environmental impacts, socioeconomic impacts, and community health. The biological and physical environments intersect with social structures to impact low-income and minority communities. Project-related impacts to subsistence resources and uses are described in Section 3.21, Subsistence. Project-related impacts to human health are described in Section 3.22, Human Health, including effects from changes in air quality and water quality, and potential risks from subsistence food consumption. A focused risk analysis (FRA) (Appendix AB) was conducted to evaluate the potential risks and hazards of exposure to Project-related hazardous chemicals. Section 3.19.3 examines the Environmental Justice effects for all alternatives, recognizing that the affected population of each action alternative is generally the same.

3.19.2.4 COMMUNICATION AND OUTREACH

A thorough scoping process, government-to-government consultation with Tribes, and community outreach has been a major part of the EIS process. Sections 6.2 and 6.3 of Chapter 6, Consultation and Coordination, discuss the extent of these outreach and consultation efforts in detail. This outreach effort identified many concerns, which are catalogued in the Scoping

Report and the Comment Analysis Report (CAR). Many of the issues selected for further analysis in Chapter 6, Consultation and Coordination, reflect concerns raised by communities represented in the environmental justice analysis.

In addition to scoping and government-to-government consultation processes, additional outreach was conducted with communities in the region. Community outreach included two workshops to listen to Traditional Ecological Knowledge (TEK) shared by elders and community leaders. TEK is a detailed and dynamic body of wisdom about the local environment based on the traditions of living from the land and waters. In November 2013, the first TEK workshop included 13 local experts from Stony River to Tuntutuliak. They met with agency representatives in Aniak to share stories and offer insights from TEK and subsistence. The second TEK workshop was held in March 2014, when leaders from 13 communities convened with agency representatives for a dialogue about the current status of subsistence fish and wildlife and potential impacts from the Donlin Gold Project.

Another outreach effort included three interview projects, the first of which focused on the impacts to families and communities from the "boom and bust" at the historic Red Devil Mine (URS 2014d). There are many differences between historic mine engineering and regulatory oversight compared to the modern setting of the Donlin Gold Project. However, the experiences of families from the Red Devil Mine era identified topics of local concern to address in the development of the Donlin Gold Project. Refer to Section 3.20.2.2.4, Cultural Resources, for additional description of the outreach effort and issues identified.

Another interview project explored potential sociocultural impacts to subsistence from employment and new income at the Donlin Gold Mine (AECOM 2015a). Eight communities participated, including: Aniak, Bethel, Chuathbaluk, Crooked Creek, Lower Kalskag, Sleetmute, Stony River, and Upper Kalskag. These interviews identified benefits and adverse impacts on the future of subsistence. In 2015, 26 interviews were conducted with tribal, municipal and regional service organization leaders in the same eight communities and Bethel concerning current leadership strengths and challenges, as well as future challenges to their governance capacities that may arise if the Donlin Gold Project were to go forward (AECOM 2016d).

The combination of additional outreach efforts with the scoping, public meetings on the Draft EIS, and government-to-government consultation has provided ongoing opportunities for local residents to engage in the EIS process. See Chapter 6, Consultation and Coordination, for information on outreach activities.

3.19.2.5 CLIMATE CHANGE

Climate change effects on the atmosphere, water resources, permafrost, vegetation, wildlife, and subsistence may have ramifications for low-income and minority populations in the EIS Analysis Area. The EPA's Plan EJ 2014 Progress Report noted the increased vulnerability and existing disproportionate impact for low-income and minority populations to climate change (EPA 2014i). The President's Climate Action Plan (Executive Office of the President 2013) notes an initiative to assist tribal communities on climate change preparedness. Under the current administration this was rescinded in 2017 by EO 13783.

Permafrost thaw may increase scour, aufeis or glaciation, subsidence, and erosion. These processes add costs for maintaining housing and community facilities, which may stretch both individual and public budgets for low-income communities. Indirectly, erosion or ground

subsidence may damage community sanitation facilities, which could increase risks for infectious disease and cause other adverse human health effects in low-income and minority communities. Stress caused by worries and adaptations for climate change may also indirectly have an adverse impact to rates of non-communicable and chronic health conditions in low-income and minority communities. This marginal increase in stress may have more impact to populations with existing anxiety over socioeconomic conditions.

Climate change may have contributed to recent declines in moose in GMU 19A and Chinook salmon populations in the Kuskokwim River. These declines may affect food security, nutrition, and cultural practices tied to subsistence in low-income and minority communities in the EIS Analysis Area. For the Kuskokwim River area, the Alaska Native Tribal Health Consortium (ANTHC) Local Environmental Observer (LEO) Network includes observations of recent low snow years, thin river ice, and open water, which may be related to climate changes. Less predictable ice on the Kuskokwim River particularly impacts the feasibility and safety of travel on frozen waterways for the low-income and minority populations that depend upon this form of access in subsistence pursuits, and who may not have the means for other forms of travel (such as more expensive flights).

3.19.3 ENVIRONMENTAL CONSEQUENCES

As described in Section 3.19.1, Executive Order 12898 requires federal agencies to identify and address "disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations," including Alaska Native communities. Much of the population within the EIS Analysis Area, including the Bethel, Kusilvak, and Yukon-Koyukuk census areas, has a high proportion of Alaska Natives and incomes lower than the rest of the state. The purpose of this section is to summarize potential impacts to minority and low-income communities, including changes to socioeconomics, human health, and subsistence resulting from the implementation of the alternatives, and to conclude whether there may be disproportionate adverse effects to minority or low-income communities triggering an environmental justice concern.

Potential impacts to minority and low-income communities were determined by assessing the magnitude (intensity), duration, extent or scope, and context of anticipated impacts using the impact methodology described in Table 3.19-4. As noted, environmental justice analysis is the intersection of several resources, including socioeconomic, subsistence, and health. Sections 3.18, Socioeconomics; 3.21, Subsistence; and 3.22, Human Health, describe impacts to the entire population in the EIS Analysis Areas for these resources. Section 3.19.3 draws upon information presented in those sections specific to impacts upon minority and low-income communities in order to develop conclusions for environmental justice concerns.

Table 3.19-4 displays the impact methodology for determining socioeconomic and subsistence impacts as pertaining to environmental justice concerns. Drawing on Alaska Department of Health and Social Services (ADHSS) terminology for health impact assessments, Table 3.19-5 and Table 3.19-6 show the impact assessment methodology for human health impacts pertaining to environmental justice concerns. See Section 3.22.4.2 (Human Health) for more discussion on human health impact methods and conclusions.

Table 3.19-4: Environmental Justice Impact Methodology for Socioeconomics and Subsistence

Type of Effect	Impact Factor	Assessment Criteria		
Environmental Justice	Magnitude or Intensity (Socio-economics)	Changes in socioeconomic indicators in unique communities are difficult to perceive or measure, generally within normal variation and trends or <5% increase or decrease. May alter but does not impair functions of affected sector(s).	Changes in socioeconomic indicators in unique communities are slightly outside normal variation and trends or between 5% to 10% increase or decrease.	Changes in socioeconomic indicators in unique communities are well outside normal variation and trends or greater than 10% increase or decrease.
	Magnitude or Intensity (Subsistence)	Changes would necessitate small adjustments in harvest pattern. Alternative resources are readily available at low cost and effort increases of less than 10%, resulting in reduction in overall harvest success of less than 10%.	Changes require adjustments affecting high productivity subsistence resources or more than one seasonal pattern. Alternative resources available at cost and effort increases of up to 25%, resulting in reduction in overall harvest success of 25% or less.	Changes necessitate large-scale changes affecting high productivity resources or harvest practices through multiple seasons of the year. Alternative resources unavailable or available only at cost and effort increases greater than 25%, resulting in reduction in overall harvest success greater than 25%.
	Duration	Changes would last for the duration of the Construction Phase and would be expected to return to pre-activity levels after actions causing impacts were to cease.	Changes would last for the life of the project.	Changes would extend beyond the life of the project and after Closure.
	Geographic Extent	Affects unique communities within a subregion, such as the Upper Kuskokwim, Central Kuskokwim, etc.	Affects unique communities throughout the EIS Analysis Area.	Affects unique communities outside the EIS Analysis Area.
	Context	Affects populations that are not minority or low-income.		Affects minority or low-income populations, including Alaska Native populations.

Table 3.19-5: Environmental Justice Impact Dimensions for Human Health

Step 1				
Impact Dimensions				
Impact Rating Score	**A – Health Effect (+/-)**	**B- Duration**	**C-Magnitude**	**D- Extent**
0	Effect is not perceptible	Less than 1 month	Minor	Individual cases
1	(+/-) minor benefits or risks to injury or illness patterns (no intervention needed)	Short-term: 1-12 months	Those impacted will: • Be able to adapt to the impact with ease and maintain pre- impact level of health, • See noticeable but limited and localized improvements to health conditions.	Local: small limited impact to households
2	(+/-) moderate benefits or risks to illness or injury patterns (intervention needed, if negative)	Medium-term: 1 to 6 years	Those impacted will: • Be able to adapt to the health impact with some difficulty and will maintain pre- impact level of health with support, or • Experience beneficial impacts to health for specific population some maintenance may still be required.	Entire potentially affected communities; village level
3	(+/-) severe benefits or risks: marked change in mortality and morbidity patterns (intervention needed, if negative)	Long-term: more than 6 years / life of project and beyond	Those impacted will: • Not be able to adapt to the health impact or to maintain pre-impact level of health • See noticeable major improvements in health and overall quality of life	Extends beyond potentially affected communities; regional and state-wide levels

Source: ADHSS 2015

Table 3.19-6: Environmental Justice Impact Likelihood Rating and Overall Impact Rating for Human Health

Step 2	Step 3						
Impact Level (Use Score from Step 1 to choose range)	Likelihood Rating						
	Extremely Unlikely (<1%)	Very Unlikely (1-10%)	Unlikely (10-33%)	About as likely as Not (33-66%)	Likely (66-90%)	Very Likely (90-99%)	Virtually Certain (>99%)
1-3	♦	♦	♦	♦	♦♦	♦♦	♦♦
4-6	♦	♦	♦	♦♦	♦♦	♦♦	♦♦♦
7-9	♦♦	♦♦	♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦♦
10-12	♦♦♦	♦♦♦	♦♦♦	♦♦♦♦	♦♦♦♦	♦♦♦♦	♦♦♦♦
Step 4	**Impact Rating**						
	Category 1= ♦ Category 2 =♦♦ Category 3 = ♦♦♦ Category 4 = ♦♦♦♦						

Source: ADHSS 2011, 2015

The context for all environmental justice impacts is unique in that the analysis is mandated under Executive Orders and considers impacts to the communities with primarily low-income and minority populations identified in the Affected Environment (Section 3.19.2). Data limitations preclude a separate quantitative analysis of the effects of each project component (Mine Site, Transportation Corridor, and Pipeline). For the three resource areas considered in the analysis for environmental justice, socioeconomic and human health data are aggregated for all components and subsistence differences are noted in the text by component. The summary of impacts for environmental justice does not separate components.

3.19.3.1 ALTERNATIVE 1 – NO ACTION

Under the No Action Alternative, the Donlin Gold Project would not receive permits, and Donlin Gold would not establish a Mine Site, develop transportation facilities, or construct a natural gas pipeline. Baseline employment for exploration and permitting would not continue. Alternative 1 would maintain existing trends of communities, such as community facility projects.

Reductions in job opportunities would affect the minority (Alaska Native) and low-income communities in the Y-K region. Donlin Gold has been an important employer in recent years, and the loss of these jobs would not be easily offset. As a result, some people may leave the Y-K region under the No Action Alternative. Out-migration may cause an erosion of economic stability and social integrity in Y-K communities. Impacts to areas outside of the Y-K region would not be noticeable.

The advance royalties that Donlin Gold pays to Calista (estimated at $1 million per year) would cease under the No Action Alternative. These revenues contribute to dividends and employment opportunities Calista provides to its shareholders. This would affect residents of the minority (Alaska Native) and low-income communities of the Y-K region. Due to sharing requirements under Section 7(i) of ANCSA, this would also affect Alaska Native shareholders

outside the region, which may or may not raise environmental justice concerns depending on the ethnic composition and income levels of the communities involved. Though the agreement is confidential, the negotiated payments to TKC would cease under the No Action Alternative, as would the Donlin Gold scholarship contributions and shareholder hire opportunities. These revenues directly benefit TKC shareholders through community development, dividends, training, and job opportunities (Section 3.18.2.1, Socioeconomics.)

Direct and indirect socioeconomic effects from the No Action Alternative in minority and low-income communities would result in changes in socioeconomic indicators that are difficult to perceive or measure. Impacts to areas outside of the Y-K region would not be noticeable, and minority and low-income communities would bear a disproportionate share of adverse effect from the loss of jobs, income, and sales.

Without disturbance from exploration activities, habitat would recover, and subsistence resources would reoccupy the exploration camp vicinity, and subsistence harvests would be re-established. At the Mine Site, subsistence resources and access for Crooked Creek subsistence hunters would return to pre-project levels under the No Action Alternative. There would be no direct effect to competition for subsistence resources. Local employment from exploration and environmental studies for the proposed project would not continue, possibly leading to some families leaving the region. Potential effects to socio-cultural aspects of subsistence would include a loss of income to fund subsistence activities, while labor and time available for subsistence would increase.

Direct and indirect human health impacts associated with the loss of jobs and decrease in household income would include potential increases or decreases in social determinants of health, such as income, psychosocial stress, substance abuse, and family stability. Impacts to areas outside of the Y-K region would be imperceptible.

3.19.3.1.1 SUMMARY FOR ALTERNATIVE 1

The intensity of impacts would vary with loss of exploration activity employment and income, cessation of disturbance and displacement of subsistence resources and uses at the Mine Site, and return to baseline conditions in human health. The duration of these effects under Alternative 1 would persist after actions that caused the impacts to cease. The extent of effects would vary from localized impacts near the Mine Site, to changes in employment, income, and human health throughout the EIS Analysis Area. Impacts beyond the EIS Analysis Area would be limited, but may include a reduction in natural resource revenue-sharing among Alaska Native corporations. The context of these impacts would affect predominantly minority (Alaska Native) and low-income communities of the Y-K region. Under the No Action Alternative, Calista and TKC would not achieve the mandate of ANCSA that Calista develop its resources for the benefit of ANCSA shareholders. Alternative 1 would have disproportionately adverse effects on minority and low-income populations, such as the effects from the reduction in income that would be concentrated in the Y-K region. Thus, Alternative 1 would raise an environmental justice concern.

3.19.3.2 ALTERNATIVE 2 – DONLIN GOLD'S PROPOSED ACTION

Based on comments on the Draft EIS from agencies and the public, one route option has been included in Alternative 2 to address concerns due to pipeline crossings of the Iditarod National Historic Trail (INHT):

- North Option: The MP 84.8 to 112 North Option would realign this segment of the natural gas pipeline crossing to the north of the INHT before the Happy River crossing and remain on the north side of the Happy River Valley before rejoining the alignment near MP-112 where it enters the Three Mile Valley. The North Option alignment would be 26.5 miles in length, compared to the 27.2 mile length of the mainline Alternative 2 alignment it would replace, with one crossing of the INHT and only 0.1 mile that would be physically located in the INHT right-of-way (ROW). The average separation distance from the INHT would be 1 mile.

3.19.3.2.1 EFFECTS FROM CHANGES IN SOCIOECONOMIC RESOURCES

Beneficial Donlin Gold Project employment and income effects would occur in the Y-K region, contrasting with the current high rates of unemployment in the area over the life of the mine. In terms of intensity, beneficial changes in socioeconomic indicators in the Y-K region would be well outside normal variation and trends or greater than 10 percent increase in employment during the construction Phase, and slightly outside of normal variation and trend, between 4 and 5 percent, during operations. The intensity of beneficial impacts would be reduced during Closure as employment would decrease to low levels. Under agreements with the ANCSA landowners, Donlin Gold is committed to hiring qualified Y-K region residents. During a Hooper Bay Scoping Meeting, Mr. Ben Nukusuk noted that, "Among our concerns I see great potential economic benefits to our people, which have been the poorest, if not the poorest, in our state" (URS 2013b).

Project payments to state and local governments would largely not be directed to minority and low-income communities, but could indirectly affect government jobs in these communities by providing funds to state budgets. Royalty payments to ANCSA corporations would provide a beneficial effect to shareholders in the Y-K region as well as outside of the area; royalty payments to shareholders outside of the Y-K region are not generally considered residents of a low-income or minority community. The magnitude of the effects of project payments to state and local governments and ANCSA corporations would be beneficial and range from <5 percent to 10 percent increase or decrease from normal variation limits and trends. These impacts would extend through the life of the project. Impacts to public infrastructure would be low, as camps housing workers would be self-contained and operated and maintained by Donlin Gold throughout all project phases.

3.19.3.2.2 EFFECTS FROM CHANGES IN SUBSISTENCE

Communities in the Y-K region have subsistence-based economies. While subsistence resources are important because of the high cost of grocery store food and the low number of jobs, subsistence activities also are a way of life that is woven into the culture and traditions of the Y-K region. During a Bethel Scoping Meeting, Mr. David Trantham noted his concern about subsistence resources in small, rural communities, particularly fish:

> That river is my supermarket…My…concern is about subsistence lifestyle, not only for my family, but for every family, especially those families that live in small communities (URS 2013b).

Mine Site: During Construction and Operations, localized habitat loss and noise disturbance may displace subsistence resources in the Crooked Creek drainage, including black bears, furbearers, waterfowl, and berries. Effects to subsistence fish in the Crooked Creek drainage would be limited. The affected areas are small portions of wildlife resource ranges.

During Construction and Operations, limitations on access and displacement of subsistence harvest areas would affect Crooked Creek residents' uses of black bear, furbearers and waterfowl, primarily due to noise disturbance in the Crooked Creek drainage. Berry picking by Aniak residents, in an area located north of the Mine Site, may also be displaced due to fugitive dust. For both communities these are not concentrated areas of harvest and represent small portions of the subsistence harvest areas for Crooked Creek and Aniak. Access to alternative areas is readily available at small cost and effort. No other Kuskokwim River communities have subsistence use areas in the vicinity of the Mine Site.

As an indirect effect, Bering Sea Coast villages' harvest of waterfowl may be lower due to the concerns of contamination from the Tailings Storage Facility, even though the biological analysis suggests very low risk (Section 3.21.6.1.2). In regard to competition for subsistence resources, employment at the Mine Site would have very little direct effect on competition, since employees are prohibited from hunting and fishing while working. In addition, since commuting to the remote work place is at no cost, very few employees from outside the EIS Analysis Area are expected to relocate to villages near the project. Increased employment and incomes may indirectly contribute to competition among residents in the Kuskokwim River drainage for scarce resources such as Chinook salmon and moose.

Increased incomes would benefit subsistence activities by defraying equipment and operating costs. With shareholder hire policies during Construction, beneficial effects of employment and income would reach an estimated 25 to 29 percent of households in the EIS Analysis Area. During Operations, from 8 to 9 percent of area households would see these benefits. For both phases, the percentage of households affected may be higher for communities located closer to the Mine Site.

Project employment may also result in out-migration of about half of employee households, with effects on community subsistence production and sharing. Rotating work shifts may provide adequate flexibility to support subsistence activities, though about half of employee households may also find this adversely affects subsistence activities.

Transportation Corridor: During Construction and Operations, subsistence resources would be affected by habitat loss in small acreages associated with the port sites, airstrip, and mine access road. Limited disturbance from river and ocean barge traffic would affect fish, marine mammals, and terrestrial mammals, with greater effects in the narrow and shallow segments of the river, such as near Aniak and the Oskawalik River. Fugitive dust from vehicle traffic would affect berry resources along the mine access road. Changes in abundance would be limited and likely to result in small decreases in harvest levels.

During Construction and Operations, subsistence activities near the mine access road and Angyaruaq (Jungjuk) Port site would be displaced, affecting residents of Crooked Creek and other Kuskokwim River villages. River barge traffic would intermittently disturb subsistence

fishing and moose hunting along the bank, with greater displacement in narrow and shallow segments of the Kuskokwim River near Birch Tree Crossing, Aniak, and Oskawalik River. Redirection to alternate times and places at low expense and effort would result in little change in harvest levels.

Sociocultural effects on subsistence from employment and income would be the same as at the Mine Site.

Pipeline: During the 2.5 years of Construction, 14,100 acres of habitat would be affected along the 316-mile pipeline corridor. Construction activities and noise would affect subsistence resources beyond the pipeline corridor, but would be unlikely to result in reduced abundance.

During Operations, the pipeline would be buried, with limited above ground facilities, and temporary construction facilities would be stabilized, recontoured and reclaimed. The right-of-way (ROW) would not be fenced, but would be brushed every 10 years to provide for visual monitoring. Little effect on resource abundance would be expected.

The Pipeline corridor overlaps with portions of the subsistence use areas of Crooked Creek, Stony River, McGrath, Nikolai, Skwentna, and Tyonek. Displacement would be greater during Construction and very limited during Operations and Closure. The ROW affects small portions of these subsistence use areas, and alternative areas would be available at low cost and effort, resulting in little change to harvest levels.

Impacts would be the same as with the Mine Site, except that increased access for fly-in hunters and trappers at Farewell Airstrip and the ROW to the north and west may result in a small increase in competition for McGrath and Nikolai subsistence users.

Impacts from competition and sociocultural aspects of employment and income would be the same as at the Mine Site.

All Components, Closure Phase: Disturbance to subsistence resources would be greatly reduced when mining activities cease. Reclamation of facilities would greatly reduce habitat displacement and over time, resources would return to pre-project levels. Subsistence access would return to pre-project levels, as displacement of subsistence use patterns would decrease. Fear of contamination of migratory waterfowl by the pit lake may continue indefinitely, although the biological analysis indicated little risk of actual contamination. After Closure, three decades of employment and incomes would cease. However, the skills and work experience gained at the Donlin Mine would be assets that the employees could use to obtain jobs at other projects, whether in the region, in Alaska, or elsewhere. Incomes to invest in subsistence activities could end, as would adverse effects of employment on out-migration and rotating shiftwork.

3.19.3.2.3 EFFECTS FROM CHANGES IN HEALTH RESOURCES

As discussed in Section 3.22 (Human Health), the Donlin Gold Project would generally bring economic benefits rated Category 3 that would be considered to be substantial for the residents of the affected communities to low-income and minority communities in the Y-K region, which could increase available funds to support subsistence activities, improve food security, and contribute to improving health. Adverse impacts rated Category 1 or 2 associated with increased economic resources could also include negative health consequences related to increases in substance abuse, potential accidents and injuries, exposure to hazardous

constituents, and infectious and non-communicable diseases, which are all subject to control and mitigation based on the proposed project plans (SRK 2018). Other potential impacts that were classified as Category 1 or 2 include both positive and negative effects related to family stress and stability, accidents by surface transportation, increases or decreases in infectious diseases and non-communicable diseases, access to water and sanitation and routine access to healthcare infrastructure and services.

Section 3.22, Human Health provides an analysis of the potential for contamination of subsistence fish by mercury and other chemicals of concern. It is very unlikely and it is not predicted that even combined exposures to mercury from multiple pathways related to the Donlin Gold Project (e.g., air inhalation, consumption of fish and game), would result in mercury concentrations in people that would exceed the health guidelines.

3.19.3.2.4 CLIMATE CHANGE

The Donlin Gold Project would contribute to climate change through the production of greenhouse gases as discussed in Section 3.8, Air Quality. The amount of greenhouse gas emissions from implementation of Alternative 2 is not likely to create additional climate change effects for low-income and minority communities in the EIS Analysis Area, and would not raise an environmental justice concern. However, if current climate change trends persist, impacts to low-income and minority populations would likely be similar to those discussed under the Affected Environment (Section 3.19.2), including existing disproportionate adverse impacts for low-income and minority communities. The existing disproportionate climate change impacts to low-income and minority communities are expected to continue into the future, but the project would not directly cause additional disproportionate climate change impacts to low-income and minority communities.

3.19.3.2.5 SUMMARY FOR ALTERNATIVE 2

As discussed above, Alternative 2 would result in a variety of direct and indirect impacts to socioeconomics, subsistence, and human health as they relate to environmental justice. Table 3.19-7 provides a summary of impacts from Alternative 2.

Alternative 2 would provide employment and income to the Y-K region, an area with notably low per capita incomes, high unemployment, and high poverty rates. In terms of intensity, employment impacts in the Y-K region during Construction would be beneficial and result in changes to socioeconomic indicators that are well outside normal variation and trends or greater than a 10 percent increase. During Operations, the beneficial increase in employment would be from 4 to 5 percent. Payments to ANCSA landowners would be outside of normal variation and trends, exceeding a 10 percent increase, while tax revenues would represent large sums of income to borough and state governments.

Adverse impacts to subsistence would include disruption to subsistence resources and displacement of access to subsistence use areas of different communities depending on the project component. Generally the habitat areas affected and the proportion of traditional uses affected are small, and subsistence users may redirect effort to alternative use areas at little cost and effort, with little overall reduction in subsistence harvest levels. The intensity of displacement would be greater for Crooked Creek residents in relation to the Mine Site (with a small displacement of Aniak resident uses), greater for subsistence fishing in narrow and

shallow segments of the river, near Aniak and the Oskawalik River, and a small increase in competition for McGrath and Nikolai due to competition deriving from greater use of Farewell Airstrip.

Beneficial effects from project-related employment and income include more funds to invest in subsistence equipment and costs. These effects may be greater for the smaller villages near the Mine Site, where rates of project employment may be greater.

The duration of socioeconomic impacts would be for the Construction and Operations Phase. However, while employment opportunities would significantly decrease at the Donlin Mine after Closure, the ability to use the skills developed at Donlin would persist and could result in continued employment at another location. For subsistence effects, most impacts would occur for the duration of the Construction and Operations phases. However, for the pipeline component, the disturbance to subsistence resources and displacement of subsistence access would be greater during the Construction phase, and would decrease considerably during Operations when the pipeline would be buried in nearly all of its length, with limited monitoring activity and brushing of the corridor every ten years.

The Donlin Gold Project would generally bring both positive and negative health impacts rated Categories 1, 2, and 3 to the Y-K region. An increase in employment and incomes could support subsistence activities, improve food security, and contribute to improving health. Adverse human health impacts could include increases in substance abuse, potential accidents and injuries, exposure to hazardous constituents, and infectious diseases.

Direct and indirect impacts to environmental justice discussed above would be the same under the North Option.

Table 3.19-7: Alternative 2 Impacts Summary Table [1, 2]

Impacts to low-income or minority communities	Assessment Criteria				
	Magnitude or Intensity	**Duration**	**Extent or Scope**	**Context**	**Disproportionate adverse impacts to minority or low-income communities, including Alaska Native populations?**
Socioeconomic	During Construction and Operations, changes in socioeconomic indicators may be well outside normal variation and trends or greater than a beneficial 10% increase. However, employment impacts during operations would be smaller with a 4-5% increase. During Closure, changes in socioeconomic indicators in the Y-K region would be may be slightly outside normal limits and trends or between a beneficial 5 to 10% decrease for most indicators, and larger decline for payments to ANCSA landowners.	Changes in socioeconomic indicators would extend through the life of the project (30 years) and return to pre-activity levels after actions causing impacts cease.	Impacts would affect communities throughout the EIS Analysis Area.	Impacts would affect minority or low-income populations, including Alaska Native populations.[4]	Yes: Y-K region, Communities of Bethel, Unalaska, Beluga No: Kenai Peninsula Borough, Matanuska-Susitna Borough, Municipality of Anchorage, State of Alaska
Subsistence	**Mine Site:**				

Table 3.19-7: Alternative 2 Impacts Summary Table [1, 2]

Impacts to low-income or minority communities	Assessment Criteria				
	Magnitude or Intensity	**Duration**	**Extent or Scope**	**Context**	**Disproportionate adverse impacts to minority or low-income communities, including Alaska Native populations?**
	During Construction and Operations, adverse impacts would primarily affect Crooked Creek, Aniak, and Bering Sea Coast waterfowl harvesters, and would affect small proportions of habitat and subsistence use areas. Harvest effort could be redirected to alternative areas at low cost and effort, resulting in small harvest reduction of less than 10%. Beneficial effects of employment and income to invest in subsistence activities would affect 25-29% of households during Construction and 8-9 percent during operations. Increased incomes may indirectly result in increases in historic patterns of in-region competition for Chinook salmon, and moose. Adverse effects of out-migration and disruption due to shift work would affect about half of employed households.	Impacts to subsistence would extend through the life of the project (30 years) and return to pre-activity levels after actions causing impacts cease. For the perceived risk of waterfowl contamination, changes may persist into the Closure period due to the pit lake even though the biological analysis suggests very low risk.	Impacts would be concentrated in the Central Kuskokwim sub-region and the Bering Sea coast, and employment and income effects would extend throughout the EIS Analysis Area.	Impacts would affect minority or low-income populations, including Alaska Native populations.	Yes

Table 3.19-7: Alternative 2 Impacts Summary Table [1, 2]

Impacts to low-income or minority communities	Assessment Criteria				
	Magnitude or Intensity	**Duration**	**Extent or Scope**	**Context**	**Disproportionate adverse impacts to minority or low-income communities, including Alaska Native populations?**
	Transportation Corridor:				
	River barge traffic would result in disruption to subsistence resources and displacement of subsistence access on the Kuskokwim River, with greater intensity in narrow and shallow segments such as near Aniak and the Oskawalik River. Alternative fishing areas are available at small cost and effort, with small decreases in harvest success likely. Other effects are similar to those at the Mine Site.	Impacts to subsistence would extend through the life of the project (30 years) and return to pre-activity levels after actions causing impacts cease.	Impacts would affect communities throughout the EIS Analysis Area.	Impacts would affect minority or low-income populations, including Alaska Native populations.	Yes
	Pipeline:				
	Disturbance to subsistence resources and displacement of subsistence access would affect a small portion of the subsistence use area of several communities during Construction. During Operations, the intensity would diminish, as the pipeline is buried, with limited disturbance from monitoring activity and brushing of the corridor every 10 years. Small adjustments in harvest activities at low cost and effort would result in small reductions in overall harvest success. Other effects are similar	Larger impacts would occur during the Construction period, with reduced levels of impact during the Operations Phase.	Impacts would affect communities throughout the EIS Analysis Area during construction, but longer term effects would be concentrated on McGrath and Nikolai.	Impacts would affect minority or low-income populations, including Alaska Native populations.	Yes

Table 3.19-7: Alternative 2 Impacts Summary Table [1, 2]

Impacts to low-income or minority communities	Assessment Criteria				
	Magnitude or Intensity	**Duration**	**Extent or Scope**	**Context**	**Disproportionate adverse impacts to minority or low-income communities, including Alaska Native populations?**
	to those at the Mine Site				
Human Health in the context of Environmental Justice[3]	Direct and indirect effects would be adaptable and communities would be able to maintain pre-impact levels of health. Impacts from accidents and injuries should they occur could range to effects that individuals would be unable to maintain pre-impact level of health.	Impacts could occur to populations more than 6 years or beyond the project life for all direct and indirect impacts.	Impacts from accidents and injuries would impact individuals. Access to routine healthcare, social determinates of health, and food nutrition would impact a limited number of households. Access to healthcare in emergency situations, effects of non-communicable and chronic diseases, and exposure to potentially hazardous materials would impact residents on a community level.	During all phases (Construction, Operations, and Closure),impacts to health effects would generally include economic benefit which could increase funds to support subsistence activities, improve food security, and contribute to improving health. Potential positive health consequences include increased household incomes, higher employment rates and increased educational attainment. Negative health consequences could include increases in substance abuse, potential accidents and injuries, exposure to hazardous constituents, and infectious diseases, Both positive and	Yes

Table 3.19-7: Alternative 2 Impacts Summary Table [1, 2]

Impacts to low-income or minority communities	Assessment Criteria				
	Magnitude or Intensity	**Duration**	**Extent or Scope**	**Context**	**Disproportionate adverse impacts to minority or low-income communities, including Alaska Native populations?**
				negative impacts could occur related to family stress and stability, accidents by surface transportation, increases or decreases in infectious diseases and non-communicable diseases, access to water and sanitation and routine access to healthcare infrastructure and services.	

Notes:

1 Alternative 2 Summary Impacts takes into account human health, socioeconomic, and subsistence impacts as they pertain to environmental justice concerns (Table 2.3-55).
2 The expected impacts account for impact reducing design features proposed by Donlin Gold and Standard Permit Conditions and BMPs that would be required. It does not account for additional mitigation measures being considered.
3 The impact dimensions and rating criteria for human health are consistent with ADHSS terminology for health impact assessments (see Section 3.22, Human Health).
4 Under Alternative 2 Calista and TKC would achieve the mandate of ANCSA that Calista Corporation develop its resources for the benefit of ANCSA shareholders.

3.19.3.2.6 MITIGATION AND MONITORING FOR ALTERNATIVE 2

Effects determinations take into account impact reducing design features (Table 5.2-1 in Chapter 5, Impact Avoidance, Minimization, and Mitigation) proposed by Donlin Gold and also the Standard Permit Conditions and BMPs (Section 5.3) that would be implemented.

Design features and BMPs considered for environmental justice would also include those identified for socioeconomics (discussed in Section 3.18), subsistence (discussed in Section 3.21), and human health (discussed in Section 3.22). Design features important for reducing impacts to minority and low-income communities include:

- Agreements with Alaska Native landowners create contractual commitments to shareholder hire and revenue flows for Alaska Native shareholders;
- The project design includes assistance to develop project-related training programs for local residents to enhance local hire potential during Construction and Operations Phases;
- Shareholder preference in hiring maximizes economic benefit to local communities (minority and low income); along with enclave work place, this minimizes risk of influx of non-local workers into nearby communities; and
- Agreements with Alaska Native landowners create contractual commitments to bidding preferences for Calista and TKC companies with respect to contracts for work on the Donlin Gold property.

Standard Permit Conditions and BMPs important for reducing impacts to minority and low-income communities include:

- Implementation of Stormwater Pollution Prevention Plans (SWPPPs) and/or Erosion and Sediment Control Plans (ESCPs) and use of industry standard BMPs for sediment and erosion control;
- Development and maintenance of Oil Discharge Prevention and Contingency Plans (ODPCPs), Spill Prevention, Control and Countermeasure (SPCC) Plans, and Facility Response Plans (FRPs);
- Monitoring of water withdrawals to ensure permitted limits are not exceeded; and
- Use of BMPs such as revegetation planning, watering and use of dust suppressants to control fugitive dust.

Additional measures are being considered by the Corps and cooperating agencies and are further assessed in Chapter 5, Impact Avoidance, Minimization, and Mitigation (Section 5.5 and Section 5.7). Examples of additional measures being considered that are applicable to this resource include:

- Provide monies to communities for programs, activities, infrastructure needs, schools, community centers, or for assistance in building improvements, based on communities' discussions, possibly facilitated by DATROC. These discussions should identify what proactive programs or options may be available to pursue as part of community planning and programs designed to maintain traditional ways of life.

3.19.3.3 ALTERNATIVE 3A – REDUCED DIESEL BARGING: LNG-POWERED HAUL TRUCKS

Employment and income, as well as other socioeconomic indicators under Alternative 3A, would be similar to those under Alternative 2. However, this alternative would create small decreases in jobs during construction of transportation facilities, as well as small decreases in fuel expenditures during operation of the mine. Alternative 3A would decrease the barging frequency from that proposed under Alternative 2, lessening impacts to subsistence fishing in minority and low-income communities in the narrow and shallow reaches of the Kuskokwim River. Impacts from changes in human health would be similar to Alternative 2, with small reductions in exposure of emissions due to reduced barge traffic and haul truck fuel. Under Alternative 3A, there would be a reduction in the risk of water transport accidents and injuries, reduced potential exposure to hazardous constituents in air and water as the risk of a diesel spill decreases.

Impacts associated with climate change would be the same as discussed for Alternative 2. The effects determinations take into account applicable impact reducing design features, as discussed in Alternative 2. As under Alternative 2, minority and low-income communities in the Y-K region would incur disproportionate adverse impacts, and Alternative 3A would raise an environmental justice concern.

3.19.3.4 ALTERNATIVE 3B – REDUCED DIESEL BARGING: DIESEL PIPELINE

Two options to Alternative 3B have been added based on Draft EIS comments from agencies and the public:

- Port MacKenzie Option: The Port MacKenzie Option would utilize the existing Port MacKenzie facility to receive and unload diesel tankers instead of the Tyonek facility considered under Alternative 3B. A pumping station and tank farm of similar size to the Tyonek conceptual design would be provided at Port MacKenzie. A pipeline would extend northwest from Port MacKenzie, route around the Susitna Flats State Game Refuge, cross the Little Susitna and Susitna rivers, and connect with the Alternative 3B alignment at approximately MP 28. In this option, there would be no improvements to the existing Tyonek dock; a pumping station and tank farm would not be constructed near Tyonek; and the pipeline from the Tyonek tank farm considered under Alternative 3B to MP 28 would not be constructed.
- Collocated Natural Gas and Diesel Pipeline Option: The Collocated Natural Gas and Diesel Pipeline Option (Collocated Pipeline Option) would add the 14-inch-diameter natural gas pipeline proposed under Alternative 2 to Alternative 3B. Under this option, the power plant would operate primarily on natural gas instead of diesel as proposed under Alternative 3B. The diesel pipeline would deliver the diesel that would be supplied using river barges under Alternative 2 and because it would not be supplying the power plant, could be reduced to an 8-inch-diameter pipeline. The two pipelines would be constructed in a single trench that would be slightly wider than proposed under either Alternative 2 or Alternative 3B and the work space would be five feet wider. The permanent pipeline ROW would be approximately two feet wider. This option could be configured with either the Tyonek or Port MacKenzie dock options.

Alternative 3B would slightly enhance the beneficial impacts from employment, income, and sales for minority and low-income communities compared to those under Alternative 2 during Construction. A slightly larger workforce and increased expenditures during Construction for a diesel pipeline and diesel power mining operations under Alternative 3B would be greater than concurrent reductions in employment and expenditures for shipping, barging, trucking, and storage. The expansion of the existing Tyonek North Foreland Barge Facility would create job opportunities in the minority and low-income community of Tyonek. In the case of the North Option, impacts would be shifted away from Tyonek.

The Collocated Pipeline Option would result in some increased beneficial socioeconomic indicators, due to greater employment, equipment, and materials required during Construction. Impacts to subsistence and human health would be similar to Alternative 2.

Under Alternative 3B, local communities may be interested in obtaining access to diesel fuel piped through the Donlin Gold pipeline; however, no utilities or energy suppliers have expressed interest in developing the distribution system that would be required. If such a distribution system were to be implemented in the future, then the communities could experience a decrease in energy costs if the diesel fuel price transported by pipeline was less than the current price of diesel fuel brought in by barge. Therefore, Alternative 3B may eventually have potential to lower fuel costs for communities in the region.

Alternative 3B would decrease the barging frequency from that proposed under Alternative 2, lessening the intensity of impacts to subsistence fishing in minority and low-income communities in the narrow reaches of the Kuskokwim River. The dock expansion in Tyonek may increase potential disturbance of marine mammals, but there are few marine mammals in the area of the Tyonek North Forelands Facility. These impacts would be avoided under the Port MacKenzie Option.

For human health effects, the lower amount of barging would result in a decreased potential for accidents and reduced impacts to subsistence fishing in the low-income and minority communities of the Y-K region. There would also be fewer impacts to air quality, water quality, and biota along the Kuskokwim River associated with the decrease in barging. There would also be less risk to human health as spill risks decrease.

Overall, impacts for Alternative 3B would be similar to Alternative 2. Beneficial impacts from income in minority and low-income communities would be slightly larger. Adverse impacts to subsistence fishing in the narrow reaches of the Kuskokwim River would be reduced, but retaining a larger set of airstrips for spill response capacity may increase and competition from out-of-region hunters. Tyonek may have increased employment opportunities from the project, but there may some potential for disturbance of marine mammals, though they are not common in the port area. Impacts associated with climate change would be the same as discussed for Alternative 2. The effects determinations take into account applicable impact reducing design features, as discussed in Alternative 2.

Under the Port MacKenzie Option for Alternative 3B, direct and indirect impacts to environmental justice would be the same as discussed under Alternative 2, but would shift away from Tyonek. Impacts to environmental justice under the Collocated Pipeline Option would be the same as discussed under Alternative 2. As under Alternative 2, minority and low-income communities in the Y-K region would incur disproportionate adverse impacts, and Alternative 3B would raise an environmental justice concern.

3.19.3.5 ALTERNATIVE 4 – BIRCH TREE CROSSING PORT

Alternative 4 would enhance the beneficial impacts from employment, income, and sales for minority and low-income communities in the Y-K region compared to those under Alternative 2. A larger workforce and increased expenditures for a longer road would be greater than concurrent decreases in barge crew employment and expenditures. The intensity of socioeconomic impacts would remain the same.

Alternative 4 would decrease the barging distance from that proposed under Alternative 2, lessening the intensity of impacts to subsistence fishing in minority and low-income communities in the narrow reaches of the Kuskokwim River above Birch Tree Crossing. The longer mine access road proposed under Alternative 4 would increase displacement of access and habitat for subsistence uses, crossing subsistence berry gathering and hunting areas for moose, caribou, and black bear for Aniak and Chuathbaluk. The Birch Tree Crossing (BTC) Port site could displace set net and drift net fishing opposite the downstream mouth of Aniak Slough (Section 3.21, Subsistence).

Alternative 4 would have similar human health impacts as those discussed under Alternative 2, but would have a reduced risk of water transport accidents and injuries, an increase in potential surface transport accidents and injuries, and a reduction in potential subsistence fisheries impacts on the Kuskokwim River. The mine access road could potentially increase the displacement of wildlife used by subsistence hunters and have a low increase of impacts from air quality, as the road would be longer.

The overall impacts for Alternative 4 would be similar to Alternative 2. Beneficial impacts from income in minority and low-income communities would be enhanced. Adverse impacts to subsistence fishing in the narrow reaches of the Kuskokwim River would be reduced, but displacement of subsistence activities in the vicinity of the mine access road would be increased. There could be a reduction in potential water transportation injuries and an increase in potential surface transportation injuries. Impacts associated with climate change would be the same as discussed for Alternative 2. The effects determinations take into account applicable impact reducing design features, as discussed in Alternative 2.

As under Alternative 2, minority and low-income communities in the Y-K region would incur disproportionate adverse impacts, and Alternative 4 would raise an environmental justice concern.

3.19.3.6 ALTERNATIVE 5A – DRY STACK TAILINGS

Alternative 5A would substitute “dry stack” as the method of tailings management, as opposed to the conventional slurry tailings ponds in Alternative 2. The dry stack tailings could produce more fugitive dust, which may affect subsistence vegetation resources to a greater extent that Alternative 2. The direct and indirect impacts to minority or low-income communities in the EIS Analysis Area from Alternative 5A would be similar to those under Alternative 2. As under Alternative 2, minority and low-income communities in the Y-K region would incur disproportionate adverse impacts, and Alternative 5A would raise an environmental justice concern. Impacts associated with climate change would be the same as discussed for Alternative 2. The effects determinations take into account applicable impact reducing design features, as discussed in Alternative 2.

3.19.3.7 ALTERNATIVE 6A – MODIFIED NATURAL GAS PIPELINE ALIGNMENT: DALZELL GORGE ROUTE

Alternative 6A would enhance the beneficial impacts from employment, income, and sales for minority and low-income communities in the Y-K region compared to those under Alternative 2. A larger workforce and increased expenditures (tens of millions of dollars) would occur during pipeline construction (Donlin Gold 2015h; see Section 3.18.2.7, Socioeconomics). The intensity of socioeconomic impacts would remain the same as discussed under Alternative 2.

Direct and indirect impacts to subsistence resources for minority or low-income communities from Alternative 6A would be similar to those under Alternative 2, including impacts from the natural gas pipeline to subsistence.

Direct and indirect impacts for human health would be similar to those discussed under Alternative 2, with adverse impacts and beneficial impacts to minority and low-income communities in the Y-K region.

The overall impacts for Alternative 6A would be similar to Alternative 2. Adverse and beneficial health impacts associated with increased income in minority and low-income communities in the Y-K region would be enhanced during pipeline construction. Impacts associated with climate change would be the same as discussed for Alternative 2. The effects determinations take into account applicable impact reducing design features, as discussed in Alternative 2.

As under Alternative 2, minority and low-income communities in the Y-K region would incur disproportionate adverse impacts, and Alternative 6A would raise an environmental justice concern.

3.19.3.8 ALTERNATIVES IMPACT COMPARISON

A comparison of the impacts to minority and low-income communities by alternative is presented in Table 3.19-8.

Table 3.19-8: Comparison of Impacts by Alternative* for Environmental Justice

Impact-causing Project Component	Alternative 2 – Proposed Action	Alternative 3A – LNG-Powered Haul Trucks	Alternative 3B – Diesel Pipeline	Alternative 4 – BTC Port	Alternative 5A – Dry Stack Tailings	Alternative 6A – Dalzell Gorge Route
Socioeconomics	<u>Construction</u> • Direct jobs, Y-K region: 1,600 to 1,900 (50-59% of total direct jobs) • Direct Payroll, Alaska: $940 million • Direct Expenditures, Alaska: $1.7 billion • ROW Acquisition to state: $1.5 million • ROW Acquisition to ANCSA corps: $250,000 <u>Operations</u> • Direct Jobs, Y-K region: 500 to 600 (50-60% of total direct jobs) • Direct Payroll, Alaska: $1.7 billion • Direct Expenditures, Alaska: $9.8 billion • Royalties to Calista (and shared with other ANCSA regional corporations): $55.4 million per year over project life • Royalties to TKC: Not estimated • Lease payments to Calista and Cook Inlet Region Inc.: $250,000 per year over project life • Corporate Income Tax and Mining License Tax to state: $1.24 billion over project life <u>Closure and Reclamation</u> • Total Direct Jobs: 20 to 100 for deconstruction, 6 for about 50 years after mine closure, 6 in perpetuity • Potential post-operations employment at other location using skills developed while working at Donlin Gold	<u>Construction</u> • Direct and Indirect Jobs: Similar to Alternative 2 • Direct and Indirect Expenditures: Similar to Alternative 2, except decrease for transportation by tens of millions of dollars <u>Operations</u> • Direct and Indirect Jobs: Similar to Alternative 2, except decrease for transportation. • Direct and Indirect Expenditures: Similar to Alternative 2, except decrease for transportation by tens of millions of dollars. <u>Closure and Reclamation</u> Similar to Alternative 2	<u>Construction</u> • Direct and Indirect Jobs: Same as Alternative 2, except increase for pipeline. Direct and Indirect Expenditures: Similar to Alternative 2, except • Decrease for Mine Site and transportation by tens of millions of dollars • Increase for pipeline by hundreds of millions of dollars <u>Operations</u> Direct and Indirect Jobs: Similar to Alternative 2, except. • Decrease for transportation • Increase for pipeline Direct and Indirect Expenditures: Similar to Alternative 2, except • Increase for Mine Site by hundreds of millions of dollars • Decrease for transportation by tens of millions of dollars • Increase for pipeline by tens of millions of dollars <u>Closure and Reclamation</u> • Direct and Indirect Jobs: Similar to Alternative 2, except increase for pipeline • Direct and Indirect Expenditures: Similar to Alternative 2	<u>Construction</u> • Direct and Indirect Jobs: Similar to Alternative 2, except increase for transportation • Direct and Indirect Expenditures: Similar to Alternative 2, except increase for transportation by tens of millions of dollars <u>Operations</u> • Direct and Indirect Jobs: Similar to Alternative 2, except increase for transportation by truck and decrease for transportation by barge • Direct and Indirect Expenditures: Similar to Alternative 2, except increase for transportation by less than ten million dollars <u>Closure and Reclamation</u> • Direct and Indirect Jobs: Similar to Alternative 2, except increase for transportation • Direct and Indirect Expenditures: Similar to Alternative 2, except increase for transportation	Similar to Alternative 2	<u>Construction</u> • Direct and Indirect Jobs: Similar to Alternative 2, except increase for pipeline • Direct and Indirect Expenditures: Similar to Alternative 2, except increase for pipeline by tens of millions of dollars <u>Operations</u> Similar to Alternative 2 <u>Closure and Reclamation</u> Similar to Alternative 2

Table 3.19-8: Comparison of Impacts by Alternative* for Environmental Justice

Impact- causing Project Component	Alternative 2 – Proposed Action	Alternative 3A – LNG-Powered Haul Trucks	Alternative 3B – Diesel Pipeline	Alternative 4 – BTC Port	Alternative 5A – Dry Stack Tailings	Alternative 6A – Dalzell Gorge Route
Subsistence	Resource abundance : • Mine Site – During Construction and Operations, habitat loss and noise disturbance would affect small portions of available habitat for subsistence resources near the Mine Site and in the Crooked Creek drainage. Disturbance and displacement would largely end in the Closure Phase. • Transportation Facilities – During Construction and Operations, river barge traffic would disrupt subsistence resources along the Kuskokwim River, with greater intensity in narrow and shallow segments. Disturbance would largely cease after Closure. • Pipeline – Disturbance to subsistence resources would occur in a small portion of available habitat during Construction, with limited displacement reduced Operations and Closure. Access: • Mine Site – Crooked Creek and Aniak residents would be displaced during Construction and Operations from access to a small portion of their subsistence use areas near the Mine Site and Crooked Creek drainage. With Closure, the disturbance would largely cease, and subsistence uses may be reestablished over time. Bering Sea Coast villages may limit use of migratory waterfowl due to concerns over contamination at mine facilities during all project phases. No impact to other communities. • Transportation Facilities – River barge activity would displace access to subsistence fishing during Construction and Operations, particularly in narrow and shallow segments, such as near Aniak and the Oskawalik River. The displacement would largely cease after Closure. • Pipeline – Disturbance during Construction in small portion of available habitat, and reduced disturbance during Operations.	Similar to Alternative 2, but decreased barging frequency would reduce disturbance to subsistence resources and displacement of subsistence fishing in minority and low-income communities in the narrow reaches of the Kuskokwim River.	Similar to Alternative 2, but decreased barging frequency would reduce disturbance to subsistence resources and displacement of subsistence fishing in minority and low-income communities in the narrow reaches of the Kuskokwim River. Limited impacts would occur to marine mammal subsistence resources from the Tyonek dock expansion. More frequent monitoring flights (26 per year) would add disturbance to wildlife and subsistence uses along the pipeline ROW. Construction-related airstrips would be retained during Operations to support spill response capacity and this would increase the potential for competition where community subsistence use areas overlap with the pipeline ROW. The Port MacKenzie Option would shift impacts for the port away from Tyonek. The Collocated Pipeline Option would increase socioeconomic benefits from greater labor, equipment, and materials required during Construction.	Similar to Alternative 2, but adverse impacts to subsistence fishing in the narrow reaches of the Kuskokwim River above BTC would be eliminated. Displacement of subsistence activities in the vicinity of the mine access road would affect Aniak and Chuathbaluk residents in a small portion of their subsistence use areas.	Similar to Alternative 2. The dry stack tailings could produce more fugitive dust. This may affect subsistence vegetation resources to a greater extent that Alternative 2.	Similar to Alternative 2

Table 3.19-8: Comparison of Impacts by Alternative* for Environmental Justice

Impact- causing Project Component	Alternative 2 – Proposed Action	Alternative 3A – LNG-Powered Haul Trucks	Alternative 3B – Diesel Pipeline	Alternative 4 – BTC Port	Alternative 5A – Dry Stack Tailings	Alternative 6A – Dalzell Gorge Route
Human Health	Competition: • Mine Site and Transportation Facilities – Little new competition from non-local mine employees. As an indirect effect of new incomes, renewed in-region competition for moose and salmon, with unpredictable timing and intensity. • Pipeline – Little change for most subregions, however, competition may increase in the vicinity of Farewell Airstrip, affecting subsistence uses of McGrath and Nikolai. Sociocultural impacts: • All components – project related employment and income would have a beneficial effect supporting costs for subsistence equipment and operations. The intensity would be greater during Construction due to the larger workforce. Adverse effects, including out-migration and interruption from shiftwork schedules, would affect about half of project-employed households. At Closure, beneficial effects of income and adverse effects of employment patterns would largely cease. Social Determinants of Health • Beneficial increases in household income, employment, education. • Adverse psychosocial stressors with possible increased drug and alcohol use and changes in lifestyle and cultural practices. Accidents and Injuries • Potential for water, surface, and air transportation accidents. Exposure to Potentially Hazardous Substances • Potential groundwater contamination (only has a health effect if occurs where used for drinking water). • Fugitive dust could result in elevated concentrations of metal in soils surrounding the Mine Site. • Small changes in mercury concentrations in plants, fish, and wildlife. Food, Nutrition, and Subsistence Activity • Benefits from increases in food security and decreases in regional food costs. • Some potential adverse impacts to subsistence resources, but increased income to facilitate subsistence activities. Infectious Diseases • Low magnitude increases in infectious disease possible from employment of workers from outside the region	Similar to Alternative 2, except decreased potential for water transport injury, and reduction of hazardous contaminants in the air and surface water, and a reduction of risk from spills.	Similar to Alternative 2, except decreased potential for water transport injury, reduction of hazardous contaminants in the air and water.	Similar to Alternative 2, except increased potential for surface transport injury, increased air contaminants in the vicinity of the roadway, and a reduction in potential subsistence fisheries impacts on the Kuskokwim River.	Similar to Alternative 2. The dry stack tailings could produce more fugitive dust. This may affect subsistence vegetation resources to a greater extent that Alternative 2.	Similar to Alternative 2.

Notes:

* The No Action Alternative would have no new impacts to low income and minority communities, but a loss of employment and income from pre-project exploration activities would be adverse for socioeconomic indicators.