

1.0 INTRODUCTION

This Big Lake Airport Master Plan Report will guide the orderly development of the Big Lake Airport (BGQ) over the next 20 years. The report also evaluates whether BGQ should use Federal Aviation Administration (FAA) Airport Improvement Program (AIP) funds for future development and be obligated by AIP grant assurances or rely solely on non-AIP funding, such as state general funds (GF) or state general obligation bonds. BGQ is owned and operated by the DOT&PF. Funding for improvement of the airport is provided to the DOT&PF by the State of Alaska in the form of GF appropriations and by the FAA in the form of grants from the AIP.

The Airport Master Plan documents community and airport characteristics, forecasts future aviation activity, identifies existing and anticipated future airport deficiencies, and proposes future facility requirements and design standards. In addition, this plan identifies airport improvement alternatives, recommends a long range (20-year) airport development plan, a Capital Improvement Program (CIP) to implement that plan, and provides an updated Airport Layout Plan (ALP).

2.0 SOCIOECONOMIC EVALUATION

2.1 Socioeconomic Profile of the Big Lake Area

Socioeconomic indicators for the Big Lake area are generally quantified by looking at data within the Big Lake Census Designated Place (CDP). However, because the population in the Matanuska Susitna Borough (MSB) is spread widely, and many residents commute between communities for work or other activities, socioeconomic information provided for the Big Lake CDP should not be viewed as strictly representative of activity impacting BGQ. That activity is likely larger than what is shown for the Big Lake CDP. In addition, it is difficult to obtain detailed economic data for a community as small as the Big Lake CDP. Therefore, this report will address the economy and demographics of the MSB in the following sections and includes data specific to Big Lake where it is available.

Big Lake is an unincorporated community in the rural lower Susitna Valley within the MSB. The Big Lake CDP encompasses an area of about 87,371 acres (136.5 square miles) surrounding Big Lake, southwest of Wasilla in the Talkeetna Mountains. BGQ is roughly 60 road miles northwest of Anchorage, and about 15 road miles southwest of the Wasilla Airport via the Parks Highway. The 2016 population of the Big Lake CDP was estimated at 3,655 and makes up about 3.6 percent of the borough population (see Table 1).

The Big Lake area was historically occupied by the Dena'iana Athabascans, an Alaska Native American Tribe. The first sled dog trail into the Talkeetna Mountains from Knik passed through the Big Lake area in 1899. Between 1920 and World War II, the Big Lake area was homesteaded, but access for building materials was difficult. Growth continued slowly through 1959, when the area had about 300 private cabins, as well as several lodges and children's camps. As road access and electricity connections improved into the 1960s and 1970s, more and more lakefront lots were developed. A 1996 wildfire in the area burned 37,500 acres and 433 buildings valued at \$8.9 million. In recent decades, the Big Lake area has continued to grow at a pace like that of the borough as a whole. That growth has been fueled by availability of residential land, proximity to rural area recreation, proximity to Anchorage, and the economic growth of nearby Wasilla and Palmer.

As the economy of the state and especially of Anchorage has grown, so has the population of the MSB. Because of diverse housing options and available land and its close proximity to Anchorage (about an hour's drive away) the MSB has experienced the strongest population increase in the

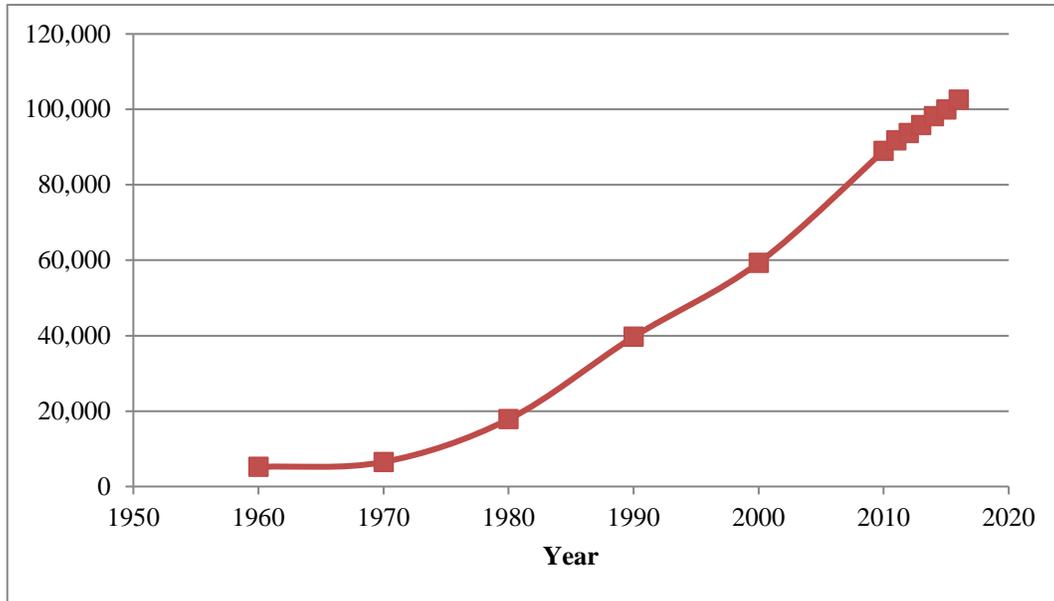
state for many years. That growth has been pronounced in recent years, and population growth is expected to continue into the foreseeable future, despite a statewide economic recession. The small, scattered communities (most of them unincorporated) of the Susitna Valley are further from Anchorage and more rural in character, and population expansion has been a little slower to reach into this area.

Some mining activity still exists in this area. Lucky Shot Mine just off the Willow Fishhook Road will employ 90 to 110 full-time workers on three shifts for a minimum of four to six years. Recreation activities bring visitors, including non-residents who own cabins in the area. Much of the economy of the Big Lake CDP is based on supporting the resident and visitor populations. As part of the MSB, the Big Lake CDP is impacted by the economy of the borough in general.

2.1.1 Population

The estimated 2016 population of the MSB was 102,598, and 3,655 of them (about 3.6 percent of the total borough population) lived within the Big Lake CDP. Big Lake CDP residents tend to be older and have smaller household sizes than the MSB as a whole. The median age of MSB residents in 2016 was 35.1 years, much younger than the Big Lake CDP median age of 43.3 years. Many retirees have moved to Big Lake in recent years. The 2010 Census determined that the average MSB household size was 2.75 persons, and the Big Lake CDP average household size was 2.44 persons.

The MSB has one of the fastest growing populations in the state, showing an annual average growth rate of 5.5% between 1960 and 2016. That growth has slowed in recent years, with an average annual growth rate of 2.4% between 2010 and 2016. Figure 1 presents population change in the MSB from 1960 through 2016.



Source: ADLWD 2017.

Figure 1. Matanuska-Susitna Borough Population Growth, 1960 to 2016

Table 1 presents population change in the MSB and the Big Lake CDP from 1990 to 2016. The rate of population growth has slowed over time compared to the rapid pace in the 1970s and 1980s, but the MSB is still one of the fastest growing areas of the state. The average population growth in the Big Lake CDP over that period is slightly slower than the MSB as a whole, with an average annual increase in population of 3.55 percent between 1990 and 2016, compared to MSB's average growth rate of 3.72 percent per year in the same time period. The Big Lake CDP's percentage of the MSB population has decreased slightly over time.

The growth in MSB population between 2015 and 2016 was 2,646 residents. Of that growth, 936 (35.4 percent) was from natural increase (births minus deaths), and 1,710 (64.6 percent) was from net migration (in migration minus out migration).

**Table 1. Matanuska-Susitna Borough and Big Lake CDP Population Growth,
1990 to 2016**

Year	MSB Population	MSB Avg. Annual Change	Big Lake CDP Population	Big Lake CDP Avg. Annual Change	Big Lake as % of MSB
1990	39,683		1,477		3.72%
2000	59,322	4.10%	2,435	5.13%	4.10%
2010	88,995	4.14%	3,350	3.24%	3.76%
2011	91,775	3.12%	3,373	0.69%	3.68%
2012	93,684	2.08%	3,470	2.88%	3.70%
2013	95,840	2.30%	3,550	2.31%	3.70%
2014	98,167	2.43%	3,533	-0.48%	3.60%
2015	99,952	1.82%	3,578	1.27%	3.58%
2016	102,598	2.65%	3,655	2.15%	3.56%
Average 1990-2016		3.72%		3.55%	
Average 2010-2016		2.40%		1.46%	

Sources: ADLWD and U.S. Bureau of Census.

2.1.1.1 Population Projections

The following population projections for the MSB were developed by the State of Alaska and local government agencies. The two projections use different assumptions, and neither fully consider the current statewide recession. Both forecasts were considered in developing BGQ air traffic forecast, along with the current statewide recession and many other socioeconomic and aviation factors.

Table 2 presents population projections for the MSB to 2045 developed by the Alaska Department of Labor and Workforce Development (ADLWD), State Demographer's Office in 2015. Population projections for communities within the borough were not prepared. These projections do not consider any specific construction or economic development projects and may not fully reflect the statewide recession beginning in 2015. The table shows that the median age for MSB residents is expected to increase due to the aging of the population. An aging population could result in a lower average birth rate and a higher death rate, for a decreasing population growth rate over time.

Table 2. Matanuska-Susitna Borough Population Projections, 2015-2045

Year	MSB Population	Average Annual Growth	Median Age
2015	100,178		
2020	113,415	2.5%	35.5
2025	127,144	2.3%	25.5
2030	141,247	2.1%	35.2
2035	155,442	1.9%	35.3
2040	169,418	1.7%	35.6
2045	182,836	1.5%	36.0

Source: State Demographer, ADLWD 2015.

The University of Alaska Institute for Economic and Social Research in conjunction with HDR, Inc. and MSB also developed population forecasts spanning to 2035 for the MSB Long Range Transportation Plan. These forecasts were developed for transportation analysis zones (TAZs) within the borough. While these zones do not correlate directly to Census Areas or Census Designated Places, we were able to approximately correlate specific TAZ forecasts to the Big Lake CDP. It is important to note that this population forecast was developed prior to the downturn in oil prices, resulting in the current statewide recession, and should be considered high. This population forecast assumes the building of a Knik Arm Crossing early in this forecast period.

The MSB Long Range Transportation population forecast indicates that the population of the MSB will grow about 4.9 percent per year between 2010 and 2035, for a 2035 population estimate of 176,121. An area correlating closely to the Big Lake CDP will grow about 7.6 percent per year between 2010 and 2035, for a 2035 population estimate of 10,055.

Alaska’s economic challenges over the next several years are expected to dampen population growth slightly, and that has already been seen in 2016. However, the population growth for the MSB is still expected to be the strongest in the state.

2.1.2 Economic Activity

Due to its close proximity to Anchorage, its relative abundance of housing, and its desirable rural character, many people who work in Anchorage live in the MSB. Since jobs in other parts of the state often pay more than in the MSB, labor has become a major export with MSB residents commuting to work in Anchorage and other parts of the state. Much of the local MSB business community has developed to support the growing residential areas. Support industries such as trade, transportation, and utilities are large employers in the MSB. As the borough has developed,

local government (including schools) has also become an important employer. The MSB has many recreational opportunities and attracts visitors from nearby communities and across the world, providing employment opportunities within the borough. In addition, some mining and agricultural activities provide local employment.

The annual per capita personal income for MSB residents in 2015 was \$46,554. That was about 3.2 percent below the national average of \$48,112 and about 17 percent below the state average of \$56,147. In 2015, net wages and salaries made up 71 percent of MSB resident's income, a greater proportion than Alaska as a whole (67 percent), or the nation (64 percent). Dividends, interest, and rent made up 13 percent and personal transfer payments made up 16 percent of MSB residents' income in 2015.

Table 3 presents the number of businesses, average annual employment, and average monthly earnings by industry in the MSB during 2015. This count does not include self-employed people, such as those running small businesses with no employees, and those with commercial fishing licenses. Most of these jobs are within the service producing industries, some of the largest (by number of jobs) of those industries being retail sales and health care. Government is also a major employer within the MSB. These support industries serve an existing resident population and draw only limited revenue and business from outside the local areas. The industries with the highest average earnings in the MSB are local government, mining, construction, and manufacturing. Recreation and tourism (where most employment is shown under the leisure and hospitality industry) is also a strong economic sector in the MSB.

Table 3. Employment and Earnings in the Matanuska-Susitna Borough by Industry for 2015

Industry	Number of Businesses	Average Monthly Jobs	Percent of Total Jobs	Average Monthly Wages
TOTAL INDUSTRIES	2,116	22,835		\$3,561
TOTAL GOVERNMENT	103	5,051	22.1%	\$4,265
Federal Government	19	213	0.9%	\$7,180
State Government	76	1,545	6.8%	\$4,388
Local Government	8	3,293	14.4%	\$4,019
PRIVATE OWNERSHIP	2,013	17,784	77.9%	\$3,361
NATURAL RESOURCES AND MINING	34	171	0.7%	\$4,380
Agriculture, Forestry, Fishing, Hunting	18	82	0.4%	\$1,562
Mining	16	89	0.4%	\$6,977
CONSTRUCTION	414	2,058	9.0%	\$5,916
MANUFACTURING	39	422	1.8%	\$6,409
TRADE, TRANSPORTATION AND UTILITIES	355	4,970	21.8%	\$2,812
Retail Trade	213	3,919	17.2%	\$2,423
Transportation and Warehousing	90	689	3.0%	\$3,595
INFORMATION	26	444	1.9%	\$5,217
FINANCIAL ACTIVITIES	122	772	3.4%	\$3,740
PROFESSIONAL AND BUSINESS SERVICES	268	1,237	5.4%	\$4,188
EDUCATIONAL AND HEALTH SERVICES	279	4,159	18.2%	\$3,388
Educational Services	29	393	1.7%	\$2,790
Health Care and Social Assistance	250	3,766	16.5%	\$3,450
LEISURE AND HOSPITALITY	261	2,759	12.1%	\$1,469
Arts, Entertainment and Recreation	52	381	1.7%	\$1,583
Accommodation and Food Services	209	2,378	10.4%	\$1,451
OTHER SERVICES	169	768	3.4%	\$2,035
UNCLASSIFIED ESTABLISHMENTS	46	25	0.1%	\$2,915

Source: ADLWD, Employment and Earnings Data, 2016.

The unemployment rate in the MSB was 8.3 percent in 2016, which was slightly higher than the 7.8 percent in 2015. The statewide average unemployment rate for 2016 (6.7 percent) was also slightly higher than the 2015 rate of 6.5 percent (ADLWD, Unemployment Statistics, 2017).

Employment in Big Lake CDP somewhat mirrors employment in the MSB, with the trade, transportation and utilities industry being the largest employer (Table 4). The state and local government, financial activities, education, health services, and leisure and hospitality industries

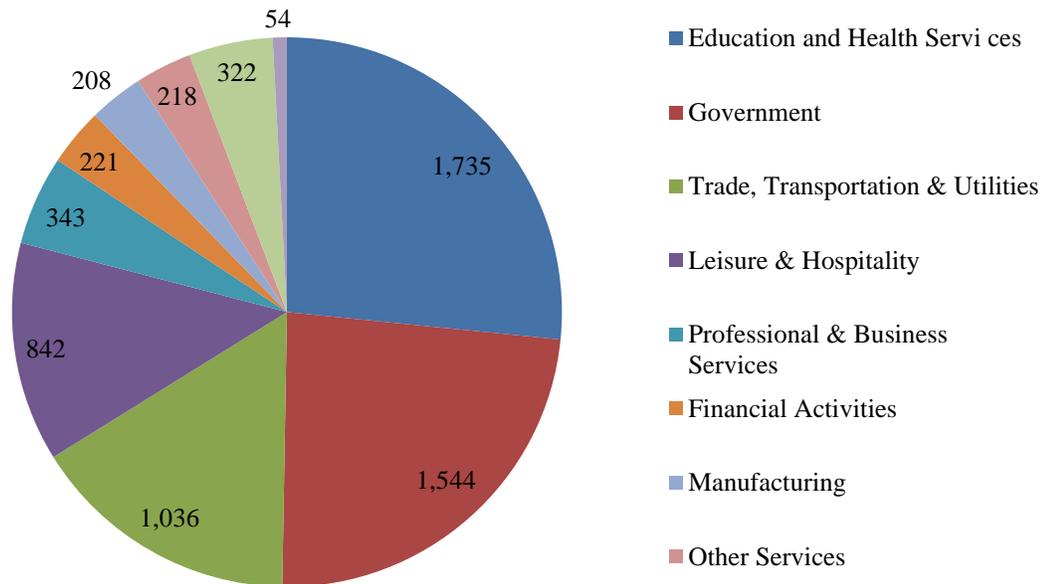
are less prevalent in the Big Lake CDP than in the MSB as a whole. The Big Lake CDP has relatively more employment in the natural resources and mining, construction, manufacturing, and professional and business services industries than the MSB.

Table 4. Jobs by Industry for Big Lake CDP Residents, 2015

Industry Category	Jobs	Percent of Total
Natural Resources & Mining	112	8.3%
Construction	180	13.4%
Manufacturing	57	4.2%
Trade, Transportation & Utilities	305	22.7%
Information	19	1.4%
Financial Activities	27	2.0%
Professional & Business Services	124	9.2%
Educational & Health Services	173	12.9%
Leisure & Hospitality	113	8.4%
State Government	57	4.2%
Local Government	136	10.1%
Other	40	3.0%
Total	1,343	100.0%

Source: ADLWD, 2017.

Figure 2 presents MSB job growth by industry between 2004 and 2015. Most of the growth industries in the borough are those that support the resident population. Only three of the fastest growing industries receive most of their revenue from outside of the borough (leisure and hospitality, manufacturing, and natural resources and mining) and each will be addressed in more detail later in this report.



Source: ADLWD 2016.

Figure 2. Growth in the Matanuska-Susitna Borough in Number of Jobs Between 2004 and 2015

The fastest growing support industry sector in the MSB is education and health services. This industry is showing strong growth statewide as it matures and as the population of Alaska ages. As more medical care for MSB residents has been provided locally, additional economic growth has occurred in this sector and continued growth is expected. Government is another support sector that has shown strong growth in the MSB. The trade, transportation, and utilities sector has also shown strong growth in the past decade and reflects the opening of new retail establishments in the borough in recent years. In addition to the wage and salary jobs presented in Table 3, residents with Big Lake addresses held 259 business licenses in early 2017.

2.1.3 Economic Trends

The State of Alaska receives a large portion of its revenue from oil taxes and recent low oil prices and reduced oil production in the state has greatly reduced that revenue. According to recent Alaska Economic Trends articles by the ADLWD, the resulting state budget deficit, as well as job and investment losses in the oil industry has resulted in a statewide economic recession. This recession began in 2016 and is expected to deepen and continue through 2020, and possibly beyond. Statewide, job losses are expected to be largest in state government, the oil industry

(under natural resources and mining), professional and business services, and construction industries. In addition, lower state government spending will impact many industries throughout Alaska. The softer economy will impact most support industry sectors including transportation demand. The tourism industry is not expected to be impacted by this recession and may be a bright spot in the state's economy. In addition, health care industry jobs should continue to grow in Alaska in the near future.

Because Anchorage is the center of Alaska's oil industry and the Anchorage economy strongly impacts that of the MSB, some of these negative economic impacts will be evident in the borough. This negative impact will be somewhat offset by the strength in the tourism and health care industries in the MSB economy over the next several years. The length and depth of this recession will depend in a large part on what the Alaska Legislature is able to do to bridge the budget gap with other revenue sources. A recent change in federal government administration may result in policies that impact the economy of Alaska, the MSB and the Big Lake CDP. However, it is too early to know what these policy changes might be, and what impacts they might produce. The following sections address industries that have strong impacts on the MSB economy and transportation demand.

2.1.3.1 Recreation and Tourism

One of the fastest growing basic industries in the MSB is recreation and tourism (reported mainly under the leisure and hospitality industry by ADLWD). The MSB has abundant recreational opportunities and is located between the two most populous areas of the state. Visitors from outside of the region and across the world also visit the MSB. Denali National Park is a major Alaska visitor attraction and can be reached via the Parks Highway and rail routes through the borough. The economic recession will result in less disposable income of state residents but should not have much of an impact on recreational travel within Alaska.

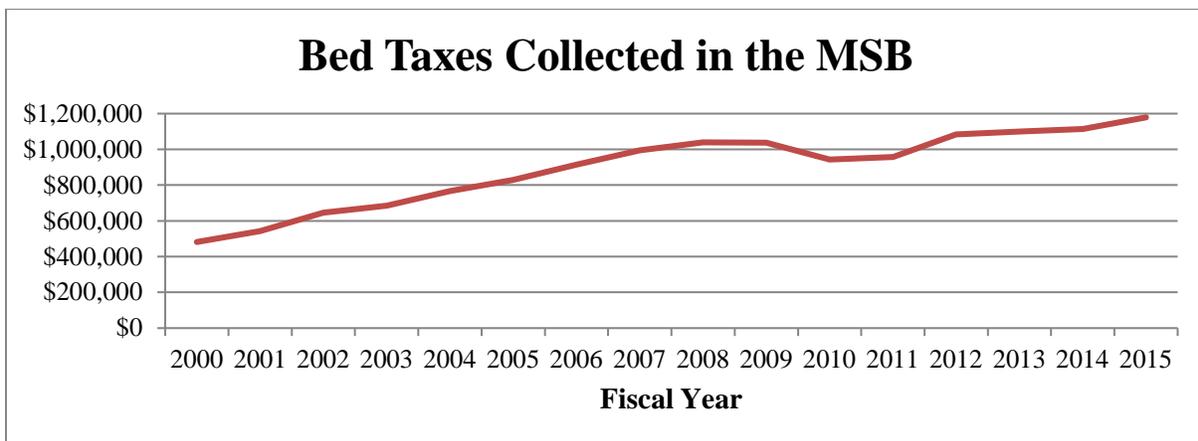
Sport fishing access has been a strong draw to the MSB and Big Lake area. In 2007 and 2008, sport fishing tourism contributed about \$120 million per year into the MSB economy, but dramatically lower fish runs in the Susitna River drainage resulted in that contribution dropping to \$20 million per year in 2015.¹ Recent reworking of commercial fishing regulations to allow more escapement of salmon into that river has resulted in stronger salmon runs and a rebuilding of that lucrative industry. A stronger sport fishing industry will likely increase demand for floatplane

¹ Mat Su Economic Development Corporation, Don Dyer, Executive Director, telephone interview, 1/19/17.

access in the MSB including in the Big Lake area. In addition, a recent predator control program will result in the rebuilding of moose stocks in the MSB, allowing additional hunting in the borough.

Winter tourism is more prevalent in the MSB than in most places in Alaska due to the large population centers on either side of the borough. Major draws to the borough during the winter are the Iditarod sled dog and the Iron Man snow machine races. Both races pass near Big Lake and create winter aviation activity at the BGQ and the Big Lake area for a few weeks' time around those activities. There is also occasional use of Herning Trail on the airport by snow machines.

Figure 3 presents bed taxes collected in the MSB between Fiscal Years (FY) 1990 and 2015. The MSB estimates that there were 1,985 rooms available to accommodate visitors in the borough in 2015. The MSB bed tax of 5 percent has remained unchanged since it was implemented in 1990. Bed taxes collected in FY 2015 totaled \$1,178,960, and despite the economic slowdown in 2009 and 2010, the average annual growth rate of bed taxes between FY 2000 and FY 2015 was 6.4 percent.



Source: MSB 2017.

Figure 3. Bed Taxes Collected in the Matanuska Susitna Borough Fiscal Years 2000 to 2015

2.1.3.2 Education and Health Services

One of the fastest growing support industry sectors in Alaska and the MSB is health and education services. The health services component of this industry has experienced strong growth statewide as the industry matures, as the population of Alaska ages, and as more services are being provided locally. The health and education services industry is the third largest employer of Big Lake CDP residents and growth in this industry should continue regardless of the statewide recession. Changes in federal health care policy may impact this industry in the future.

2.1.3.3 Government

State and local government agencies, including local school districts, employed 4,838 MSB residents in 2015. Local government employed 136 Big Lake CDP residents, even though the community has no local government of its own. Some of these workers are employed at local public schools, but some likely commute to other areas of the borough to work for borough or other local governments. State government facilities in the MSB include Denali State Park, the University of Alaska Mat-Su College campus, and the Alaska Railroad. State government also includes the Alaska Department of Natural Resources (ADNR) Division of Forestry's firefighting operations for southern half of Alaska, located at the Palmer Municipal Airport. Federal agencies include the National Park Service's Denali National Park, the main Alaska offices of US Department of Agriculture Rural Development and the National Resource Conservation Service, the Alaska Tsunami Warning Center, and FAA Flight Service Center. State government employment is expected to drop due to the statewide recession but could see some increases with the development of a state prison in the MSB. Potential changes to federal policy regarding national parks and other federal lands could also impact federal government employment in the MSB.

Big Lake is an unincorporated community within the MSB. Although the community council is recognized by the MSB as representing the residents of Big Lake, the community council is not an arm of the MSB and has no municipal powers. The community council usually meets monthly.

2.1.3.4 Natural Resources and Mining

This industry category includes mining and timber harvesting. Workers who commercially harvest fish and agricultural are not included in ADLWD employment counts. Processing of minerals, timber, fish, and agricultural products are counted under the manufacturing industry category. Although agricultural production and mining activities occur at lower levels than in the past, they still contribute to the economy of the MSB.

Harvestable timber within the MSB is located on MSB lands, state lands (including University of Alaska and Mental Health Trust lands), Native corporation lands and private lands. Mining activity in the MSB has declined over time and current activity in the industry is mostly restricted to sand and gravel extraction. However, the MSB has both hard rock and placer deposits of gold and associated metals and large coal fields within borough boundaries. Mineral and other resources exist in the Susitna River drainage and west of the Big Lake area. Mineral exploration is ongoing and mainly happens in winter. A State of Alaska “Road to Resources” study was completed but is not currently funded and would provide access to mineral, petroleum, and agricultural resources to the south and west of Big Lake.² In addition, one potential route for an Alaska gas line would pass to the west of Big Lake. Many of these potential projects are dependent on market prices of the products developed and developing public policy.

Agricultural production in the MSB has declined over time, yet the Matanuska Susitna region still produces a large portion of the agricultural value in the state. This includes production of crops and livestock (including dairy products). Some value-added processing of agricultural products occurs now, and the MSB is planning an agricultural processing and product development center. The University of Alaska has an experimental farm in the MSB. Exceptionally fertile soils have been found in the Fish Creek area, to the west of Big Lake.³

2.1.3.5 Commercial Fishing

Although MSB boundaries do not encompass any fishing ports, some of its residents’ travel outside the area to fish commercially. In 2015, 322 MSB residents held state commercial fishery permits and likely as many held fishing crew licenses. Data for 2015 indicates that MSB residents harvested 47,222,311 pounds of fish commercially with a value of \$17,568,161 in that year. It is likely that MSB residents also engage in fisheries that occur in federal waters and are licensed by the federal government, such as federal halibut, sablefish and crab fisheries. During 2015, seven Big Lake CDP residents held commercial fishing permits, landing an estimated 185,185 pounds of fish for a value of \$203,283. Other Big Lake CDP residents likely hold commercial fishing crew licenses. If the MSB is a desirable place to live, commercial fishers will likely continue to live there and bring their earnings back home. The market for Alaska fish is strong and it is likely that a commercial fishing contribution to the MSB economy will continue.

² Ibid.

³ Ibid.

2.1.3.6 Trade, Transportation and Utilities

The Trade, Transportation, and Utilities economic sector has the largest employment of any single sector for both MSB residents and Big Lake CDP residents. Much of the employment in this sector focuses on supporting the resident population, but a considerable amount supports visitors to the area also. Rapid population growth has resulted in growing employment in these support businesses.

The borough's 9,000-acre industrial and commercial port district at Point MacKenzie continues to be developed. Infrastructure at the site includes a newly expanded bulkhead barge dock, a 1,200-foot, deep-draft dock that can accommodate Panamax and Cape Class vessels, a 7,000 square foot terminal building, and about 9,000 acres of uplands available for industrial and commercial development.

A 32-mile-long rail link is being developed to connect Point MacKenzie with the existing Alaska rail system and major roadways in the area are being improved. A Knik Arm Crossing has been planned in this area, but this report assumes the Knik Arm Crossing will not be developed. If this crossing were constructed, BGQ would be much more accessible to Anchorage area pilots and plane owners, increasing demand for space at the airport.

The MSB has recently completed a MSB Regional Aviation System Plan, Phase II which included an MSB Seaplane Base Siting Study to refine the evaluation of potential seaplane base sites in the southern portion of the borough and recommend a long-term development program for a preferred site to yield a safe, environmentally acceptable, and financially sustainable seaplane base. The preferred site is at Seven Mile Lake, about 6.5 air miles southwest of BGQ. The System Plan did not recommend a new seaplane base for BGQ.

2.1.3.7 Construction

The construction industry was the second largest employer of Big Lake CDP residents and fifth largest employer of MSB residents in 2015. Although construction employment can vary greatly from year to year due to the beginning and ending of short-term projects, with continued housing development, public facilities, major commercial development, and upcoming road work within the MSB, that sector will have activity for years to come. However, the statewide economic recession will likely slow this activity for the next several years. The recent change in the federal government administration will affect federal dollars available for construction projects, but it is too early to tell what policies will be put into effect.