

# Denali Borough Assembly Public Hearing and Regular Meeting Agenda

July 8, 2020  
6:00 PM

VIRTUAL MEETING

Jill Boelsma  
Seat A  
Term Expires 11/2020

Jake Hill  
Seat B  
Term Expires 11/2021

Tallon Shreeve  
Seat C  
Term Expires 11/2022

Lisa Miner  
Seat D  
Term Expires 11/2022

Joe Chatfield  
Seat E  
Term Expires 11/2020

Krista Zappone  
Deputy Presiding Officer  
Seat F  
Term Expires 11/2021

Jared Zimmerman  
Presiding Officer  
Seat G  
Term Expires 11/2021

Jeff Stenger  
Seat H  
Term Expires 11/2022

Eileen Holmes  
Seat I  
Term Expires 11/2020

## **REGULAR MEETING**

### **A. CALL TO ORDER**

### **B. ROLL CALL**

### **C. PUBLIC COMMENTS** (During this section of the agenda, the Assembly receives comments from the public. When providing comment, please include your full name, and limit your testimony to approximately three minutes per person.)

### **D. APPROVAL OF AGENDA**

### **E. MINUTES OF PREVIOUS MEETING**

- 1.) June 10, 2020 Public Hearing and Regular Meeting Minutes

### **F. REPORTS**

- 1.) Introduction: Denali Borough Attorney, Joseph Levesque; Levesque Law Group, LLC
- 2.) Receive the May 2020 Financial Report
- 3.) Planning Commission Report
- 4.) Emergency Manager Report
- 5.) School District Report
- 6.) Mayor's Report
- 7.) CARES Act Programs Report
- 8.) Assembly Comments

### **G. COMMUNICATION AND APPEARANCE REQUEST**

### **H. ORDINANCES**

#### **1.) DRAFT ORDINANCES:**

- a) ORDINANCE 20-12: Denali Borough Code Chapter 3.26 Titled Alcohol and Marijuana Tax
- b) ORDINANCE 20-13: Accept and appropriate Emergency Management Performance Grant (EMPG) funds

*Mission Statement: The Denali Borough Assembly, in the service of the Borough citizens, seeks to defend and sustain the spirit and will of the people.*

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# Denali Borough Assembly Public Hearing and Regular Meeting Agenda

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- c) ORDINANCE 20-14: Accept and appropriate Rasmuson Municipal Arts & Culture Matching Grant funds
- d) ORDINANCE 20-15: Denali Borough Code Chapter 9.15 – Local Option Zoning
- e) ORDINANCE 20-16: Denali Borough Code Chapter 9.15– Conditional Land Use

## 2.) **PENDING ORDINANCES:**

### **I. RESOLUTIONS**

- 1.) RESOLUTION 20-10: AMLJIA Loss control incentive program
- 2.) RESOLUTION 20-11: Approve the Hazard Mitigation Plan update

### **J. OTHER BUSINESS**

- 1.) Denali Borough Land Management Plan
- 2.) Public Comments

### **K. ASSEMBLY COMMENTS**

### **L. TIME AND PLACE OF NEXT MEETING**

Wednesday, August 5, 2020: Public Hearing and Regular VIRTUAL Meeting at 6:00 PM

### **M. ADJOURNMENT**

#### **WHAT'S A VIRTUAL MEETING?**

Assembly members will be meeting through the Zoom remote conferencing service. This remote meeting will be broadcast live on the Denali Borough YouTube channel and/or Facebook Page that can be found by going to the Denali Borough website.

#### **HOW CAN THE PUBLIC PROVIDE COMMENT?**

The public is invited to call the Denali Borough Office (907) 683-1330 OR email Denali Borough Clerk Amber Renshaw at [arenschaw@denaliborough.com](mailto:arenschaw@denaliborough.com) to provide comment before, during and after the meeting.

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*Mission Statement: The Denali Borough Assembly, in the service of the Borough citizens, seeks to defend and sustain the spirit and will of the people.*

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**Denali Borough Assembly  
Minutes of the Public Hearing and Regular Meeting  
Virtual Meeting  
June 10, 2020**

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**PUBLIC HEARING**

17 Presiding Officer Jared ZIMMERMAN called the public hearing to order at 6:01 PM.

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**ORDINANCE 20-09: Fiscal year 2021 budget**

20 There were no comments.

21  
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**ORDINANCE 20-11: Healy Spur Road CTP Project allocation**

23 There were no comments.

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**REGULAR MEETING**

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**CALL TO ORDER**

28 Presiding Officer Jared ZIMMERMAN called the regular meeting to order at 6:01 PM.

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**ROLL CALL**

31 Assembly members present: Jake HILL, Jill BOELSMA, Lisa MINER, Jared ZIMMERMAN,  
32 Tallon SHREEVE, Joe CHATFIELD (joined meeting at 6:05), Eileen HOLMES, Jeff  
33 STENGER (joined meeting at 6:15 PM) and Krista ZAPPONE. Mayor Clay Walker was also  
34 present.

35 Jill BOELSMA MOVED to excuse Joe CHATFIELD and Jeff STENGER until they were able  
36 to join the meeting. The motion was seconded. The VOTE by show of hands and voice  
37 confirmation was unanimous.

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39

**PUBLIC COMMENTS**

40 Vanessa Juszczak with the Denali Chamber of Commerce reviewed the Denali Recovery  
41 Alliance activities including the launch of a new website.

42 Healy area resident Richard Martin asked for borough assistance to mitigate flooding issues  
43 along dry creek, specifically the impacts to residents along Ranch Road and Killian Road.  
44 Mr. Martin asked that a meeting be schedule with impacted residents to discuss mitigation  
45 options and to develop a mitigation plan.

46  
47

**APPROVAL OF AGENDA**

48 Jill BOELSMA MOVED to approve the agenda. The motion was seconded. The VOTE by  
49 show of hands and voice confirmation to approve the agenda was unanimous.

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**MINUTES OF PREVIOUS MEETING**

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**MAY 13, 2020 AND MAY 27, 2020 MINUTES**

1 Jill BOELSMA MOVED to approve the minutes from the May 13, 2020 Public Hearing and  
2 Regular Meeting and the May 27, 2020 Grant Review and Special Meeting. The motion was  
3 seconded. The VOTE by show of hands and voice confirmation was unanimous.  
4

## 5 **REPORTS**

### 6 **FINANCIAL REPORT**

7 Jill BOELSMA MOVED to receive the April 2020 financial report. The motion was seconded.  
8 The VOTE by show of hands and voice confirmation to receive the April 2020 financial  
9 report was unanimous.  
10

### 11 **PLANNING COMMISSION REPORT**

12 Planning Commissioner Kesslyn Tench reported that the Planning Commission recently  
13 reviewed the Annual Work Plan for land related projects. Ms. Tench announced that the  
14 Planning Commission will spend the next four (4) meetings touring Denali Borough Land  
15 and becoming familiar with specific areas that are in need of additional effort and action.  
16

### 17 **SCHOOL DISTRICT REPORT**

18 Superintendent Dan Polta verbally highlighted information provided in the attached written  
19 report (Appendix A).  
20

### 21 **MAYOR REPORT**

22 Mayor Clay Walker verbally highlighted information provided in the attached written report  
23 (Appendix B).  
24

### 25 **EMERGENCY PLANNER REPORT**

26 Emergency Planner Chris Noel verbally highlighted information provided in the attached  
27 written report (Appendix C).  
28

### 29 **ASSEMBLY COMMENTS**

30 Assembly members expressed appreciation for the work being accomplished by the Denali  
31 Recovery Alliance and thanked Denali Borough staff and Superintendent Polta for their work  
32 and reports in addition to the following:

- 33 • Expressed excitement for continued Antler Creek trail planning, and
- 34 • expressed appreciation for the recent Mini March, and
- 35 • congratulated 2020 High School graduates.  
36

### 37 **COMMUNICATION AND APPEARANCE REQUEST**

38 There were no communication and appearance requests.  
39

### 40 **DRAFT ORDINANCES**

41 There were no draft ordinances to consider for introduction.  
42

### 43 **PENDING ORDINANCES**

### 44 **ORDINANCE 20-09: Fiscal Year 2021 Budget V. B**

1 Jill BOELSMA MOVED to substitute Ordinance 20-09 with version B. The motion was  
2 seconded. The VOTE by show of hands and voice confirmation to substitute with version B  
3 was unanimous.

4  
5 Jake HILL MOVED to approve Ordinance 20-09 Version B. The motion was seconded.  
6 There was some discussion regarding Hazard Mitigation and potential efforts to address Dry  
7 Creek flooding. The roll call VOTE to approve Ordinance 20-09 Version B was unanimous.

8  
9 **ORDINANCE 20-11: Healy Spur Road CTP project allocation**

10 Jill BOELSMA MOVED to approve Ordinance 20-11. The motion was seconded. The roll  
11 call VOTE to approve Ordinance 20-11 was unanimous.

12  
13 **OTHER BUSINESS**

14 **PUBLIC COMMENTS**

15 Healy area resident James Gauvin encouraged the borough to facilitate Dry Creek flood  
16 mitigation planning with area residents. Mr. Gauvin also asked if there was an update with  
17 plans for the “into the wild bus”. Mr. Gauvin stated that he looks forward to participating in  
18 some of the upcoming Planning Commission meetings that will tour areas of Denali Borough  
19 lands, and he will watch for the Denali Borough Land Management Plan on a future  
20 assembly meeting agenda.

21  
22 **ASSEMBLY COMMENTS**

23 Assembly members commented on the following:

- 24 • appreciation for public comments, and
- 25 • encouraged discussion for Dry Creek flood mitigation options and planning, and
- 26 • thanked those that provided a report.

27  
28 **TIME AND PLACE OF NEXT MEETING**

29 Upcoming assembly meetings will be virtual on the following dates and times:

- 30 • Public Hearing and Regular Meeting: Wednesday, August 5, 2020 VIRTUAL  
31 Meeting starting at 6:00 PM.

32  
33 **ADJOURN:**

34 Tallon SHREEVE MOVED to adjourn. The motion was seconded. The meeting was  
35 adjourned by unanimous voice vote at 8:58 PM.

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38 APPROVED: \_\_\_\_\_  
39 Jared Zimmerman, Presiding Officer

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41  
42 ATTEST: \_\_\_\_\_  
43 Amber Renshaw, Borough Clerk

44 Date Approved: \_\_\_\_\_



**Superintendent's Report  
Denali Borough Assembly  
Wednesday, June 10<sup>th</sup>, 2020**

Dear Denali Borough Assembly and Mayor Walker,

Please accept this written report for the month of June.

1. Appreciation/Congratulations

- a. Congratulations to all our graduates and their families. We wish you all the best as you move from adolescence into adulthood. Thank you to our staff who worked on our school ceremonies and celebrations to honor the graduates' successes. I also appreciate the efforts in our community to use the less restrictive mandates and guidelines for the public in order to celebrate all the graduates in our communities.
- b. Thank you, Angel Hayes for the fabulous interview you gave to Kris Capps for her article in the Daily News Minor about your help delivering educational materials to our students.
- c. Thank you, Gretchen Striker for your interview with KTVA on your selection as a BP Teacher of Excellence.
- d. Congratulations - A big congratulations to TVS senior, and student school board representative, Makenzie Mirasole. Kenzie was selected as the AASG Student Council Leader of the Year!
- e. Thank you to Candace (and Daryl) Mudge, and our tech crew, for putting on the Variety Show and working through some technical challenges the evening of the event. Here is a link to the full recorded version. <https://www.youtube.com/watch?v=7iAtzLNfAio&feature=youtu.be>
- f. Congratulations to Jeni Mason for being honored as the Principal of the Year for Region 2 by the Alaska Association of Secondary School Principals. For Jeni, this is a 'threepeat' of this recognition. If you haven't seen, there was also a small article in the Fairbanks Daily News Minor about her recognition.

2. Coronavirus -

- a. Smart Start - DEED released their Smart Start guidance for schools on reopening on Thursday June 4th. Just to repeat, the overall structure is to identify community health conditions which define low, medium, and high health risk conditions and then plan for district and school operations for these conditions. The descriptors given for those conditions are general,

**Mission Statement**

*Nurturing, empowering and inspiring today's student to positively shape tomorrow's world.*

meaning the language does not say, “If there are 0-10 cases in the community then...”. The basic outline is that the low risk is no confirmed new cases of COVID-14 for 14 days, medium risk is that there are “minimal” new cases, and high risk is the exists of outbreaks or increase in cases. DEED is allowing each district to decide what exactly the case load and increases is to move from one condition to another for each community. For example, the number of cases in Anchorage that could occur and that large community to be at low risk is very different from the number of cases for a small rural community, on or off the road system.

- b. DBSD Planning Process - For our planning we have one more organizing meeting and then will reach out for some additional participants to help with the planning work. We continue to review the areas to address and identify which should be done by specific individuals, as more technical pieces, and which are more vital to have broader participation. We are also designing structures for the small groups to generate multiple ideas for the scenarios that can be considered farther and more deeply.
- c. Summer Facilities - We developed a set of guidelines for access to our facilities in the summer for community groups such as our libraries, sport camps, etc. Our intent is to allow the community libraries, if they choose, to have access to the library facilities starting in June, provided they can follow and provide the cleaning necessary to meet the mandates for public libraries in Alaska. Access to other areas of the buildings will be restricted. Similarly, organizations wishing to access the outdoor fields will be permitted so long as they agree to follow the general mandates for organized sports and day camps. We are not considering opening the inside spaces of our school buildings (gyms, MPRs, etc.) for community sports etc. We do not have the capacity to provide the cleaning necessary and also have concerns of how access to these spaces may provide more broad access to our buildings than we wish.

### 3. Finances

- a. FY20 Budget - We are in the close out phase of our budget and completing the final payments and tracking of expenses for this fiscal year. We continue to track for an operational surplus. We we narrow in on the final student allotment expenses, carry over, etc. we will see the final figure increase over the projection on the financial report and should be well above \$300,000. This will increase our unrestricted carryover. This will help with the general fiscal uncertainty and to help with the approve FY21 Budget which was approved with an operational deficit of several hundred thousand dollars.
- b. CARES Act - Mayor Walker and I reviewed a list of District expenses which we feel are appropriate and necessary for the District to maintain operations in the face of the current pandemic. The amount is ~\$730,000. This is the amount by which the Borough will consider reducing the local contribution. In addition to the Borough’s Cares Act

money, the District also submitted its first round of expenses for our direct award. Initially we were working with the Borough for them to take on those costs as of the aforementioned list. DEED said we needed to include at least some current expenses in the grant application. Therefore, we submitted increased personnel costs specific to COVID-19 to date. These are ~25,000.

- c. FY21 Budget - The Denali Borough Assembly is considering its local contribution to the FY21 DBSD Budget. The District's total request includes both a required portion and an optional additional portion. The required portion is based on the value of real and personal property in the Borough. The additional amount the Borough is allowed to give is capped by state statute at 23% of the District's Basic Need. The total request from DBSD is \$2,679,071. This includes both portions and is slightly below the maximum allowable based on our enrollment projections. It is slightly lower than the amount requested and provided in FY20.

#### 4. Facilities

- a. Tri-Valley Boiler - We had a very close call with the coal boiler at Tri-Valley today, May 22nd. The boiler overheated and came very close to causing an explosion with possible injury. No one was hurt and the building is safe. An emergency temperature shut off control failed on the boiler. This shut off is designed to turn the boiler off when the system reaches 180 degrees. The system continued to heat up and was discovered from the banging and shaking of the pipes in the boiler room and school. A second emergency shut off kicked in and turned off the system and allowed Curtis and our maintenance crew to take additional steps to shut down and cool down the system. The second shut off is designed to shut the system down at 200 degrees. Nonetheless parts of the system exceeded that heat threshold and reach temperatures in excess of 250 degrees, hot enough to boil the glycol in the system. Curtis and crew are checking the pipes for any damage and if they check out, will turn on the elementary boilers that run on heating oil in order to provide warmth to the building. They will then check and replace the emergency shut offs, check the pipes, fixtures, etc., and only after they are fully confident in the safety of the system will they test run the coal boilers again.
- b. Boiler update after the initial report - when the boiler overheated, it was isolated from the main system for cleaning and maintenance work. This isolation shuts off the valves that move the fluids and turns off the ability for the building to call for heat. The boiler is supposed to go into a cool mode where a small coal fire burns and is fed just enough to keep going. This allows a faster easier start up than a full shut cold shut down. The boiler system is designed to use its temperature sensors to turn down the coal feed and heat buildup to maintain that cool state. These sensors failed. We are now working to find the replacement sensors. This is challenging given the size of the boiler and that most sensor available are



designed for water/steam system which operate at higher temperatures than our glycol system does. The school is being heated by the oil boilers in the elementary end. Even in the summer the school gets very cold without additional heat. We are turning down temperature settings as much as we can in order to be able to provide an acceptably warm (or at least not unacceptably cold) library for the community.

- c. Anderson Roof Project - The protest period on our Intent to Award closed with no protest. This week I reviewed and signed the final contract with Interior Alaska Roofing for this construction project. The overall cost for the construction work on this project is just over \$1 million. Construction will begin this summer and will complete work on two sections. The final section will be completed in the summer for 2020.
- d. Server Room Fire Suppression - Installation of this system should begin in early June. In addition to installing the dry system, the sprinkler heads on the wet system will be replaced with units with a much higher temperature initiation point. This will prevent the water system from initiating before the dry system has a chance to be effective, while maintaining the back up if that system is insufficient to extinguish and control a fire.
- e. Activity Bus - While preparing the Tri-Valley parking lot for graduation we learned that the air brakes on the activity bus had seized and we were unable to move the bus. Usibelli Coal Mine is helping with these repairs
- f. Department of Forestry - We signed tentative agreements with the Department of Forestry to guide the potential use and related fees of our school buildings if there is a local wildfire and our facilities are needed to support the suppression efforts.

## 5. Personnel

- a. Certified Staff
  - i. I authorized one additional, optional work day to our teachers to help provide time for the end of year wrap up and room close out work this year in consideration for the time and facility access challenges we all face during distance learning.
- b. Classified Staff
  - i. No updates
- c. Exempt Staff
  - i. No updates
- d. Temporary Staff,
  - i. The District is not hiring temporary staff this summer in order to further limit person to person contact to our regular staff members. Some staff have been offered additional hours to help with that work.

Sincerely,

Dan Polta  
Denali Borough School District

# DENALI BOROUGH

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Website: [www.denaliborough.org](http://www.denaliborough.org)



*Clay Walker, Mayor*

## **June 2020 Mayor's Report to the Denali Borough Assembly**

This report speaks primarily to non-agenda items. Agenda items will be discussed in meeting.

### **Community COVID-19 Testing Collaboration**

- As an outcome of the regular Healthcare Provider meetings, Alaska Division of Public Health input, and CARES funding opportunities, the Denali Borough, in the past two weeks, stood up a new, free to all, Community Testing Collaboration. Nurse Karri Keith is serving as the lead, performing the testing. More information is included in the program description attached to this report.
- In just a few days of the new program, it appears we have doubled the number of tests performed in the borough. With increased testing also comes the increased odds of a positive case in the borough. As of June 10, we are one of the few counties in the nation without a confirmed positive case. We do not expect that to last much longer, but the readily available and free testing will prove helpful in managing the public health risks going forward.
- Thanks to collaborators which include the CRNA Cantwell Clinic, Interior Community Health Center Healy, Clear Clinic, State of Alaska Division of Public Health, Usibelli Coal Mine, and Tri-Valley Community Center, and more. And many thanks to Nurse Keith for stepping into this role.

### **Denali CARES Programs**

- Borough staff, especially our Borough Clerk, have worked tirelessly to put together and make public two new support programs, which were agreed to be a priority use of CARES funding:
  - Small Business Support Program
    - The application for this program went live on our website on Friday, June 5. The total amount committed to the program is \$900,000. We expect all successful applicants to receive at least \$2,500, with greater sums awarded to those with greater losses. The application period closes June 22. At that time, we will determine the number of awardees and divide the available total between successful applicants, based upon the three levels of lost revenue.
  - Non-Profit Support Program
    - The application for this program also went live on Friday, June 5 and closes on June 22. Rather than craft the program to also fit the needs of emergency response departments and the City of Anderson, we are meeting with each of those organizations separately to arrive at agreements of CARES funding usage. For all other non-profits, the base amount of need is determined to be \$10,000 with any additional need requiring specific justification.

## **Denali National Park Winter and Shoulder Season Visitor Services Environmental Assessment (EA)**

- The National Park Service released the above EA, which is the “culmination of a 2018-2019 planning effort to provide high-quality visitor experiences and resource protection during the winter and shoulder seasons”. The proposed alternative calls for plowing the Park Road to Mountain Vista in February, improvements at Mountain Vista, earlier start dates for bus services and campgrounds, improvements to Teklanika Rest Area, new commercial guiding opportunities, and trail grooming in the entrance area, among other actions. The full plan can be found on the Park website under Planning and the comment period ends June 30. Through the planning process, the Denali Borough supported a number of the proposed actions. After reading the full plan, I intend to submit comments from the Denali Borough offering our support of the plan.

## **Federal Energy Regulatory Commission (FERC) approval of Alaska Gasline Development Corporation’s (AGDC) Alaska Liquefied Natural Gas (AKLNG) Project**

- On May 21, FERC issued authorization to construct and operate the proposed AKLNG Project. Gas pricing forecasts put the project as planned in an uneconomic position. But, of course, we will continue to stay tuned and abreast of developments.

## **Other Meetings of Interest**

- I attended the May 21 **Denali Borough School District Board meeting** virtually and provided a report. I shared the collaborative work with Superintendent Polta in identifying school costs which qualify under U.S. Treasury guidance as allowable uses of CARES funding and the intention to consider using those funds to buttress a reduced borough Additional Allowable Contribution in the borough’s FY 2021 Budget.
- On June 3, the Fairbanks office of the **National Weather Service hosted a Denali Heavy/Rain Flooding Tabletop Exercise**. The Denali Borough, the State of Alaska Division of Homeland Security and Emergency Management, Denali National Park, the City of Anderson, Tri-Valley VFD, the Red Cross, NOAA, State DOT, Clear AFS, GVEA, Usibelli Coal Mine, the Alaska Railroad, and State Public Health were all active participants. This was a great exercise in working through different roles, responsibilities, and planned courses of actions for the wide range of involved organizations and agencies. Building those relationships is always an important take away. The half inch of rain which fell over the course of the two-hour exercise made it even more relevant.
- Together with Denali N.P. and State DOT, we have participated in a couple meetings, including a June 10 site visit, regarding planning for the **Federal Land Access Program funded Bison Gulch Parking Area and Trail Enhancement**. Upon closer ground and soil investigation, the best long-term site for the Parking Area and Trail may actually be closer to Antler Creek.
- Serving as a committee member, I attended the **National Assn of Counties’ Public Land Steering Committee Meeting** June 10. Keeping up on federal developments, the Great American Outdoors Act, which includes substantial funds for National Park Service deferred maintenance, is progressing with broad support. PILT funding is secured for this year and will be released at the end of the month. A long-term funding source of PILT is yet to be identified. A fourth stimulus bill is slow to develop, with expectations that the earliest one could come together is late July.

Happy June, happy peak of the light cycle. As always, feel free to call me or staff if you have any questions. Stay safe, Clay

## MEMO

**To:** Denali Borough Assembly Members

**From:** Chris Noel, Emergency Planner

**Date:** June 10, 2020

**Re:** COVID-19 emergency planning update

COVID-19 testing is now available at the Cantwell Clinic (907-768-2122), Interior Community Health Clinic in Healy (907-683-2211), and the Community Testing Program (907-750-4182). According to the State of Alaska dashboard, 44 tests have been performed in the Borough, and we continue to have no confirmed cases Borough residents have done a great job, and our sacrifices so far are commendable- and have contributed to our position today. Keep up the good work. We must continue to proactive good social distancing and wearing masks in public when social distancing is not possible. Three Bears has created a COVID-19 Mitigation shelf near the “free mask basket” stocked with supplies such as hand sanitizer and disinfectant spray.

Health Mandate 10 has been updated, permitting interstate travel under the conditions of the Mandate, and this will lead to an increase in travel through the Denali Borough. Travelers to Alaska must follow one of four scenarios to travel safely to Alaska. They can arrive with a Negative test result and receive a second negative test after arriving or receive a test when they arrive and a second test within 7-14 days of the first. Until the traveler has received two negative test results, they should minimize trips into public spaces and avoid close contact with those outside of their traveling group. The traveler may complete a 14-day quarantine instead of completing testing.

As we approach the July 1<sup>st</sup> opening of Denali area businesses, lets continue to encourage local business owners to develop a mitigation plan for COVID-19. The plan should address how they will keep their employees safe, and how they will provide services to visitors while protecting the communities in which they operate. The plan should include policies for visitors who arrive and test positive for COVID-19. Public Health Nursing is willing and able to assist businesses with their individual plan.

We will be meeting individually with each volunteer fire department to discuss CARES funding to the departments, coinciding with the Nonprofit and business relief programs.

We continue to work towards a collaborative solution to the flooding some homeowners are experiencing adjacent to Dry Creek. The Borough was among ~15 agencies who participated in a severe weather tabletop exercise presented by the National Weather Service. They shared that the flooding Healy experienced in August of 2019 resulted from a 9 day rainfall total of 6 ½”. Within the Dry Creek drainage, enough water fell to cover the 48 acre school lot with 16’ of water. We will continue to work with State and Federal partners to develop a long-term flood mitigation strategy.

<https://covid19.alaska.gov/>

<https://www.denaliborough.org/>

Fairbanks Public Health  
Center: 907-452-1776

**Denali Borough**  
**Financial Report**  
 May 2020

Balance Sheet

	<b>May 31, 20</b>	<b>May 31, 19</b>
<b>ASSETS</b>		
<b>Current Assets</b>		
<b>Checking/Savings</b>		
CARES Act	1,840,570.43	0.00
1010 · Petty Cash	200.00	200.00
1011 · Landfill Petty Cash	500.00	500.00
1012 · CTS Petty Cash	200.00	200.00
1013 · HTS Petty Cash	200.00	200.00
1031 · FNB General Fund	320,254.79	257,517.75
1032 · FNB Repo Account	3,354,094.31	3,378,021.38
1038 · FNB Perm Inv Fund	11,704.07	11,694.64
1041 · AMLIP		
1046 · Disaster Contingency Fund	138,976.40	128,715.91
<b>Total 1041 · AMLIP</b>	<b>138,976.40</b>	<b>128,715.91</b>
1054 · FNB Savings Land Management	66,024.82	120,578.45
1056 · FNB Land Management Fund	25,605.01	64,227.53
1057 · FNB Land Sales Account	154,332.81	132,984.56
1058 · *FNB Land Managment Capital Fun	347,012.41	449,306.23
1061 · FNB Solid Waste Fund	46,789.35	60,411.10
1062 · Equipment Reserve Fund	365,909.09	284,725.41
1063 · FNB Solid Waste Savings	295,681.16	157,230.20
1064 · FNB Landfill Closure Fund	70,542.87	70,464.68
1067 · FNB Maj. School Maint. Reserve	13,020.10	13,020.10
1068 · KeyBank AMLIP Savings MSMRF	883,337.74	809,018.47
1071 · Parks & Recreation	20,027.54	10,002.54
1075 · ERAF	380,000.00	200,000.00
1081 · FNB Capital Improvements Fund	437,963.49	194,436.75
<b>Total Checking/Savings</b>	<b>8,772,946.39</b>	<b>6,343,455.70</b>
<b>Accounts Receivable</b>		
1110 · O/A Tax Receivable	21,581.68	46,453.23
1111 · Severance Tax Receivable	-55.00	-55.00
1200 · Accounts Receivable		
1201 · Solid Waste	32,878.65	3,663.55
1200 · Accounts Receivable - Other	833.09	-0.01
<b>Total 1200 · Accounts Receivable</b>	<b>33,711.74</b>	<b>3,663.54</b>
1300 · Land Sales Receivable	46,510.05	64,778.08
<b>Total Accounts Receivable</b>	<b>101,748.47</b>	<b>114,839.85</b>
<b>Other Current Assets</b>		
1140 · State & Federal Receivable	-1,649.03	0.00
1150 · NSF Receivable	0.00	321.50
1499 · Undeposited Funds	2,771.57	5,915.88
1545 · Construction In Progrss	0.00	391,336.95
<b>Total Other Current Assets</b>	<b>1,122.54</b>	<b>397,574.33</b>
<b>Total Current Assets</b>	<b>8,875,817.40</b>	<b>6,855,869.88</b>
<b>Fixed Assets</b>		
1510 · Solid Waste Landfill	1,570,913.35	894,062.42
1515 · Accumulated Depreciation	-1,865,219.56	-1,742,755.06
1520 · Solid Waste Equipment	1,124,295.73	1,076,356.64
1525 · Land Enterprise Fund Assets	48,356.83	49,414.17
1530 · Solid Waste Building	710,766.74	710,766.74
1540 · Cantwell Transfer Station	276,547.14	276,547.14
1631 · Building Renovations - Gen Fund	9,110.20	9,110.20
1671 · Equipment - General Fund	169,638.64	209,346.98

**Denali Borough  
Financial Report**

Balance Sheet

	<u>May 2020</u>	
	<u>May 31, 20</u>	<u>May 31, 19</u>
1692 · School Buildings	32,531,126.87	32,531,126.87
1699 · Accum Deprec Gov't	-13,815,876.18	-13,424,133.55
<b>Total Fixed Assets</b>	<b>20,759,659.76</b>	<b>20,589,842.55</b>
<b>Other Assets</b>		
1935 · First National Bank Alaska		
1935A · Land Enterprise CD	101,086.48	100,654.50
1935B · Solid Waste CD	152,297.56	150,690.22
1935C · SW Equip Reserve CD	152,316.47	150,708.92
<b>Total 1935 · First National Bank Alaska</b>	<b>405,700.51</b>	<b>402,053.64</b>
1940 · TVI/ProEquities		
1943 · Accrued Int	10,265.50	11,947.40
1944 · Market Value Adj	104,428.46	-85.95
1945 · Cash	154,476.79	88,451.37
1946 · Landfill Closure Fund CD	249,000.00	247,000.00
1947 · General Fund CD	2,723,000.00	2,722,000.00
<b>Total 1940 · TVI/ProEquities</b>	<b>3,241,170.75</b>	<b>3,069,312.82</b>
1950 · PIF-TVI/Pro Equities		
1951 · Accrued Interest	5,039.53	4,916.74
1952 · Investment Market Value Adjust	62,674.55	6,405.63
1953 · Money Market Funds	17,485.72	262,012.69
1954 · Fixed Income	1,424,000.00	1,187,000.00
1955 · Vanguard Mid-Cap Fund		
Vanguard mid-cap mkt adj	14,581.82	-338.45
1955 · Vanguard Mid-Cap Fund - Other	506,724.41	497,722.44
<b>Total 1955 · Vanguard Mid-Cap Fund</b>	<b>521,306.23</b>	<b>497,383.99</b>
1956 · Vanguard Small-Cap Fund		
Vanguard small cap mkt adj	-32,541.34	-18,050.78
1956 · Vanguard Small-Cap Fund - Other	505,095.48	497,564.84
<b>Total 1956 · Vanguard Small-Cap Fund</b>	<b>472,554.14</b>	<b>479,514.06</b>
1958 · Vanguard 500 Index Fund		
1957 · Vanguard 500-Market Value Adjus	509,187.27	426,727.60
1958 · Vanguard 500 Index Fund - Other	348,441.72	348,441.74
<b>Total 1958 · Vanguard 500 Index Fund</b>	<b>857,628.99</b>	<b>775,169.34</b>
<b>Total 1950 · PIF-TVI/Pro Equities</b>	<b>3,360,689.16</b>	<b>3,212,402.45</b>
1960 · Deferred Outflow-PERS Employer	109,757.04	136,695.56
1961 · Deferred Outflows-OPEB	51,637.62	83.00
<b>Total Other Assets</b>	<b>7,168,955.08</b>	<b>6,820,547.47</b>
<b>TOTAL ASSETS</b>	<b>36,804,432.24</b>	<b>34,266,259.90</b>
<b>LIABILITIES &amp; EQUITY</b>		
<b>Liabilities</b>		
<b>Current Liabilities</b>		
<b>Accounts Payable</b>		
2010 · Accounts Payable	190.00	-4.51
<b>Total Accounts Payable</b>	<b>190.00</b>	<b>-4.51</b>
<b>Credit Cards</b>		
1096 · FNB Credit Cards		
1097 · Solid Waste FNBCC	113.44	614.58
1098 · Land Enterprise FNBCC	178.25	826.70
1099 · General Fund FNBCC	734.49	7,000.43
<b>Total 1096 · FNB Credit Cards</b>	<b>1,026.18</b>	<b>8,441.71</b>
<b>Total Credit Cards</b>	<b>1,026.18</b>	<b>8,441.71</b>
<b>Other Current Liabilities</b>		
2100 · Payroll Liabilities		

**Denali Borough  
Financial Report**

Balance Sheet

	<u>May 2020</u>	
	<u>May 31, 20</u>	<u>May 31, 19</u>
2105 · FWT, FICA, Medicare	-825.36	-416.08
2107 · SBS Payable	-5.65	5,120.31
2100 · Payroll Liabilities - Other	10.32	10.32
<b>Total 2100 · Payroll Liabilities</b>	<b>-820.69</b>	<b>4,714.55</b>
2101 · Payroll Liab	5,585.36	21,145.44
2140 · PERS Payable	413.38	413.38
2340 · Accrued PTO (Formerly Vaca Lve)	30,900.81	28,551.42
2445 · Due to Solid Waste	95.12	95.12
<b>Total Other Current Liabilities</b>	<b>36,173.98</b>	<b>54,919.91</b>
<b>Total Current Liabilities</b>	<b>37,390.16</b>	<b>63,357.11</b>
<b>Long Term Liabilities</b>		
2020 · Est. Liab. for Landfill Closure	764,573.00	265,900.00
2030 · PERS Pension Liability-Employer	751,477.01	809,716.00
2031 · Deferred Inflows-PERS Employer	33,068.00	90,067.00
2032 · OPEB Retirement Liability	153,852.01	128,952.00
2033 · Deferred Inflows OPEB	64,046.01	69,913.99
<b>Total Long Term Liabilities</b>	<b>1,767,016.03</b>	<b>1,364,548.99</b>
<b>Total Liabilities</b>	<b>1,804,406.19</b>	<b>1,427,906.10</b>
<b>Equity</b>		
2510 · Invmt in Acct Group - Gen Fund	19,325,451.00	19,325,451.00
2515 · Investment in Acct Group - Land	34,031.77	9,559.00
2520 · Invmt in Acct Group - Landfill	1,617,870.00	1,617,870.00
2740 · Fund Balance		
2650 · Resv for subs exp	5,867,056.00	5,867,056.00
2741 · Permanent Fund	3,239,316.00	3,239,316.00
2742 · School Maintenance	672,913.00	672,913.00
2743 · Capital Projects	484,909.00	484,909.00
2744 · Landfill	826,662.00	826,662.00
2746 · Land	665,550.00	665,550.00
2751 · 2751 Spendable PIF	89,052.00	89,052.00
2752 · 2752 Disaster Contingency	125,266.08	125,266.08
<b>Total 2740 · Fund Balance</b>	<b>11,970,724.08</b>	<b>11,970,724.08</b>
2745 · Retained Earnings	729,785.14	966,682.14
Net Income	1,322,164.06	-1,051,932.42
<b>Total Equity</b>	<b>35,000,026.05</b>	<b>32,838,353.80</b>
<b>TOTAL LIABILITIES &amp; EQUITY</b>	<b>36,804,432.24</b>	<b>34,266,259.90</b>

**Denali Borough  
Financial Report  
May 2020**

Budget vs Actual  
GF:Assembly,  
Matching Grants, DBSD ,  
Fund Transfer

	<u>May-20</u>	<u>Jul 19-May 20</u>	<u>Budget</u>	<u>\$ Over Budget</u>	<u>% of Budget</u>
<b>Ordinary Income/Expense</b>					
<b>Income</b>					
3110 · Overnight Accommodation Tax	237.05	2,775,411.09	2,900,000.00	-124,588.91	95.70%
3120 · Severance Tax	0.00	41,093.19	50,000.00	-8,906.81	82.19%
3210 · PILT Act	0.00	395,436.00	395,436.00	0.00	100.00%
3310 · Community Assistance (Revenue S	0.00	369,402.11	369,402.00	0.11	100.00%
3320 · PERS On Behalf Payments	0.00	0.00	10,000.00	-10,000.00	0.00%
3330 · Electric/Telephone Co-op Tax	0.00	0.00	45,000.00	-45,000.00	0.00%
3410 · Interest Income	5,300.39	81,668.88	60,000.00	21,668.88	136.12%
3420 · Unrecognized Gain (Loss) on Inv	31,100.00	79,534.21	0.00	79,534.21	100.00%
3910 · Miscellaneous Income	70.00	3,238.76	3,500.00	-261.24	92.54%
3920 · Penalties/Interest	70.00	1,320.33	0.00	0.00	100.00%
<b>Total Income</b>	<u>36,777.44</u>	<u>3,747,104.57</u>	<u>3,833,338.00</u>	<u>-86,233.43</u>	<u>97.75%</u>
<b>Gross Profit</b>	36,777.44	3,747,104.57	3,833,338.00	-86,233.43	97.75%
<b>Expense</b>					
4001 · Nonstaff Stipends	1,850.00	18,900.00	22,800.00	-3,900.00	82.90%
4006 · Staff Salaries	13,528.93	156,800.39	185,000.00	-28,199.61	84.76%
4011 · Staff Benefits	17,666.18	159,098.89	215,000.00	-55,901.11	74.00%
4012 · Nonstaff Benefits	455.18	1,992.62	2,475.00	-482.38	80.51%
4014 · Workmen's Compensation	0.00	917.45	1,300.00	-382.55	70.57%
4021 · Nonstaff Travel	0.00	4,979.07	6,000.00	-1,020.93	82.99%
4022 · Staff Travel	0.00	5,701.49	10,000.00	-4,298.51	57.02%
4025 · Staff Training	0.00	2,444.24	5,000.00	-2,555.76	48.89%
4026 · Nonstaff Training	0.00	701.20	1,000.00	-298.80	70.12%
4030 · Rent	2,449.20	26,941.20	33,620.00	-6,678.80	80.13%
4031 · Utilities	315.23	2,881.94	6,000.00	-3,118.06	48.03%
4035 · IT Services	357.50	5,433.97	9,000.00	-3,566.03	60.38%
4038 · Janitorial Services	144.00	2,368.00	1,500.00	868.00	157.87%
4040 · Elections	0.00	16,253.08	17,000.00	-746.92	95.61%
4041 · Codification of Municipal Code	0.00	1,126.50	2,000.00	-873.50	56.33%
4050 · Equipment	0.00	4,556.84	12,000.00	-7,443.16	37.97%
4052 · Repairs and Maintenance	0.00	1,295.02	2,500.00	-1,204.98	51.80%
4060 · Supplies	63.44	3,115.63	5,000.00	-1,884.37	62.31%
4061 · Dues/Subscriptions/Advertising	371.74	17,726.47	19,000.00	-1,273.53	93.30%
4062 · Postage	3.25	1,671.51	3,000.00	-1,328.49	55.72%
4064 · Bank Fees	110.23	20,144.20	25,000.00	-4,855.80	80.58%
4070 · Vehicle Insurance	0.00	353.81	500.00	-146.19	70.76%
4071 · Property Insurance	0.00	250.00	250.00	0.00	100.00%
4073 · Bonding & Insurance	0.00	5,318.50	6,000.00	-681.50	88.64%
4080 · Consultant Fees	0.00	7,155.50	15,000.00	-7,844.50	47.70%
4081 · Attorney Fees	3,980.20	6,711.15	16,000.00	-9,288.85	41.95%
4082 · Audit Fees	0.00	35,400.00	36,000.00	-600.00	98.33%
4083 · Overnight Accom Audit Fees	0.00	2,000.00	2,000.00	0.00	100.00%
4310 · Contingency	0.00	1,352.16	3,000.00	-1,647.84	45.07%
<b>6000 · Matching Grants</b>					
Kobe Farm Community	0.00	24,000.00	24,000.00	0.00	100.00%
McKinley Volunteer Fire Dept	0.00	0.00	8,000.00	-8,000.00	0.00%
Tri-Valley Community Library	0.00	5,984.65	6,455.00	-470.35	92.71%
<b>Total 6000 · Matching Grants</b>	<u>0.00</u>	<u>29,984.65</u>	<u>38,455.00</u>	<u>-8,470.35</u>	<u>77.97%</u>
7010 · DBSD Mandatory Contribution	0.00	964,876.00	964,876.00	0.00	100.00%
7020 · DBSD Additional Allowable Cont	0.00	1,804,432.00	1,804,432.00	0.00	100.00%
<b>Total Expense</b>	<u>41,295.08</u>	<u>3,312,883.48</u>	<u>3,470,708.00</u>	<u>-157,824.52</u>	<u>95.45%</u>
<b>Net Ordinary Income</b>	-4,517.64	434,221.09	362,630.00	71,591.09	119.74%
<b>Other Income/Expense</b>					
<b>Other Expense</b>					
<b>Total TRANSFERS IN</b>	<u>58,127.00</u>	<u>58,127.00</u>	<u>58,127.00</u>	<u>0.00</u>	<u>100.00%</u>
<b>Total Other Income</b>	58,127.00	58,127.00	58,127.00	0.00	100.00%
<b>TRANSFERS OUT</b>					
9120 · To Special Revenue Fund	0.00	0.00	12,000.00	-12,000.00	0.00%
9130 · To Capital Projects	0.00	60,000.00	60,000.00	0.00	100.00%
9150 · To MSMRF	0.00	60,000.00	60,000.00	0.00	100.00%
9160 · To Land Enter. Fund	0.00	80,000.00	80,000.00	0.00	100.00%
9170 · To Solid Waste Enterprise Fund	0.00	80,000.00	80,000.00	0.00	100.00%
9180 · To Parks & Recreation	0.00	20,000.00	78,127.00	-58,127.00	25.60%
9190 · To Emergency Response Apparatus	0.00	180,000.00	180,000.00	0.00	100.00%
<b>Total TRANSFERS OUT</b>	<u>0.00</u>	<u>480,000.00</u>	<u>550,127.00</u>	<u>-70,127.00</u>	<u>87.25%</u>
<b>Total Other Expense</b>	<u>0.00</u>	<u>480,000.00</u>	<u>550,127.00</u>	<u>-70,127.00</u>	<u>87.25%</u>
<b>Net Other Income</b>	0.00	-480,000.00	-550,127.00	70,127.00	87.25%
<b>Net Ordinary Income</b>	-4,517.64	-45,778.91	-187,497.00	141,718.09	24.42%



**Denali Borough  
Financial Report  
May 2020**

Budget vs Actual  
GF: Mayor

	<u>May-20</u>	<u>Jul 19-May 20</u>	<u>Budget</u>	<u>\$ Over Budget</u>	<u>% of Budget</u>
<b>Ordinary Income/Expense</b>					
4005 · Mayor Salary	6,578.00	75,647.00	85,514.00	-9,867.00	88.46%
4006 · Staff Salaries	8,040.65	85,111.00	110,000.00	-24,889.00	77.37%
4010 · Mayor Benefits	6,433.03	58,834.55	76,000.00	-17,165.45	77.41%
4011 · Staff Benefits	10,592.05	91,197.17	120,000.00	-28,802.83	76.0%
4014 · Workmen's Compensation	0.00	917.46	1,200.00	-282.54	76.46%
4022 · Staff Travel	0.00	1,989.76	3,000.00	-1,010.24	66.33%
4023 Mayor Travel	0.00	8,019.27	10,000.00	-1,980.73	80.19%
4025 · Staff Training	0.00	1,985.00	2,500.00	-515.00	79.4%
4031 · Utilities	237.57	8,210.46	10,000.00	-1,789.54	82.11%
4035 · IT Services	0.00	5,673.29	9,000.00	-3,326.71	63.04%
4038 · Janitorial Services	0.00	1,368.00	1,500.00	-132.00	91.2%
4050 · Equipment	0.00	4,916.21	7,000.00	-2,083.79	70.23%
4052 · Repairs and Maintenance	0.00	858.72	1,000.00	-141.28	85.87%
4060 · Supplies	0.00	508.20	1,000.00	-491.80	50.82%
4061 · Dues/Subscriptions/Advertising	0.00	6,197.44	10,000.00	-3,802.56	61.97%
4070 · Vehicle Insurance	0.00	353.82	500.00	-146.18	70.76%
4071 · Property Insurance	0.00	250.00	250.00	0.00	100.0%
4073 · Bonding & Insurance	0.00	5,318.50	5,500.00	-181.50	96.7%
4080 · Consultant Fees	1,261.00	2,515.43	4,000.00	-1,484.57	62.89%
4081 · Attorney Fees	480.95	2,730.95	16,000.00	-13,269.05	17.07%
4310 · Contingency	0.00	2,167.60	3,000.00	-832.40	72.25%
5110 · Public Safety Per Capita					
Cantwell Volunteer Fire Dept	0.00	6,570.00	6,570.00	0.00	100.0%
McKinley Volunteer Fire Dept	0.00	5,550.00	5,550.00	0.00	100.0%
Tri-Valley Volunteer Fire Dept	0.00	34,818.00	34,818.00	0.00	100.0%
Total 5110 · Public Safety Per Capita	0.00	46,938.00	46,938.00	0.00	100.0%
5200 · Nonprofit Contributions					
Cantwell Community Library	468.97	4,896.79	5,690.00	-793.21	86.06%
Community of Cantwell	7,132.44	18,649.22	29,834.00	-11,184.78	62.51%
Denali Chamber of Commerce	3,767.59	14,618.42	24,100.00	-9,481.58	60.66%
Denali Emergency Services Assn	3,956.00	79,441.00	86,010.00	-6,569.00	92.36%
Denali Preschool and Lrning Cnt	3,969.99	9,155.92	14,500.00	-5,344.08	63.14%
Healy Hockey Association	6,375.96	9,530.21	10,500.00	-969.79	90.76%
Kobe Farm Community	0.00	17,278.29	18,000.00	-721.71	95.99%
McKinley Park Community Club	3,899.51	12,852.44	16,200.00	-3,347.56	79.34%
McKinley Volunteer Fire Dept	6,333.04	17,688.38	30,050.00	-12,361.62	58.86%
Panguingue Creek Homeowners Ass	1,362.59	5,919.08	14,995.00	-9,075.92	39.47%
Railbelt Mental Health and Addi	3,134.84	9,532.22	10,000.00	-467.78	95.32%
Tri-Valley Community Library	0.00	10,612.82	12,600.00	-1,987.18	84.23%
Tri-Valley Volunteer Fire Dept	0.00	135,862.64	223,100.00	-87,237.36	60.9%
Total 5200 · Nonprofit Contributions	40,400.93	346,037.43	495,579.00	-149,541.57	69.83%
5300 · Revenue Sharing Distribution					
Cantwell Volunteer Fire Departm	0.00	0.00	15,789.00	-15,789.00	0.0%
McKinley Volunteer Fire Dept	0.00	0.00	15,789.00	-15,789.00	0.0%
Tri-Valley Volunteer Fire Depar	0.00	0.00	15,789.00	-15,789.00	0.0%
Total 5300 · Revenue Sharing Distribut	0.00	0.00	47,367.00	-47,367.00	0.0%
5310 · Municipal Assistance	0.00	48,500.00	48,500.00	0.00	100.0%
5400 · Community Events (Winterfest)	0.00	2,387.91	3,500.00	-1,112.09	68.23%
5410 · AML Summer Conference	0.00	0.00	0.00	0.00	0.0%
	<u>74,024.18</u>	<u>808,633.17</u>	<u>1,118,848.00</u>	<u>-310,214.83</u>	<u>72.27%</u>
<b>Net Ordinary Income</b>	<u>-74,024.18</u>	<u>-808,633.17</u>	<u>-1,118,848.00</u>	<u>310,214.83</u>	<u>72.27%</u>
	<u><b>-74,024.18</b></u>	<u><b>-808,633.17</b></u>	<u><b>-1,118,848.00</b></u>	<u><b>310,214.83</b></u>	<u><b>72.27%</b></u>

**Denali Borough  
Financial Report**

Budget vs Actual  
Solid Waste

**May 2020**

	<u>May-20</u>	<u>Jul 19-May 20</u>	<u>Budget</u>	<u>Over Budget</u>	<u>% of Budget</u>
<b>Income</b>					
3320 · PERS On Behalf Payments	0.00	0.00	4,000.00	-4,000.00	0.0%
3410 · Interest Income	359.52	7,828.53	6,000.00	1,828.53	130.48%
3420 · Unrecognized Gain (Loss) on I	2,773.86	10,724.32	0.00	10,724.32	100.0%
3710 · Tipping Fees	20,818.87	485,734.24	500,000.00	-14,265.76	97.15%
3720 · Cover	44.52	829.38	1,000.00	-170.62	82.94%
<b>Total Income</b>	<u>23,996.77</u>	<u>505,116.47</u>	<u>511,000.00</u>	<u>-5,883.53</u>	<u>98.85%</u>
	23,996.77	505,116.47	511,000.00	-5,883.53	98.85%
<b>Expense</b>					
4006 · Staff Salaries	16,106.29	168,370.51	210,000.00	-41,629.49	80.18%
4011 · Staff Benefits	6,826.57	65,962.86	100,000.00	-34,037.14	65.96%
4014 · Workmen's Compensation	0.00	11,512.85	11,600.00	-87.15	99.25%
4022 · Staff Travel	0.00	56.93	1,000.00	-943.07	5.69%
4025 · Staff Training	0.00	1,095.00	2,000.00	-905.00	54.75%
4031 · Utilities	1,030.94	10,166.36	11,000.00	-833.64	92.42%
4033 · Heating Fuel	1,027.80	2,357.84	4,000.00	-1,642.16	58.95%
4035 · IT Services	0.00	5,316.07	7,500.00	-2,183.93	70.88%
4050 · Equipment	127.63	20,230.86	25,000.00	-4,769.14	80.92%
4051 · Safety Equipment	0.00	2,480.68	3,500.00	-1,019.32	70.88%
4052 · Repairs and Maintenance	1,211.80	39,560.75	55,000.00	-15,439.25	71.93%
4053 · Equipment Fuel (Diesel)	0.00	18,328.54	28,000.00	-9,671.46	65.46%
4054 · Equipment Fuel (Gas)	0.00	381.88	1,000.00	-618.12	38.19%
4056 · Snow Plowing	0.00	10,613.00	9,000.00	1,613.00	117.92%
4057 · Tools	0.00	1,656.67	2,500.00	-843.33	66.27%
4060 · Supplies	88.58	3,711.30	6,000.00	-2,288.70	61.86%
4061 · Dues/Subscriptions/Advertisi	0.00	1,027.95	5,000.00	-3,972.05	20.56%
4062 · Postage	0.00	0.00	50.00	-50.00	0.0%
4064 · Bank Fees	245.06	5,780.06	5,000.00	780.06	115.6%
4070 · Vehicle Insurance	0.00	1,415.27	1,500.00	-84.73	94.35%
4071 · Property Insurance	0.00	2,438.97	2,500.00	-61.03	97.56%
4072 · Equipment Insurance	0.00	2,773.13	3,000.00	-226.87	92.44%
4080 · Consultant Fees	0.00	63.50	5,000.00	-4,936.50	1.27%
4100 · Survey Fees	6,750.00	6,750.00	10,000.00	-3,250.00	67.5%
4101 · Hauling Fees	2,584.56	26,459.45	33,000.00	-6,540.55	80.18%
4102 · Cover and Cell Maintenance	0.00	0.00	2,000.00	-2,000.00	0.0%
4103 · Well Monitoring	0.00	12,735.74	46,000.00	-33,264.26	27.69%
4105 · HHW Disposal	0.00	2,467.35	12,000.00	-9,532.65	20.56%
4107 · DEC Inspections	0.00	4,210.00	6,000.00	-1,790.00	70.17%
4310 · Contingency	30.00	1,338.75	3,000.00	-1,661.25	44.63%
<b>Total Expense</b>	<u>36,029.23</u>	<u>429,262.27</u>	<u>611,150.00</u>	<u>-181,887.73</u>	<u>70.24%</u>
	-12,032.46	75,854.20	-100,150.00	176,004.20	-75.74%
	<u><b>-12,032.46</b></u>	<u><b>75,854.20</b></u>	<u><b>-100,150.00</b></u>	<u><b>176,004.20</b></u>	<u><b>-75.74%</b></u>

**Denali Borough  
Financial Report**

Budget Vs Actual  
Land Management

**May 2020**

	<u>May-20</u>	<u>Jul 19-May 20</u>	<u>Budget</u>	<u>Over Budget</u>	<u>% of Budget</u>
<b>Income</b>					
3320 · PERS On Behalf Payments	0.00	0.00	1,000.00	-1,000.00	0.0%
3410 · Interest Income	0.00	198.34	200.00	-1.66	99.17%
3910 · Miscellaneous Income	306.00	1,434.00	0.00	1,434.00	100.0%
3930 · Application Fee	25.00	355.00	100.00	255.00	355.0%
<b>Total Income</b>	<u>331.00</u>	<u>1,987.34</u>	<u>1,300.00</u>	<u>687.34</u>	<u>152.87%</u>
	331.00	1,987.34	1,300.00	687.34	152.87%
<b>Expense</b>					
4001 · Nonstaff Stipends	725.00	7,950.00	11,400.00	-3,450.00	69.74%
4006 · Staff Salaries	3,796.70	43,622.07	50,000.00	-6,377.93	87.24%
4011 · Staff Benefits	2,734.86	25,852.37	40,000.00	-14,147.63	64.63%
4012 · Nonstaff Benefits	0.00	590.96	873.00	-282.04	67.69%
4014 · Workmen's Compensation	0.00	244.50	400.00	-155.50	61.13%
4021 · Nonstaff Travel	0.00	0.00	1,500.00	-1,500.00	0.0%
4022 · Staff Travel	0.00	1,482.27	3,000.00	-1,517.73	49.41%
4025 · Staff Training	0.00	819.00	2,000.00	-1,181.00	40.95%
4026 · Nonstaff Training	0.00	336.62	2,000.00	-1,663.38	16.83%
4030 · Rent	0.00	6,631.68	7,500.00	-868.32	88.42%
4031 · Utilities	0.00	0.00	2,000.00	-2,000.00	0.0%
4035 · IT Services	0.00	4,083.77	6,000.00	-1,916.23	68.06%
4038 · Janitorial Services	288.00	288.00	1,800.00	-1,512.00	16.0%
4050 · Equipment	0.00	2,705.41	6,000.00	-3,294.59	45.09%
4052 · Repairs and Maintenance	0.00	0.00	1,000.00	-1,000.00	0.0%
4060 · Supplies	0.00	350.18	1,000.00	-649.82	35.02%
4061 · Dues/Subscriptions/Advert	170.00	8,716.03	12,000.00	-3,283.97	72.63%
4062 · Postage	8.25	52.20	500.00	-447.80	10.44%
4080 · Consultant Fees	0.00	34,047.00	60,000.00	-25,953.00	56.75%
4081 · Attorney Fees	0.00	0.00	3,000.00	-3,000.00	0.0%
4202 · Land Administration	0.00	6,335.00	25,000.00	-18,665.00	25.34%
4310 · Contingency	0.00	349.26	1,500.00	-1,150.74	23.28%
<b>Total Expense</b>	<u>7,722.81</u>	<u>144,456.32</u>	<u>238,473.00</u>	<u>-94,016.68</u>	<u>60.58%</u>
<b>Net Ordinary Income</b>	<u>-7,391.81</u>	<u>-142,468.98</u>	<u>-237,173.00</u>	<u>94,704.02</u>	<u>60.07%</u>
<b>Net Income</b>	<u>-7,391.81</u>	<u>-142,468.98</u>	<u>-237,173.00</u>	<u>94,704.02</u>	<u>60.07%</u>
<b>Other Income/Expense</b>					
<b>TRANSFERS IN</b>					
9000 · From General Fund	0.00	80,000.00	80,000.00	0.00	100.0%
<b>Total TRANSFERS IN</b>	<u>0.00</u>	<u>80,000.00</u>	<u>80,000.00</u>	<u>0.00</u>	<u>100.0%</u>
<b>Total Other Income</b>	<u>0.00</u>	<u>80,000.00</u>	<u>80,000.00</u>	<u>0.00</u>	<u>100.0%</u>

**Denali Borough  
Financial Report  
May 2020**

Cash Activity Last 60 Days

Type	Date	Num	Name	Memo	Amount	Balance
<b>1010 - Petty Cash</b>						<b>200.00</b>
Total 1010 - Petty Cash						200.00
<b>1031 - FNB General Fund</b>						<b>428,845.44</b>
Check	04/01/2020	5709	Kramer, Aileen	March Janitorial Svcs	-288.00	428,557.44
Deposit	04/02/2020			Deposit	262.25	428,819.69
Deposit	04/02/2020			Deposit	502.50	429,322.19
Liability Check	04/03/2020	EFTPS	US Dept of Treasury - IRS	92-0135377 PPE 03/31/20	-393.96	428,928.23
Transfer	04/03/2020			PPE 03/31/20	-2,378.02	426,550.21
Transfer	04/03/2020			PPE 03/31/20	780.46	427,330.67
Deposit	04/06/2020			Deposit	88.01	427,418.68
Transfer	04/08/2020			AK Waste Transfer \$11,307.50 & \$5,268.75	-16,576.25	410,842.43
Liability Check	04/10/2020	PERS	PERS	PPE 04/05/2020	-6,501.99	404,340.44
Liability Check	04/10/2020	SBS	SBS-AP	PPE 04/05/2020	-2,670.90	401,669.54
Liability Check	04/10/2020	EFTPS	US Dept of Treasury - IRS	92-0135377 PPE 04/05/2020	-2,916.76	398,752.78
Liability Check	04/10/2020	Primerica	Primerica Shareholder Services	PPR 04/05/2020	-347.16	398,405.62
Transfer	04/10/2020			PPE 04/05/2020	-18,428.32	379,977.30
Transfer	04/10/2020			PPE 04/05/2020	2,500.46	382,477.76
Transfer	04/10/2020			PPE 04/05/2020	9,081.68	391,559.44
Check	04/10/2020	5710	GCI		-34.04	391,525.40
Check	04/10/2020	5711	Levesque Law Group	File 603-1	-3,980.20	387,545.20
Check	04/10/2020	5712	Alaska Communications	1917944	-852.50	386,692.70
Check	04/10/2020	5713	AETNA INC.	March 2020	-26,238.37	360,454.33
Deposit	04/10/2020			Deposit	356.72	360,811.05
Liability Check	04/14/2020	BenefitFocu	SBS-AP	523	-131.20	360,679.85
Deposit	04/20/2020			Deposit	27.81	360,707.66
Check	04/21/2020	5708	FNB Alaska	VOID: Acct No. ****-0003 Statement Date 06/28/20:	0.00	360,707.66
Check	04/21/2020	5714	FNB Alaska	Acct No. ****-0003 Statement Date 06/28/2017	-2,992.37	357,715.29
Check	04/21/2020	5715	Matanuska Telephone Assoc - V	Acct 299210	-52.77	357,662.52
Check	04/21/2020	5716	Matanuska Telephone Assoc - V	Acct 11994	-333.94	357,328.58
Check	04/21/2020	5717	AT&T Mobility		-262.49	357,066.09
Check	04/21/2020	5718	Tri-Valley Volunteer Fire Dept - V	May rent	-2,449.20	354,616.89
Deposit	04/21/2020			Deposit	70.00	354,686.89
Liability Check	04/24/2020	PERS	PERS	258 PPE 04/19/2020	-6,589.25	348,097.64
Liability Check	04/24/2020	SBS	SBS-AP	523 PPE 04/19/2020	-2,706.56	345,391.08
Liability Check	04/24/2020	EFTPS	US Dept of Treasury - IRS	92-0135377 PPE 04/19/2020	-2,986.18	342,404.90
Liability Check	04/24/2020	Primerica	Primerica Shareholder Services	PPE 04/19/2020	-350.66	342,054.24
Transfer	04/24/2020			Funds Transfer PPE 04/19/2020	-18,743.34	323,310.90
Transfer	04/24/2020			Funds Transfer PPE 04/19/2020	2,500.47	325,811.37
Transfer	04/24/2020			Funds Transfer PPE 04/19/2020	9,486.97	335,298.34
Deposit	04/27/2020			Deposit	36,710.00	372,008.34
Transfer	04/30/2020			Funds Transfer PPE 04/30/2020	780.46	372,788.80
Deposit	04/30/2020			Deposit	282.36	373,071.16
Deposit	04/30/2020			Deposit	321.79	373,392.95
Deposit	04/30/2020			Deposit	96.59	373,489.54
Check	04/30/2020			Service Charge	-103.23	373,386.31
Liability Check	05/01/2020	EFTPS	US Dept of Treasury - IRS	92-0135377 PPE 04/30/2020	-393.98	372,992.33
Transfer	05/01/2020			Funds Transfer PPE 04/30/2020	-2,378.01	370,614.32
Deposit	05/01/2020			Deposit	279.67	370,893.99
Deposit	05/05/2020			Deposit	25,933.68	396,827.67
Deposit	05/05/2020			Deposit	31.41	396,859.08
Check	05/07/2020	5719	AETNA INC.	April 2020	-26,238.37	370,620.71
Check	05/07/2020	5720	LeMay Engineering & Consulting, Inc.	Inv 753	-9,000.00	361,620.71
Check	05/07/2020	5721	Employee Reimbursement	Reimbursement	-34.99	361,585.72
Check	05/07/2020	5722	GCI	Acct1001832552	-146.50	361,439.22
Check	05/07/2020	5723	Global Positioning Services, Inc	Inv 5	-32,952.00	328,487.22
Liability Check	05/08/2020	PERS	PERS	PPE 05032020	-6,656.60	321,830.62
Liability Check	05/08/2020	EFTPS	US Dept of Treasury - IRS	92-0135377 PPE 05032020	-3,059.76	318,770.86
Liability Check	05/08/2020	SBS	SBS-AP	523 PPE 05032020	-2,734.08	316,036.78
Liability Check	05/08/2020	Primerica	Primerica Shareholder Services	PPE 05032020	-354.37	315,682.41
Transfer	05/08/2020			PPE 05032020	2,500.46	318,182.87
Transfer	05/08/2020			PPE 05032020	9,964.62	328,147.49
Transfer	05/08/2020			PPE 05032020	-19,037.58	309,109.91
Deposit	05/08/2020			Deposit	2,066.70	311,176.61
Check	05/11/2020	5724	Code Publishing Company	Invoice 66727	-225.00	310,951.61
Check	05/11/2020	5725	Levesque Law Group	File no. 603.1	-961.90	309,989.71
Check	05/11/2020	5726	ProEquities, Inc.	Q4	-2,064.00	307,925.71
Check	05/11/2020	5727	State of Alaska DOT & Public Facilities	FLAP - Bison Gulch Match	-10,000.00	297,925.71
Check	05/11/2020	5728	Denali Emergency Services Association	20-CNP-DESA	-3,956.00	293,969.71
Check	05/11/2020	5729	Panguingue Creek Homeowners Assoc.	20-CNP-PCHA	-1,362.59	292,607.12
Check	05/11/2020	5730	Cantwell Community Library	20-CNP-CCL	-468.97	292,138.15
Check	05/11/2020	5731	McKinley Park Community Club	20-CNP-MCC	-3,899.51	288,238.64
Check	05/11/2020	5732	Railbelt Mental Health & Addictions	20-CNP-RMHA	-3,134.84	285,103.80
Check	05/11/2020	5733	McKinley Volunteer Fire Department	20-CNP-MFD	-6,333.04	278,770.76
Check	05/11/2020	5734	Denali Chamber of Commerce - V	20-CNP-DCC	-3,767.59	275,003.17
Check	05/11/2020	5735	Healy Hockey Association - V	20-CNP-HHA	-6,375.96	268,627.21
Check	05/11/2020	5736	Denali Preschool and Learning	20-CNP-DPLC	-3,969.99	264,657.22
Check	05/11/2020	5737	Community of Cantwell, Inc.	20-CNP-CCI	-7,132.44	257,524.78
Check	05/11/2020	5738	RJG, A Professional Company	Inv 84233	-458.00	257,066.78
Check	05/11/2020	5739	AT&T Mobility	Acct 04703935	-599.55	256,467.23
Check	05/11/2020	5740	Matanuska Telephone Assoc - V	Acct 299210	-53.72	256,413.51
Check	05/11/2020	5741	Matanuska Telephone Assoc - V	Acct 11994	-328.65	256,084.86
Check	05/12/2020	5742	FNB Alaska	Acct No. ****-0003 Statement Date 06/28/2017	-567.88	255,516.98
Transfer	05/14/2020			Flap Bison Gulch	10,000.00	265,516.98
Deposit	05/15/2020			Deposit	184.68	265,701.66

**Denali Borough  
Financial Report  
May 2020**

Cash Activity Last 60 Days

Liability Check	05/18/2020	SBS	SBS-AP	523- SBS OI Benefit Focus	-131.20	265,570.46
Transfer	05/19/2020			Funds Transfer	58,127.00	323,697.46
Liability Check	05/22/2020	PERS	PERS	258-PPE 051720	-6,644.61	317,052.85
Liability Check	05/22/2020	EFTPS	US Dept of Treasury - IRS	92-0135377 PPE 051720	-3,067.70	313,985.15
Liability Check	05/22/2020	SBS	SBS-AP	523 PPE 051720	-2,729.18	311,255.97
Liability Check	05/22/2020	Primerica	Primerica Shareholder Services	PPE 051720	-354.12	310,901.85
Transfer	05/22/2020			PPE 05172020	-19,044.41	291,857.44
Transfer	05/22/2020			PPE 05172020	2,500.47	294,357.91
Transfer	05/22/2020			PPE 051720	10,017.90	304,375.81
Transfer	05/25/2020			Ordinance 20-08	-58,127.00	246,248.81
Liability Check	05/26/2020	EFTPS	US Dept of Treasury - IRS	92-0135377 PPE05/31/20	-409.28	245,839.53
Transfer	05/26/2020			13CMP 05/07 Check #5723	16,476.00	262,315.53
Deposit	05/29/2020			Deposit	1,840,570.43	2,102,885.96
Transfer	05/29/2020			1st installment CARES Act Funding 20-CRF	-1,840,570.43	262,315.53
Deposit	05/29/2020			Deposit	35.00	262,350.53
Check	05/31/2020			Service Charge	-111.37	262,239.16
<b>Total 1031 - FNB General Fund</b>					<b>-166,606.28</b>	<b>262,239.16</b>
<b>1056 - FNB Land Management Fund</b>						<b>21,714.01</b>
Transfer	04/03/2020			PPE 03/31/20	-780.46	20,933.55
Transfer	04/10/2020			PPE 04/05/2020	-2,500.46	18,433.09
Check	04/10/2020	2724	Alaska Communications	1917944	-357.50	18,075.59
Check	04/10/2020	2725	AETNA INC.	March 2020	-1,475.17	16,600.42
Check	04/20/2020	2726	FNB Alaska	Acct No ****-0003 Statement Date 06/28/2018	-170.00	16,430.42
Check	04/21/2020	2727	Tri-Valley Volunteer Fire Dept - V	May rent	-602.88	15,827.54
Transfer	04/24/2020			Funds Transfer PPE 04/19/2020	-2,500.47	13,327.07
Transfer	04/30/2020			Funds Transfer PPE 04/30/2020	-780.46	12,546.61
Check	05/07/2020	2728	AETNA INC.	April 2020	-1,475.17	11,071.44
Check	05/07/2020	2729	Kramer, Aileen	April Janitorial	-288.00	10,783.44
Check	05/07/2020	2730	Interior Surveying and Mapping	VOID: Inv 1 & 2	0.00	10,783.44
Transfer	05/08/2020			PPE 05032020	-2,500.46	8,282.98
Check	05/12/2020	2731	FNB Alaska	Acct No ****-0003 Statement Date 06/28/2018	-177.50	8,105.48
Transfer	05/13/2020			Funds Transfer	20,000.00	28,105.48
Transfer	05/22/2020			PPE 05172020	-2,500.47	25,605.01
<b>Total 1056 - FNB Land Management Fund</b>					<b>3,891.00</b>	<b>25,605.01</b>
<b>1057 - FNB Land Sales Account</b>						<b>149,313.72</b>
Deposit	04/01/2020			Deposit	283.93	149,597.65
Deposit	04/02/2020			Deposit	260.72	149,858.37
Deposit	04/07/2020			Deposit	200.00	150,058.37
Deposit	04/09/2020			Deposit	1,000.00	151,058.37
Deposit	04/15/2020			Deposit	260.72	151,319.09
Deposit	04/30/2020			Interest	4.71	151,323.80
Deposit	05/01/2020			Deposit	283.93	151,607.73
Deposit	05/04/2020			Deposit	260.72	151,868.45
Deposit	05/08/2020			Deposit	200.00	152,068.45
Deposit	05/15/2020			Deposit	260.72	152,329.17
Deposit	05/22/2020			Deposit	2,000.00	154,329.17
Deposit	05/29/2020			Interest	3.64	154,332.81
<b>Total 1057 - FNB Land Sales Account</b>					<b>5,019.09</b>	<b>154,332.81</b>
<b>1061 - FNB Solid Waste Fund</b>						<b>43,476.91</b>
Check	04/01/2020	3830	Environmental Metal Works Ltd.	Inv IN008748	-639.34	42,837.57
Deposit	04/02/2020			Deposit	1,189.06	44,026.63
Deposit	04/03/2020			Deposit	56.50	44,083.13
Deposit	04/04/2020			Deposit	9.00	44,092.13
Deposit	04/05/2020			Deposit	26.25	44,118.38
Deposit	04/05/2020			Deposit	67.00	44,185.38
Transfer	04/08/2020			AK Waste Transfer \$11,307.50 & \$5,268.75	16,576.25	60,761.63
Deposit	04/09/2020			Deposit	27.00	60,788.63
Transfer	04/10/2020			PPE 04/05/2020	-9,081.68	51,706.95
Check	04/10/2020	3831	Nenana Heating Services, Inc.	0463	-1,211.08	50,495.87
Check	04/10/2020	3832	Denali Dome Home Snow Plowing	Invoice 121	-1,200.00	49,295.87
Check	04/10/2020	3833	Golden Valley Electric Association - V	105646	-437.47	48,858.40
Check	04/10/2020	3834	Golden Valley Electric Association - V	592767	-190.28	48,668.12
Check	04/10/2020	3835	Golden Valley Electric Association - V	107813	-46.55	48,621.57
Check	04/10/2020	3836	Alaska Waste -V	Acct 011754	-2,143.72	46,477.85
Check	04/10/2020	3837	Alaska Waste -V	Acct 015412	-127.63	46,350.22
Check	04/10/2020	3838	Napa Auto Parts	4040	-104.43	46,245.79
Check	04/10/2020	3839	CLI Construction-V	Invoice 104092 & 104101	-2,600.00	43,645.79
Check	04/10/2020	3840	Alaska Communications	1917944	-357.50	43,288.29
Check	04/10/2020	3841	AETNA INC.	March 2020	-2,950.34	40,337.95
Deposit	04/10/2020			Deposit	8.00	40,345.95
Deposit	04/11/2020			Deposit	65.55	40,411.50
Deposit	04/12/2020			Deposit	81.18	40,492.68
Check	04/15/2020	3842	FNB Alaska	VOID: Acct. No. ****0003 Statement Date 1/28/2019	0.00	40,492.68
Deposit	04/15/2020			Deposit	65.25	40,557.93
Deposit	04/17/2020			Deposit	81.25	40,639.18
Deposit	04/17/2020			Deposit	65.00	40,704.18
Deposit	04/18/2020			Deposit	38.00	40,742.18
Deposit	04/19/2020			Deposit	125.15	40,867.33
Check	04/20/2020	3843	FNB Alaska	Acct. No. ****0003 Statement Date 1/28/2019	-75.07	40,792.26
Check	04/21/2020	3844	NC Machinery	0089960	-1,366.95	39,425.31
Check	04/21/2020	3845	CLI Construction-V	Invoice 104123	-800.00	38,625.31
Check	04/21/2020	3846	Matanuska Telephone Assoc - V	Acct 11992	-357.18	38,268.13
Check	04/21/2020	3847	Denali Dome Home Snow Plowing	Invoice 132	-450.00	37,818.13
Deposit	04/21/2020			Deposit	6.00	37,824.13

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Cash Activity Last 60 Days

Deposit	04/22/2020		Deposit	160.50	37,984.63	
Deposit	04/23/2020		Deposit	118.25	38,102.88	
Transfer	04/24/2020		Funds Transfer PPE 04/19/2020	-9,486.97	28,615.91	
Deposit	04/24/2020		Deposit	36.00	28,651.91	
Deposit	04/25/2020		Deposit	30.00	28,681.91	
Deposit	04/26/2020		Deposit	185.75	28,867.66	
Deposit	04/28/2020		Deposit	2.00	28,869.66	
Deposit	04/29/2020		Deposit	115.75	28,985.41	
Deposit	04/30/2020		Deposit	85.50	29,070.91	
Check	04/30/2020		Service Charge	-785.86	28,285.05	
Deposit	05/01/2020		Deposit	33.00	28,318.05	
Deposit	05/02/2020		Deposit	81.22	28,399.27	
Deposit	05/03/2020		Deposit	409.00	28,808.27	
Deposit	05/05/2020		Deposit	3,756.62	32,564.89	
Deposit	05/05/2020		Deposit	15.00	32,579.89	
Deposit	05/06/2020		Deposit	69.00	32,648.89	
Check	05/07/2020	3848	April 2020	-2,950.34	29,698.55	
Check	05/07/2020	AETNA INC.	INVOACE1457, INVO00001945, INVOACE1458	-444.12	29,254.43	
Check	05/07/2020	Three Bears Alaska - Healy	Inv 14948	-114.32	29,140.11	
Check	05/07/2020	Healy NAPA - V	Inv19112510	-613.50	28,526.61	
Check	05/07/2020	3851	Door Systems of Alaska	-448.15	28,078.46	
Check	05/07/2020	3852	Golden Valley Electric Association - V	Acct 105646	-145.14	27,933.32
Check	05/07/2020	3853	Golden Valley Electric Association - V	Acct 592767	-1,027.80	26,905.52
Check	05/07/2020	3854	Nenana Heating Services, Inc.	0463	21,290.00	48,195.52
Deposit	05/07/2020		Deposit	PPE 05032020	-9,964.62	38,230.90
Transfer	05/08/2020		Deposit	26.00	38,256.90	
Deposit	05/08/2020		Deposit	81.25	38,338.15	
Deposit	05/09/2020		Deposit	151.75	38,489.90	
Deposit	05/10/2020		Deposit	Inv 3721	-45.00	38,444.90
Check	05/11/2020	3855	C & D Delivery	Acct 11992	-350.00	38,094.90
Check	05/11/2020	3849	Matanuska Telephone Assoc - V	Acct 107813	-87.65	38,007.25
Check	05/11/2020	3857	Golden Valley Electric Association - V	Acct 011754	-2,584.56	35,422.69
Check	05/11/2020	3858	Alaska Waste -V	Acct 015412	-127.63	35,295.06
Check	05/11/2020	3859	Alaska Waste -V	Inv 1 & 2	-6,750.00	28,545.06
Check	05/12/2020	3860	Interior Surveying and Mapping	Acct. No. ****0003 Statement Date 1/28/2019	-587.00	27,958.06
Check	05/12/2020	3861	FNB Alaska	Deposit	71.25	28,029.31
Deposit	05/13/2020		Deposit	975.00	29,004.31	
Deposit	05/14/2020		Deposit	288.25	29,292.56	
Deposit	05/14/2020		Deposit	26.00	29,318.56	
Deposit	05/15/2020		Deposit	337.50	29,656.06	
Deposit	05/16/2020		Deposit	426.50	30,082.56	
Deposit	05/17/2020		Deposit	25,000.00	55,082.56	
Transfer	05/19/2020		Funds Transfer	300.00	55,382.56	
Deposit	05/19/2020		Deposit	314.75	55,697.31	
Deposit	05/20/2020		Deposit	102.00	55,799.31	
Deposit	05/21/2020		Deposit	PPE 051720	-10,017.90	45,781.41
Transfer	05/22/2020		Deposit	36.00	45,817.41	
Deposit	05/22/2020		Deposit	63.75	45,881.16	
Deposit	05/23/2020		Deposit	431.75	46,312.91	
Deposit	05/24/2020		Deposit	42.50	46,355.41	
Deposit	05/27/2020		Deposit	85.75	46,441.16	
Deposit	05/28/2020		Deposit	65.00	46,506.16	
Deposit	05/29/2020		Deposit	Service Charge	-245.06	46,261.10
Check	05/29/2020		Deposit	175.00	46,436.10	
Deposit	05/30/2020		Deposit	353.25	46,789.35	
Deposit	05/31/2020		Deposit			
Total 1061 · FNB Solid Waste Fund				3,312.44	46,789.35	
<b>1067 · FNB Maj. School Maint. Reserve</b>					<b>13,020.10</b>	
Total 1067 · FNB Maj. School Maint. Reserve					13,020.10	
<b>1081 · FNB Capital Improvements Fund</b>					<b>437,963.49</b>	
Total 1081 · FNB Capital Improvements Fund					437,963.49	
<b>TOTAL</b>				<b>-154,383.75</b>	<b>940,149.92</b>	



# Denali Borough School District

P.O. Box 280 • Healy, Alaska 99743 • (907) 683-2278 • FAX (907) 683-2514

## **Superintendent's Report Denali Borough Assembly Wednesday, July 8<sup>th</sup>, 2020**

Dear Denali Borough Assembly and Mayor Walker,

### 1. Appreciation/Congratulations

- a. Thank you to all the staff members who participated in detailed conversations on our Smart Start design thinking for our instructional delivery models; Carmen Russo, Kaitlyn Weitzel, Hannah Ragland, Caitlin Santos, Kelly Gebauer, Karen Martin, Lauren Jeffrey, Justin Mason, JoHanna Sestito, Nathan Pitt and Jeni Mason.

### 2. Coronavirus -

- a. Smart Start - This month collected information on the staff, parent and student experiences from the spring distance learning, reviewed this data, researched and considered various models for operation under the Smart Start framework. On July 1st, I issued a letter to our community, attached below. It provides very basic information on the design plans we will be moving forward with and asking the Board to consider and formally adopt at the July meeting. Please see the letter for the information provided. Many questions on operational details are not in the letter and are still being developed and settled on as we move forward.

### 3. Finances

- a. FY20 Budget - Reena and I worked through the yearend accounting and considered which funds will be directly charged against the District's Cares Act funding, which can be offset with our literacy grant, and the final Denali PEAK student allotment expenses and carryover needs. We feel that FY20 will end with an operational surplus of ~\$450,000. This will increase our unrestricted carry over to ~\$1.3 million. This will be over the normal 10% limit on the carry over but is allowed this year to help districts mitigate financial impacts of the coronavirus.
- b. FY21 Budget - The Denali Borough approved their FY21 budget. Between the funds in the budget and the funds that Borough will provide from their Cares Act funding, DBSD will receive the full local request for next year of ~\$2.7 million. This is over 20% of our operating budget for the year. As we start to look more at next school year and our finances, we will need to watch our actual student enrollment in the Fall and the impacts this will have on next year's revenue. Given the overall uncertainty, we know that

### Mission Statement

*Nurturing, empowering and inspiring today's student to positively shape tomorrow's world.*

some families have made the decision to homeschool their children rather than return to the brick and mortar environment and manage the changes they may happen if we move between low, medium and high-risk scenarios. Parents have the freedom to make these choices and DBSD operates a correspondence program, Denali PEAK, to help serve this population. Nonetheless, there are revenue impacts from enrollment changes to the District. Further, our ability to adjust expenses and staffing levels once contracts and rehire notices have been issued and accepted is limited. I feel that our unrestricted carryover and other reserves continue to place DBSD in a healthy position to face this coming year.

- c. FY20 Audit - We set the date for our audit to August 10-14th. Our auditors will conduct this year's financial review via distance.

#### 4. Facilities

- a. Tri-Valley Boiler - We placed orders for the replacement controls and will be able to install those soon. Our insurance company identified an inspector they use for boilers and would pay for this service. Unfortunately, that company is out of state and is not currently traveling. We are now seeking an inspector from Fairbanks to confirm our work and overall safety of the system once we have all the controllers in.
- b. Anderson Roof Project - Our project on renovating the Anderson roof is continuing well. Things have slowed a little bit due to the heavy rain, but the work scheduled for this summer is still on track for completion.
- c. Tri-Valley Roof - We recently had a company visit Tri-Valley and review the condition of our roof. They will identify three ideas to address the areas of leakage and also identified other areas that need attention soon, including a small area over the elementary wing. This was a free service and will provide us information we can use to update our CIP application to the State. Due to the limited size of the protentional project we can design the project like we did the generator project to be a single bid for the full design and construction.
- d. Server Room Fire Suppression - Installation will begin on July 6th.

#### 5. Personnel

- a. Certified Staff
  - i. No updates
- b. Classified Staff
  - i. Tayler Piercy and Bethany Jones, in Anderson declined their rehire notices. We appreciate their service to our students.
- c. Exempt Staff
  - i. No updates

Sincerely,  
Dan Polta  
Denali Borough School District





# Denali Borough School District

P.O. Box 280 • Healy, Alaska 99743 • (907) 683-2278 • FAX (907) 683-2514

1 July 2020,

Dear Denali Borough School District Family,

I hope that you are enjoying the summer and the long days we experience these months. I'm writing to provide an update and share some information on our plans for returning students to the buildings in August. While the summer is providing a needed break, COVID-19 continues to spread and remains a serious health concern in Alaska.

At the end of the school year in May, the Department of Education issued its "Smart Start" guidelines for Alaska. The Smart Start framework is not like the rigid mandates we experienced this spring. At that time, we were ordered to close our buildings and provide distance education even when our communities had no confirmed, active cases. The Smart Start framework asks each district to prepare for three different scenarios to educate our children. Smart Start also allows districts and schools to operate differently based on their own community factors including the size of the student populations.

I'll share some key points that will help you understand the structures we're considering for this year. We will continue to refine the plans and review them with the School Board at their meeting on July 16<sup>th</sup>. Public comments on the plans will be taken at that time. More information will be shared with you by the end of July.

One scenario will be based on a low risk of virus transmission in the community. Another will be built on medium risk and the final for a high risk environment in the Denali Borough.

The low risk scenario will bring all of our students back into the buildings to be taught in person. We will take additional safety precautions to continue to mitigate the risk of virus transmission from someone who may be asymptomatic. The low risk scenario will be followed when we have no new cases of community transmission for the past 14 days. If school was in session now, we would be in low risk and welcome our children into the building.

The medium risk scenario will be followed when there are a small number of active cases in our Borough. In this scenario we will reduce the number of students who are present in the buildings on any given day. This will allow increased physical distancing and other measures to reduce the interactions between different student groups.

At Tri-Valley the student body will be split into two groups, with the exception of students in kindergarten, grade 1 and grade 2. The groups will be based on one's family, in order to keep siblings together. The first group, Group A, will attend school and receive in person instruction on

## Mission Statement

*Nurturing, empowering and inspiring today's student to positively shape tomorrow's world*

Mondays and Wednesdays. On Tuesdays and Thursdays these students will remain at home and work on activities provided the day before. Group B will reverse this and attend school on Tuesdays and Thursdays and remain at home with activities for Monday and Wednesday. Fridays will be used for increased planning and additional support time for students. Students in kindergarten, grade 1 and grade 2 will continue to attend school in person. This is done for our younger students in order to develop foundational academic skills such as reading, and to prevent a learning gap that would otherwise take many years of focused support to remediate. These younger grades will have additional distancing measures in place to further limit their contact with students in other groups.

Anderson and Cantwell each have a small student body which allows a different approach in the medium risk scenario. These students will attend school in the building for three days a week on slightly modified times and participate one day a week in distance learning. Fridays will be used for increased planning and additional support time for students.

A high risk scenario would be implemented in the event that a student or staff member is diagnosed with COVID-19 or there is an active outbreak with increasing active cases in our community. In this scenario, we would return to distance learning.

I know that many of you may disagree with these plans or have deeper questions. You may have a desire for our children to be educated in person regardless of the coronavirus, or you may want to keep our children home until the pandemic is over. Any in-person education has a degree of risk. We also know that distance learning is not the best model of education for most of our students. Any educational plan is a balance between these factors. If you and your family feel the need to consider other educational alternatives such as continued homeschooling, we support your choice and offer our help. Whether this assistance is to enroll in our DBSD correspondence program Denali PEAK or to transfer records to another district we stand ready to assist and to welcome you back. Regardless of your personal decision in August, please remember that you may change your mind at any time and still have our support.

The District is also considering delaying the start of the student year by one week to provide more time at the start of the year to help us prepare to teach in the various scenarios and so we can make the transitions as quickly and smoothly as possible. The change in student start date will be discussed at the July School Board meeting. If the Board approves this change to our calendar, students would start on August 26<sup>th</sup>.

I hope this letter provided you some information on our plans for August and eased your concerns. It is the hope of every one of us that we will be in the buildings with our students for the entire school year. Please consider steps we can take as individuals that can help make that a reality and keep the presence of the coronavirus in our community as small and as limited as possible.

Sincerely,

*Dan Polta*

Dan Polta  
Superintendent  
Denali Borough School District  
danpolta@dbsd.org

# DENALI BOROUGH

P.O. Box 480 • Healy, Alaska 99743

Phone: (907) 683-1330 • Fax: (907) 683-1340

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*Clay Walker, Mayor*

## **July 2020 Mayor's Report to the Denali Borough Assembly**

This report speaks primarily to non-agenda items. Agenda items will be discussed in meeting.

### **Community COVID-19 Testing Collaboration**

- Nurse Keith is doing a tremendous job serving as the Community Testing Coordinator. She will be returning to the School District in August and we are soliciting interest in the position.
- Weekly meetings of healthcare providers, hosted by the borough, continue. These meetings are a valuable forum for information sharing and collaboration. Clear Clinic has been particularly helpful along the way.
- The borough appreciates the responsiveness from the State of Alaska Department of Homeland Security and Emergency Management in quickly filling the multiple requests submitted for PPE supplies, swabs, medium, and more. Also, the State Virology Lab, who receives and processes the tests, has been excellent.
- With CARES funding, the borough purchased a winter-ready trailer to provide a safe place for continued, and possibly increased, testing.
- This past week saw a record number of tests processed from the Denali Borough - around 100!
- Increased testing also means increased results. The first positive result was identified on June 25. The non-resident was asymptomatic and instructed to self-isolate, with contact tracing performed.

### **Careful Openings**

- July 1 marked the start of Alaska Railroad passenger service to Denali and the opening of the Denali Bluffs Hotel. Both operations are requiring masks be used on their transportation offerings.
- Bus service in Denali National Park, with half the regular seating capacity, also started with limited offerings on July 1. At this time, mask usage by passengers is not required by either NPS or the concessionaire but is highly encouraged. A number of drivers have expressed concern that this situation could be a potential incubator for community spread of COVID-19. I understand compliance rates with the request has been 100% the first couple days.
- A few eateries and bars have opened in the past weeks as well.

### **Denali CARES Programs**

- Ad Hoc CARES Committee. I appreciate the time and attention this group, which includes the three Finance Committee members plus the Chamber of Commerce Director, has devoted to consideration of CARES funding usage. The group last met on June 29 to review and offer thoughts on the small business and non-profit support programs, emergency services contributions, and potential COVID related projects.
- Support checks for small businesses and non-profits went out on July 2.

## **Cantwell to Ferry PEL (Planning and Environmental Linkeage) Study Open House**

- Alaska's Department of Transportation is hosting an Online Open House from June 25 to July 2. The public is invite to learn about the project and offer input regarding needs and opportunities within Parks Highway MP203-259. For more information, or to participate, go to: <http://dot.alaska.gov/nreg/parkshealypel/>

## **U.S. 2020 Census**

- The latest numbers show Denali Borough residents self-reporting at a rate of 17%. The national average is 64% and the state average is 48%. Lots of federal funding is based on population numbers, so let's encourage folks to "Stand Up and Be Counted"!

## **Denali National Park Winter and Shoulder Season Visitor Services Environmental Assessment (EA)**

- I submit comments from the Denali Borough offering our support of the preferred action plan. Under the "Varied Experiences" Plan, the Park Road will continue to be plowed to Mountain Vista in February and trail grooming for skiing in the front country will be expanded. Additional planned offerings include earlier start dates for campgrounds and buses, improvements at Mountain Vista and Teklanika Rest Areas, earlier start dates for bus services and campgrounds, new commercial guiding opportunities, and other offerings/improvements. The plan can found at: <https://www.nps.gov/dena/getinvolved/winter-ea.htm>

## **Clear Air Force Station Change of Command**

- I attended the socially distanced event July 2, when Lt. Col. Sean Lee relinquished command and Lt. Col. Shahn Rashid assumed command. Lt. Col. Rashid knows Alaska and is excited to serve and bolster community relations.

## **Local Emergency Planning Committee meeting**

- The Committee met June 23 and discussed a new effort to update the All Hazards Plan, the ongoing address system project, and other topics.

## **Fairbanks City Bus 142**

- In a March 2020 Resolution, the Denali Borough Assembly respectfully declined to sponsor a potential footbridge over the Teklanika River and, furthermore, requested the State of Alaska move Bus 142 from the west side of the river. On June 18, with the support from the Alaska Army National Guard, Alaska's Department of Natural Resources moved the bus to a secure location. DNR is working through its process in determining the next chapter in story of the bus. This development generated significant interest.

Happy July, happy fishing. As always, feel free to call me or staff if you have any questions.

Stay safe,

Clay

**DENALI BOROUGH, ALASKA  
ORDINANCE NO. 20-12  
INTRODUCED BY: MAYOR CLAY WALKER**

**AN ORDINANCE ESTABLISHING AN ALCOHOL AND MARIJUANA  
TAX IN THE DENALI BOROUGH**

**BE IT ENACTED** by the Assembly of the Denali Borough, Alaska that:

**Section 1. Classification.**

This ordinance is of a general and permanent nature

**Section 2. Purpose.**

The purpose of this ordinance is to amend the Denali Borough Code of Ordinances by creating Chapter 3.26 titled Alcohol and Marijuana Tax, as follows.

**Section 3. Effective Date.**

This ordinance becomes effective upon adoption on January 1, 2021.

**CHAPTER 3.26  
ALCOHOL AND MARIJUANA TAX**

Sections:

- 3.26.010 Definitions.**
- 3.26.020 Purpose and intent.**
- 3.26.030 Imposition of alcohol and marijuana tax.**
- 3.26.040 Administration of tax.**
- 3.26.050 Tax exemptions.**
- 3.26.060 Registration required.**
- 3.26.070 Title to taxes.**
- 3.26.080 Collection of alcohol and marijuana tax.**
- 3.26.090 Duty to file tax return and to transmit taxes to the borough.**
- 3.26.100 Confidentiality.**
- 3.26.110 Alcohol and marijuana tax audits.**
- 3.26.120 Penalties and interest.**
- 3.26.130 Estimated taxes.**
- 3.26.140 Violations.**
- 3.26.150 Civil action authorized.**
- 3.26.160 Tax lien.**
- 3.26.170 Sale of business.**
- 3.26.180 Severability.**
- 3.26.190 Appeal.**

**3.26.010 Definitions.**

- A. "Administrative costs of collection" means the actual amount of attorney's fees, litigation costs, and other expenses incurred by the borough in collecting any taxes, interest, and/or penalties due under this chapter or in otherwise enforcing any provision of this chapter.
- B. "Alcohol" means a spirituous, vinous, malt, or other fermented or distilled liquid, whatever the origin, that is intended for human consumption as a beverage and that contains one-half of one percent or more of alcohol by volume.
- C. "Commencing operations" means the act of offering alcohol and marijuana to individual customers.
- D. "Marijuana" means all parts of the plant of the genus cannabis whether growing or not, the seeds thereof, the resin extracted from any part of the plant, and every compound, manufacture, salt, derivative, mixture, or preparation of the plant, its seeds, or its resin, including marijuana concentrate; "marijuana" does not include fiber produced from the stalks, oil, or cake made from the seeds of the plant, sterilized seed of the plant which is incapable of germination, or the weight of any other ingredient combined with marijuana to prepare topical or oral administrations, food, drink, or other products.
- E. "Quarter" means the three-month periods ending on March 31st, June 30th, September 30th, and December 31st.
- F. "Retail sale" means the transfer of any alcoholic beverage to any consumer, for any consideration.
- G. "Vendor" means a person who offers for retail sale alcohol and/or marijuana.

### **3.26.020 Purpose and intent.**

It is the purpose and intent of the tax levied under this chapter to raise and diversify revenues. To that end, the scope of the tax levied by this chapter shall be broadly construed and exemptions shall be allowed only when the alcohol and marijuana retail sale clearly falls within one of the exemptions set forth at DBC 3.26.050.

### **3.26.030 Imposition of alcohol and marijuana tax.**

The borough hereby levies a tax on the retail sale of alcohol and marijuana equal to five percent of the sale price charged for each alcohol and marijuana retail sale made within the borough. This tax is imposed upon all alcohol and marijuana retail sales unless the retail sale is specifically exempted per DBC 3.26.050.

### **3.26.040 Administration of tax.**

The borough Mayor, or their designee, is responsible for the administration of alcohol and marijuana tax procedures.

### **3.26.050 Tax exemptions.**

If any municipality within the borough imposes an equal or greater tax on the same item(s), that sale shall be exempt from the borough tax.

### **3.26.060 Registration required.**

- A. It is unlawful to engage in business as a vendor without obtaining a certificate of registration under this section. Failure to comply will result in penalties per DBC 3.26.120.
- B. Every vendor offering retail sales of alcohol and marijuana shall file with the borough a registration application on a form prescribed by the borough prior to commencement of operation, but no later than 10 days after the date of commencing operations. Registration certificates will be valid for two years.
- C. Alcohol and marijuana registration forms are prescribed by the borough, and shall contain the following information:
  - 1. Dates of operation;
  - 2. Type of retail sales;
  - 3. Current contact information including mail, email, physical location and telephone;
  - 4. The name of the individual who serves as the applicant's primary point of contact.
- D. Upon receipt of a properly executed application, the borough shall issue a certificate of registration authorizing said vendor to collect the tax. The certificate shall also state the address of the business to which it is applicable, dates of operation and certificate expiration date. The certificate must be prominently displayed at the regular place of business named therein.
- E. The certificate of registration is not assignable and nontransferable. The vendor shall promptly surrender the certificate to the borough when the vendor permanently ceases to do business at the location named on the certificate. A vendor shall submit a new or updated application for other changes, such as business name changes, owner/vendor changes, change in business organization, and/or primary contact person. If the business is continued at the same location but there is a change in its name or form of organization, the vendor making such change shall, in addition to submitting a new application, surrender its existing certificate to the borough.
- F. The borough may revoke a certificate of registration if a vendor fails to comply with any of the provisions of this chapter.
- G. A vendor shall not sell alcohol and marijuana subject to the tax imposed by this chapter if the vendor does not possess a valid certificate of registration, or has had its certificate of registration revoked. A vendor that makes alcohol and marijuana retail sales subject to this tax without a valid certificate of registration, or under a revoked registration, is subject to the penalties and/or actions provided in DBC 3.26.120.

H. Registration information is public information.

### **3.26.070 Title to taxes.**

Title to taxes collected pursuant to this chapter shall vest in the borough upon collection by a vendor. Pending transmittal to the borough, every vendor has a fiduciary duty to the borough for these taxes. Every vendor shall segregate and identify the tax funds on its books and records as being held in trust for the borough.

### **3.26.080 Collection of alcohol and marijuana tax.**

- A. Every vendor that makes a retail sale subject to taxation under this chapter shall collect the tax imposed by this chapter from the customer no later than the time at which the retail sale is complete. Taxes not collected when due are delinquent.
- B. Every vendor shall state the amount of tax due under this ordinance separately from all retail sales and other charges on any invoice or receipt given to a customer.

### **3.26.090 Duty to file tax return and to transmit taxes to the borough.**

- A. Alcohol and marijuana tax returns shall be made on the forms prescribed by the borough for that purpose, and shall contain the following information:
  - 1. Total gross of alcohol and/or marijuana retail sales;
  - 2. The amount of tax due thereon under this chapter;
  - 3. Such other information and documentation as the borough may require.
- B. Every vendor making a retail sale of alcohol and marijuana in the borough in any quarter shall file a return and remit taxes due on or before the last day of the month following the end of the quarter. Should that day fall on a day the borough office is not open, the deadline will be extended to the next borough business day. Returns and taxes not received or postmarked by the due date will be deemed delinquent and subject to the penalties set forth at DBC 3.26.120. A vendor who makes no taxable retail sales in a given quarter for which they have registered shall nonetheless file a return with the borough which reports that no taxable retail sales were made.
- C. On or before the due date of the return for each quarter, every vendor shall transmit the taxes due on retail sales completed during that quarter to the borough. Regardless of whether a return has been filed, taxes due for a given quarter which are not transmitted on or before the due date of the return for that quarter are delinquent.



- D. Tax will be considered to have been timely remitted to the borough only when electronically transmitted, received in the borough office, or postmarked on or before the date on which the taxes are due.

### **3.26.100 Confidentiality.**

- A. Registration information is public. Except as otherwise provided herein, all returns filed with the borough for the purpose of complying with the terms of this chapter and all data obtained from such returns are confidential and, to the extent permitted by Alaska law, shall be kept from inspection of any persons other than officers, agents, and employees of the borough; provided, however, that such returns and/or the information obtained therefrom may be discussed by the assembly in public session with the written consent of the vendors that have submitted them.
- B. In the course of a criminal or civil action to enforce any provision of this chapter, the borough may allege, prove, publish, and produce for any purpose any return and/or information previously filed with the borough. The borough may deliver to a vendor or their authorized representative a copy of any return filed by the vendor or on their behalf. The borough may also publish statistics concerning the information contained in returns if the publication is done in such a manner that the information contained in a particular return does not disclose the identity of any vendor who submits a return in accordance with this chapter.
- C. It is unlawful for any person to divulge to another any return or any information obtained from a return filed with the borough except as provided in this section.

### **3.26.110 Alcohol and marijuana tax audits.**

- A. Record Keeping Required. Every vendor shall keep and preserve for a period of three years records of all retail sales completed, the amount of taxes collected, and such other books or accounts as may be necessary to determine the amount of tax for which the vendor is liable hereunder. Each vendor shall permit the borough or its agent to examine, inspect, and copy said records, books, and accounts at any reasonable time, at the vendor's place of business within the borough or the borough office, whichever is more convenient for the vendor.
- B. Compliance Audits. The borough reserves the right to conduct audits of compliance with borough tax code. In the event of an audit, borough requests for books, accounts or copies of specific records shall be in writing to the vendor and the vendor shall have 30 days to respond. All audits shall be performed by a professional auditor licensed as a certified public accountant in the state of Alaska and retained for that purpose.
- C. Failure to Comply with Audit. Any vendor who fails to comply with the provisions set forth in this section may be subject to penalties. For the purpose of ascertaining the correctness of any return, or determining the amount of tax collected or which should have been collected by any vendor, the mayor or their agent may hold audits, investigations and hearings concerning any matters covered by this chapter, and may examine any relevant books, papers, records, accounts or memoranda of any such vendor, and may require the attendance of any person through issuance of a

subpoena which shall be enforced under the Alaska Rules of Civil Procedure in the same manner as subpoenas issued by an officer or agency of the state.

### **3.26.120 Penalties and interest.**

- A. Operating without a valid registration is subject to a penalty of \$250 per incident.
- B. Any failure to file a timely return and to transmit tax to the borough as required by this chapter shall be considered delinquent. A delinquent account shall be subject to penalties as follows:
  - 1. A penalty of \$250 for delinquencies of 30 days or less.
  - 2. A penalty of \$500 for delinquencies of 31 to 60 days.
  - 3. A penalty of \$1,000 for delinquencies of more than 61 days.
- C. Penalties are due immediately upon accrual and are delinquent thereafter.
- D. Vendors who fail to comply with audit provisions in this chapter may be assessed a penalty of \$150.00 per day commencing 31 days after receiving notice of intent to audit, or upon a specified audit date, whichever is later, until provisions have been satisfied.
- E. Any tax or penalty assessed that is delinquent for more than 90 days is subject to civil action per DBC [3.26.150](#).

### **3.26.130 Estimated tax**

If the borough is unable to ascertain the tax due from a vendor because the vendor failed to file a quarterly return as required under this chapter, to remit collected taxes, to collect taxes, to keep accurate books, to allow inspection, or to maintain the records required by this chapter, or has falsified records, the borough shall estimate the tax due based on any available evidence. Notice of the borough's estimate shall be mailed to the seller. Unless the seller files an accurate monthly report covering the time period subject to the borough's estimate or files an appeal within 30 days of the mailing of the borough's estimate, the borough's estimate shall become final for the purpose of determining the seller's tax liability

### **3.26.140 Violations.**

Any vendor who fails to collect or remit all or any portion of the tax provided for in this chapter, or fails or refuses to comply with the provisions of this chapter, is guilty of a violation.

### **3.26.150 Civil action authorized.**

- A. The borough may institute a civil action, pursuant to AS [29.25.070](#), to enjoin a vendor from engaging in the retail sale of alcohol and marijuana in the borough until the vendor has registered. The borough may also recover from the vendor the civil

penalty imposed by this section and the borough's administrative costs of collection incurred in enforcing this section.

- B. The borough may institute a civil action against a vendor to recover taxes which the vendor failed to collect, or which the vendor collected and failed to transmit to the borough, together with the penalties, interest, and administrative costs of collection imposed by DBC 3.26.120. In any such action, a tax return or estimated tax under DBC 3.26.130 shall constitute prima facie evidence of the amount of tax which was, or should have been, collected.
- C. The borough may institute a civil action against a vendor who fails timely to file a return in order to recover the penalties and administrative costs of collection imposed by this section.
- D. Pursuant to AS 29.25.070, the borough may institute a civil action against any person who violates a provision of this chapter. In addition to injunctive and compensatory relief, the borough may recover its administrative costs of collection and a civil penalty. The borough may bring an action to enjoin a violation or to recover a civil penalty notwithstanding the availability of any other remedy. Each day that a violation of this chapter continues constitutes a separate violation.

#### **3.26.160 Tax lien.**

- A. In addition to any other remedies and administrative procedures provided under this chapter, the borough may file a civil action against any seller and/or buyer for recovery of any tax, unremitted tax, penalties, interest, costs, and fees, that have not been paid or remitted when due. The borough must file any such civil action within six years of the date that such tax, unremitted tax, penalties, interest, costs, and fees were due under this chapter.
- B. Any tax, unremitted tax, penalties, interest, costs and fees that this chapter requires a seller and/or buyer to pay or remit shall constitute a lien in favor of the borough upon all assets, earnings, revenue, and property of such seller and/or buyer. This lien arises when any such payment or remittance is not made when due and continues until the payment or remittance is fully satisfied through execution, foreclosure sale, or any other legal means. This lien is not valid as against a mortgagee, pledgee, purchaser, or judgment creditor until notice of the lien is filed in the nearest recorder's office of the nearest recording district. Upon such filing, the lien is superior to all other liens except as otherwise provided by state or federal law.

#### **3.26.170 Sale of business.**

If any vendor sells their alcohol and marijuana business to another person or entity, the vendor shall file a final tax return and transmit all tax due within 30 days after the closing date of the sale.

#### **3.26.180 Severability.**

If a court of competent jurisdiction determines that any provision of this chapter or any application thereof to any person or circumstance is invalid, the remainder of this chapter and its application to other persons or circumstances shall not be affected thereby.

### **3.26.190 Appeal.**

- A. A person aggrieved by the application or interpretation of any provision of this chapter shall appeal to the board of review per DBC [5.20.120](#).
- B. A person aggrieved by the final action of the borough may appeal to the superior court in the manner provided in DBC [5.20.130](#).

**DENALI BOROUGH, ALASKA**  
**ORDINANCE NO. 20-13**  
**INTRODUCED BY: Mayor Clay Walker**

**AN ORDINANCE TO ACCEPT AND APPROPRIATE UP TO \$12,000  
FROM THE GENERAL FUND FOR REIMBURSABLE EXPENDITURES  
RELATED TO EMERGENCY MANAGEMENT PERFORMANCE GRANT  
AS WELL AS UP TO \$12,000 IN MATCHING EXPENDITURES**

BE IT ENACTED by the Assembly of the Denali Borough, Alaska that:

Section 1. Classification. This ordinance is a non-code ordinance.

Section 2. Purpose. The purpose of this ordinance is to accept 2020 Emergency Management Performance Grant (EMPG) funds and to appropriate up to \$12,000 from the General Fund for reimbursable expenditures related to this grant as well as up to \$12,000 in match expenditures. Eligible expenditures include salary and benefits for the Emergency Planning and Projects Coordinator per the application and obligating award documents.

Section 3. Granting Agency. EMPG grants are funded by the Division of Homeland Security and Emergency Management through the State of Alaska to support emergency management activities.

Section 4. Requirements. EMPG recipients are required to perform projects identified in the borough's 2020 EMPG Work Plan, complete the Alaska Assessment, attend the State's Multi-Year Training and Exercise Plan Workshop, participate in three exercises, work with the National Incident Management System, complete the FEMA Independent Study Professional Development Series, timely report quarterly progress, and provide a dollar for dollar in-kind match .

Section 5. Effective Date. This ordinance becomes effective upon adoption by the Denali Borough Assembly and signature of the Denali Borough Mayor.

DATE INTRODUCED: \_\_\_\_\_  
FIRST READING: \_\_\_\_\_  
PUBLIC HEARING: \_\_\_\_\_

PASSED and APPROVED by the Denali Borough Assembly this XX day of July, 2020.

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Clay Walker, Mayor

ATTEST: 

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Amber Renshaw, Borough Clerk

**DENALI BOROUGH, ALASKA**  
**ORDINANCE NO. 20-14**  
**INTRODUCED BY: Mayor Clay Walker**

**AN ORDINANCE TO ACCEPT AND APPROPRIATE UP TO \$50,000  
FROM THE DENALI BOROUGH CARES FUND FOR EXPENDITURES  
RELATED TO THE RASMUSON MUNICIPAL ARTS & CULTURE  
MATCHING GRANT PROGRAM**

BE IT ENACTED by the Assembly of the Denali Borough, Alaska that:

Section 1. Classification. This ordinance is a non-code ordinance.

Section 2. Purpose. The purpose of this ordinance is to accept Municipal Arts & Culture Matching Grant funds from the Rasmuson Foundation and to appropriate up to \$50,000 from the Denali Borough CARES Fund for expenditures related to this grant as well as up to \$50,000 in match nonprofit support expenditures.

Section 3. Granting Agency. Municipal Arts & Culture Matching Grant funds are provided by the Rasmuson Foundation on a matching grant basis.

Section 4. Requirements. The Rasmuson Foundation will match a municipality's allocation of CARES Act funds to arts and culture organizations on a match ratio of 1:1 for eligible organizations. The Denali Borough has approved Denali CARES Nonprofit support for Kids in Motion (\$10,000), Denali Education Center (\$20,000) and Alaska Geographic (\$20,000) and has applied to the Rasmuson Foundation Matching Grant Program accordingly. Approved matching grant funds will be passed through the Denali Borough CARES fund from Rasmuson to the approved organization(s).

Section 5. Effective Date. This ordinance becomes effective upon adoption by the Denali Borough Assembly and signature of the Denali Borough Mayor.

DATE INTRODUCED: \_\_\_\_\_  
FIRST READING: \_\_\_\_\_  
PUBLIC HEARING: \_\_\_\_\_

PASSED and APPROVED by the Denali Borough Assembly this XX day of July, 2020.

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Clay Walker, Mayor

ATTEST: 

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Amber Renshaw, Borough Clerk



**DENALI BOROUGH, ALASKA  
ORDINANCE NO. 20-15  
INTRODUCED BY: MAYOR CLAY WALKER**

**AN ORDINANCE ESTABLISHING AMENDING DENALI BOROUGH  
CODE CHAPTER 9.15 TITLED ZONING**

**BE IT ENACTED** by the Assembly of the Denali Borough, Alaska that:

**Section 1. Classification.**

This ordinance is of a general and permanent nature

**Section 2. Purpose.**

The purpose of this ordinance is to amend the Denali Borough Code of Ordinances Chapter 9.15 titled Zoning, as follows.

**Section 3. Effective Date.**

This ordinance becomes effective upon adoption by the Denali Borough Assembly and signature of the Mayor.

**DENALI BOROUGH CODE CHAPTER 9.15  
ZONING – LOCAL OPTION**

Sections:

- 9.15.010 Borough assembly finding.
- 9.15.020 Land zoned general use
- 9.15.030 Definitions
- 9.15.150 Formation of a local option zoning district
- 9.15.160 Local option zoning district formation requirements
- 9.15.170 Local option zoning district formation procedures and approval
- 9.15.180 Effective date
- 9.15.190 Prior existing structures and uses
- 9.15.200 Nonconforming uses
- 9.15.210 Enforcement
- 9.15.220 Notice of violation hearing
- 9.15.230 Request for violation hearing reconsideration
- 9.15.240 Appeal to superior court

### 9.15.010 Borough assembly finding.

The assembly of the Denali Borough being charged by the Legislature for the provision of planning, platting and land use regulation; and whereas, the maintenance of a rural lifestyle is of utmost importance to borough residents; and whereas, the borough consists of distinct communities with differing interests, the borough assembly finds that it is in the best interests of the residents of the Denali Borough to make land use decisions as much as possible on a local or community basis.

### 9.15.020 Land zoned general use.

All land in the borough is zoned general use unless designated within a local option zoning district. Some land uses may be restricted and therefore may require a conditional use permit.

### 9.15.030 DEFINITIONS

- A. “*General use*” means any type of land use is permitted.
- B. “*Lot*” means a measured parcel of land having fixed boundaries and designated on a plot or survey
- C. “*Correctional facility*” means a prison, jail, camp, prison farm, halfway house, or other placement designated by the Commissioner of Department of Corrections for custody, care, and discipline of prisoners.
- D. “*Correctional community residential center (CCRC)*” means a community residential center, other than a correctional facility, for the short-term or temporary detention of prisoners in transition from a correctional institution, performing restitution, or undergoing rehabilitation or recovery from a legal infirmity.
- E. “*Sexually oriented commercial business*” means any commercial operation that includes the sale, rent, lease, inspection or viewing of books, films, video, magazine, periodicals or any other media whose dominant theme is actual or simulated sexual activities, display or exhibition of human genital or female breast anatomical areas, or featuring live or broadcast removal of articles of clothing, topless dancers or models, or total nudity of any gender.
- F. “*Large scale commercial business*” means a commercial operation whose total ground floor gross area, including buildings, display area and parking is equal to or exceeds 40,000 square feet, requires a class A or B waste disposal system, and/or requires an Alaska water permit for more than 2500 gallons per day. Large-scale commercial does not include agricultural uses.
- G. “*Marijuana cultivation facility*” means an entity licensed to cultivate, prepare, and package marijuana and to sell marijuana to retail marijuana stores, to marijuana product manufacturing facilities, and to other marijuana cultivation facilities, but not to consumers.

- H. "Marijuana product manufacturing facility" means an entity licensed to purchase marijuana; manufacture, prepare, and package marijuana products; and sell marijuana and marijuana products to other marijuana product manufacturing facilities and to retail marijuana stores, but not to consumers.
- I. "Marijuana retail store" means an entity licensed to purchase marijuana from marijuana cultivation facilities, to purchase marijuana and marijuana products from marijuana product manufacturing facilities, and to sell marijuana and marijuana products to consumers.
- J. "Marijuana retail store onsite consumption" means the act of ingesting, inhaling, or otherwise introducing marijuana into the human body within or inside a licensed marijuana retail store facility
- K. "Commercial power generation" means the generation of electricity with the main purpose to sell the electric power or to operate as a public utility.
- L. "Solid waste facility" means any facility or operation that accepts drilling wastes, garbage, refuse, sludge, building material, or other discarded material, including solid, liquid, semi-solid, or contained gaseous material resulting from industrial, commercial, or agricultural operations, or from community activities.
- M. "Helipport, airport or aircraft landing fields" means a tract of land or a structure, and requisite clear zone, used or intended for use for the landing and take-off of private and commercial aircraft, together with all buildings and structures normally associated with such use including, but not limited to, accessory hangars, control towers and accommodations for passengers and cargo
- N. "Cemetery" means a parcel of land, used in whole or in part, for four or more interred bodies of deceased persons and for the erection of customary markers, monuments and mausoleums
- O. "Commercial hazardous material storage or processing facility" means a facility that stores, produces, processes or retails hazardous material.
- P. "Commercial pipelines" this includes propane, natural gas, fuel, oil or water pipelines

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SECTIONS 9.15.040 THROUGH 9.15.140 WILL BE CONSIDERED  
IN ORDINANCE 20-16 ZONING - CONDITIONAL USE

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**9.15.150 ~~Petition to voters.~~ Formation of a local option zoning district**

Should any of the residents of an area desire further zoning or land use regulation, they shall initiate it by ~~petition~~ first meeting with Denali Borough staff to discuss formation requirements, procedures, and district boundaries. ~~of 25 percent or more of the registered voters of the area in question. Voters from within that area may petition~~

~~the borough assembly to make such additional restrictions as seem necessary. The borough assembly shall consider such changes by ordinance.~~

~~Alternatively, upon request of 25 percent of real property owners within an area, the assembly shall propose and consider any changes requested by ordinance.~~

~~A. The borough administration will make available the resources of the borough and such other specialists as needed to any petitioners designated representative to enable petitioners to comply with the law.~~

~~B. The borough assembly shall attempt as far as practical to maintain the intent of the petitioners in drafting and passing such ordinances.~~

~~Upon receipt of such a petition the borough assembly shall:~~

~~1. review to make certain that the proposed area is geographically contiguous and that the people affected have like interests.~~

~~2. instruct the borough administration to prepare an ordinance providing for such changes.~~

~~3. The ordinance will then be:~~

~~a. introduced,~~

~~b. and be voted upon by the borough assembly.~~

~~4. The question of a zoning change initiated by petition shall be submitted to the voters within the area affected at a special meeting called for that purpose, unless a regular election is scheduled within 75 days, but not sooner than 45 days after enactment of an ordinance submitting the question to the voters.~~

### **9.15.070 Ballot proposition.**

~~Ballot propositions submitted to the voters shall contain the following:~~

~~A. The question of whether the zoning of the proposed area shall be changed;~~

~~B. A clear description of the geographic area shall be included on the ballot or made available to voters at the precinct polling place;~~

~~C. A map depicting the location and boundaries of the proposed zoning change area shall appear on the ballot or be made available to voters at the polling place;~~

~~D. A statement of the type of zoning change including all restrictions proposed; and~~

~~E. Such other information as the assembly may by ordinance deem appropriate.~~

### **9.15.160 Local option zoning district formation requirements**

**A. The minimum area to be included in a local option zoning district (LOZD) for lots not included in an identified subdivision is 20 lots or 20 acres. The minimum area to be included in a local option zoning district for lots**

located with an identified subdivision is the subdivision as a whole. Lots in a LOZD must be contiguous or separated only by a street, alley, right-of-way, or easement and must share continuity of general lot size and use.

- B. The landowners proposing the formation of the LOZD will help borough staff develop a map of the proposed district. The map will identify current land uses, access, topography, utilities, easements, encumbrances, and any use permits within the proposed district. This map will be included in the application.
- C. All local option zoning districts must select from the following list of zoning district designations:
- Residential: The residential zoning district is intended to provide for areas appropriate for a range of detached, single family residential dwelling units and accessory dwelling units.
  - Multi-family residential: The multi-family residential zoning district is to provide for medium- to high-density housing in multiple-family structures and their directly related complementary and accessory uses.
  - Commercial: A commercial district is intended to provide for areas appropriate for the primary land use to be commercial activities including but not limited to hotels, restaurants, bars/pub, theaters, gift shops, and activity tour operation.
  - Industrial: An industrial zoning district is intended to provide for areas appropriate for a wide range of moderate to low intensity industrial uses including but not limited to manufacturing, assembly, warehousing, distribution, research and development, and limited accessory commercial and office uses.
- D. An application provided by the borough, must be completed with at least 60%, signatures of land owners of record for lots included in the proposed LOZD. In addition to the signatures, a physical address or legal description of the lot owned by each of the signers must be included next to or below their signature.

#### 9.15.170 Local option zoning district formation procedures and approval

- A. Once determined by borough staff that the LOZD requirements have been met, the local option zoning district proposal, along with the complete application and map, will be forwarded to the planning commission on the next regularly scheduled meeting agenda. The planning commission will hold two public hearings on the LOZD proposal, with one of the public hearings held in the community closest to the proposed LOZD.
- B. Public notice of the public hearings will be published in accordance with Denali Borough Charter, Article I, Section 1.05.

- C. Upon completion of the planning commission public hearings, the planning commission will recommend approval, disapproval, or approve with modification(s) and forward the LOZD proposal, application and planning commission recommendation to the assembly to be placed on the next regularly scheduled assembly meeting agenda.
- D. The assembly will hold a minimum of two public hearings on the proposed LOZD with the second public hearing being held in the community closest to the proposed LOZD.
- E. Public notice of the public hearings will be published in accordance with Denali Borough Charter, Article I, Section 1.05.
- F. During the second public hearing, an election of land owners and residents of the proposed LOZD will be held. Any person participating in the election must first show proof of land ownership or residency within the proposed LOZD. If the election results in 70% or more approval, the assembly will approve the LOZD without further discussion. If the election results in less than 70% approval, the assembly will continue discussion and vote on the proposed LOZD according to regular assembly procedures.

#### 9.15.180 Effective date

The regulations and standards approved for the LOZD will be effective 30 days after assembly approval.

#### 9.15.190 Prior existing structures and uses

Any structure, commercial operation, or land use that existed prior to the formation of an LOZD shall be allowed to continue subject to the following conditions:

- A. No additions, alterations or modifications can be made that would increase the nonconformity;
- B. Any prior existing, nonconforming structure that becomes damaged to the extent of 50% or more of the estimated value, shall be reconstructed according to the standards and regulations of the LOZD.
- C. Any prior existing, nonconforming commercial operation or land use will lose prior existing rights upon closure or stoppage of use, activity or operation.

#### 9.15.200 Nonconforming uses

- A. Nonconforming uses in effect on the date of initial adoption of the LOZD are allowed to continue operation. A determination letter providing prior existing use rights for nonconforming structures, uses and activities can be obtained from the Denali Borough. The burden of proof that the

nonconforming use existed before adoption of an LOZD is on the applicant. Failure to apply for a nonconforming use determination letter within one-year (12 months) from the date of adoption of an LOZD ordinance may result in termination of all right to continued operation as a nonconforming use and require full compliance with all provisions of this chapter.

- B. Any nonconforming land use or commercial activity which has ceased by discontinuance for an uninterrupted period of 24 months forfeit prior existing nonconforming use rights and shall not be recommenced as a nonconforming use or activity.
- C. A nonconforming use of a building or land may not be increased, intensified, changed, expanded or moved to any other part of the lot, tract, or parcel it occupies after the ordinance forming the district is adopted.
- D. Conditions may be placed on nonconforming uses or activities by the borough to protect the residential character of the LOZD by limiting excessive noise, excessive traffic, fire hazards, and to provide appropriate screening, lighting, and hours of operation.

#### **9.15.080 Election.**

- ~~A. Ballot propositions proposing zoning changes shall be submitted to the registered voters residing within the area of the proposed change;~~
- ~~B. The election shall be held at a location within or as near the proposed zoning change area as practicable in accordance with borough election codes;~~
- ~~C. The borough clerk/treasurer shall supervise the election in accordance with DBC 8.05.010, furnish all materials necessary, and employ sufficient judges;~~
- ~~D. The election may be by mail-in ballot if this election procedure is appropriate.~~

#### **9.15.060 Commencement of zoning change.**

~~Unless otherwise provided by ordinance and ballot proposition, the zoning change will take effect following certification of the election at which the zoning change was approved by 60 percent of the votes cast in that election. The requirement does not apply if the area is uninhabited.~~

#### **9.15.210 Enforcement**

Suspected violations may be reported to the Denali Borough Mayor. By discretion, the mayor or designee may investigate the alleged violation.

In the event that the alleged violation observed by the mayor or designee, a written notice of violation will be sent by certified mail within 5 business days of the observed violation to the land owner. Written notice will include:

- A. A legal description, address or similar description of each property on which an alleged violations is located;

- B. A citation to each provision that is alleged to have been violated, and a statement of the facts that constitute each alleged violation in sufficient detail to provide the recipient with a reasonable opportunity to respond to the allegations;
- C. A description of the action, if any, that is required to correct or abate the alleged violation and the time frame within which the correction or abatement must occur.
- D. Notification of the right and timeframe to respond to the allegations in writing;
- E. The consequences the borough may impose for the alleged violation, including but not limited to the initiation of fines according to the Denali Borough Fee Schedule; and
- F. The name and contact information of the borough representative to contact regarding the notice of violation.

#### 9.15.220 Notice of violation hearing

In the event that the violation remains unresolved beyond the timeframe stated in the written notice of violation, or upon the land owner's request, the matter will proceed to a hearing before the Denali Borough Planning Commission. The commission will:

- A. Schedule and publicly notice the hearing date, time and location.
- B. Hold a public hearing in which all parties may appear in person, or through counsel, to present evidence and testimony on their own behalf, call witnesses, and cross examine other parties' witnesses to the extent the Presiding Officer determines to be reasonable and necessary, and provide closing arguments. The commission may ask questions and seek additional information under the direction of the Presiding Officer.
- C. The Presiding Officer will adjourn the hearing and set a time, date and location for the commission to deliberate and issue a written decision.
- D. Deliberation will conclude within 30 days of the hearing and the written decision will be distributed by the Borough Clerk to all parties involved by certified mail. Any involved party may request a different contact method other than, or in addition to, certified mail by contacting the Borough Clerk.

#### 9.15.230 Request for violation hearing reconsideration

Within 30 days of issuance of the written decision, any party that participated in the notice of violation hearing may request reconsideration of the decision by submitting a written request for reconsideration to the Borough Clerk. The clerk will forward the request for reconsideration to the Denali Borough Assembly. The assembly will:



- A. Schedule and publicly notice the reconsideration hearing date, time and location.
- B. Hold a public reconsideration hearing in which all parties may appear in person, or through counsel, to present any new or additional, witnesses, and closing arguments. The assembly may ask questions and seek additional information under the direction of the Presiding Officer.
- C. The Presiding Officer will adjourn the reconsideration hearing and set a time, date and location for the assembly to deliberate and issue a written decision.
- D. Deliberation will conclude within 30 days of the reconsideration hearing and the written decision of reconsideration will be distributed by the Borough Clerk to all parties involved by the same method used for the initial written decision.
- E. The written decision of reconsideration will be considered final.

#### 9.15.240 Appeal to superior court

Any party that participated in the request for reconsideration hearing may appeal the decision of the assembly to superior court.

**DENALI BOROUGH, ALASKA  
ORDINANCE NO. 20-16  
INTRODUCED BY: MAYOR CLAY WALKER**

**AN ORDINANCE ESTABLISHING AMENDING DENALI BOROUGH  
CODE CHAPTER 9.15 TITLED ZONING**

**BE IT ENACTED** by the Assembly of the Denali Borough, Alaska that:

**Section 1. Classification.**

This ordinance is of a general and permanent nature

**Section 2. Purpose.**

The purpose of this ordinance is to amend the Denali Borough Code of Ordinances Chapter 9.15 titled Zoning, as follows.

**Section 3. Effective Date.**

This ordinance becomes effective upon adoption by the Denali Borough Assembly and signature of the Mayor.

**DENALI BOROUGH CODE CHAPTER 9.15  
ZONING – CONDITIONAL USE**

Sections:

- 9.15.010 Borough assembly finding.
- 9.15.020 Land zoned ~~unrestricted.~~ General use
- 9.15.030 ~~Petition to voters~~ Definitions
- 9.15.040 Conditional land use
- 9.15.050 ~~Ballot proposition.~~ Conditional use permit process
- 9.15.060 ~~Election.~~ General standards
- 9.15.070 Permit Stipulations
- 9.15.080 Exemptions
- 9.15.090 Conditional use permit appeal
- 9.15.100 Enforcement
- 9.15.110 Suspension or revocation of conditional use permit
- 9.15.120 Notice of violation, permit suspension, or permit revocation appeal

9.15.130 Request for violation, permit suspension, permit revocation reconsideration

9.15.140 Appeal to superior court

**9.15.010 Borough assembly finding.**

The assembly of the Denali Borough being charged by the Legislature for the provision of planning, platting and land use regulation; and whereas, the maintenance of a rural lifestyle is of utmost importance to borough residents; and whereas, the borough consists of distinct communities with differing interests, the borough assembly finds that it is in the best interests of the residents of the Denali Borough to make land use decisions as much as possible on a local or community basis.

**9.15.020 Land zoned ~~unrestricted~~ general use.**

All land in the borough is zoned ~~unrestricted~~ general use unless designated within a local option zoning district. Some land uses may be restricted and therefore may require a conditional use permit. ~~otherwise provided by ordinance. There are no prohibitions on land zoned unrestricted.~~

**9.15.030 DEFINITIONS**

- A. “General use” means any type of land use is permitted.
- B. “Lot” means a measured parcel of land having fixed boundaries and designated on a plot or survey
- C. “Correctional facility” means a prison, jail, camp, prison farm, halfway house, or other placement designated by the Commissioner of Department of Corrections for custody, care, and discipline of prisoners.
- D. “Correctional community residential center (CCRC)” means a community residential center, other than a correctional facility, for the short-term or temporary detention of prisoners in transition from a correctional institution, performing restitution, or undergoing rehabilitation or recovery from a legal infirmity.
- E. “Sexually oriented commercial business” means any commercial operation that includes the sale, rent, lease, inspection or viewing of books, films, video, magazine, periodicals or any other media whose dominant theme is actual or simulated sexual activities, display or exhibition of human genital or female breast anatomical areas, or featuring live or broadcast removal of articles of clothing, topless dancers or models, or total nudity of any gender.
- F. “Large scale commercial business” means a commercial operation whose total ground floor gross area, including buildings, display area and parking

is equal to or exceeds 40,000 square feet, requires a class A or B waste disposal system, and/or requires an Alaska water permit for more than 2500 gallons per day. Large-scale commercial does not include agricultural uses.

- G. “Marijuana cultivation facility” means an entity registered to cultivate, prepare, and package marijuana and to sell marijuana to retail marijuana stores, to marijuana product manufacturing facilities, and to other marijuana cultivation facilities, but not to consumers.
- H. “Marijuana product manufacturing facility” an entity registered to purchase marijuana; manufacture, prepare, and package marijuana products; and sell marijuana and marijuana products to other marijuana product manufacturing facilities and to retail marijuana stores, but not to consumers.
- I. “Marijuana retail store” means an entity registered to purchase marijuana from marijuana cultivation facilities, to purchase marijuana and marijuana products from marijuana product manufacturing facilities, and to sell marijuana and marijuana products to consumers.
- J. “Marijuana retail store onsite consumption” means the act of ingesting, inhaling, or otherwise introducing marijuana into the human body within or inside a licensed marijuana retail store facility
- K. “Commercial power generation” means the generation of electricity with the main purpose to sell the electric power or to operate as a public utility.
- L. “Solid waste facility” means any facility or operation that accepts drilling wastes, garbage, refuse, sludge, building material, or other discarded material, including solid, liquid, semi-solid, or contained gaseous material resulting from industrial, commercial, or agricultural operations, or from community activities.
- M. “Heliport, airport or aircraft landing fields” means a tract of land or a structure, and requisite clear zone, used or intended for use for the landing and take-off of private and commercial aircraft, together with all buildings and structures normally associated with such use including, but not limited to, accessory hangars, control towers and accommodations for passengers and cargo
- N. “Cemetery” means a parcel of land, used in whole or in part, for four or more interred bodies of deceased persons and for the erection of customary markers, monuments and mausoleums
- O. “Commercial use” means any activity, goods, or services that are offered for sale or rent.
- P. “Commercial hazardous material storage or processing facility” means a facility that stores, produces, processes or retails hazardous material.

Q. “Commercial pipelines” this includes propane, natural gas, fuel, oil or water pipelines

#### 9.15.040 ~~Petition to voters.~~ Conditional Land Use

The conditional use approval procedure is intended for situations where a use may or may not be appropriate, depending on the specific location, the use characteristics, and potential conditions to decrease the adverse impacts of the use on surrounding properties and/or the community-at-large. It also provides a discretionary review process for uses with unique or widely varying operating characteristics or unusual site development features. The procedure provides public review and evaluation of a use’s operating characteristics and site development features through a public hearing process.

A. Any land use is permitted unless otherwise prohibited by ordinance or law. Some land uses require a conditional land use permit prior to use. It shall be unlawful for any person to use land, or to assist another to use land, within the Denali Borough for the following uses without first obtaining a permit from the Denali Borough in accordance with the terms of this ordinance. Conditional uses requiring a permit prior to use are:

1. Correctional facility
2. Correctional community residential center
3. Sexually oriented commercial business
4. Large scale commercial business
5. Marijuana cultivation, production, retail store, and onsite consumption
6. Commercial power generation
7. Microwave or cell tower facility and installations
8. Solid waste facility, including monofill
9. Public and private heliport or airport or aircraft landing field
10. Cemetery
11. Commercial hazardous material storage or processing facility
12. Commercial pipelines
13. Commercial gravel, peat and soil extraction on private property

#### 9.15.050 Conditional use permit process

General. An application to the planning commission for a conditional use permit may be initiated by a property owner or the owners’ authorized agent. An

application for a conditional use permit shall be filed with the Mayor or designee on a form provided by the Denali Borough.

- A. The application for a conditional use permit shall be accompanied by an appropriate filing fee as established by the assembly, payable to the borough.
- B. Site plan. A detailed site plan showing the proposed location of all buildings and structures on the site, access points, buffering, drainage, vehicular and pedestrian circulation patterns, parking areas, and the specific location of the use or uses to be made of the development shall be submitted with the application.
- C. Action by the Mayor or designee. Within 30 calendar days, the mayor or designee will review the conditional use permit application to determine that the application is complete and in compliance with this chapter. All complete and compliant applications will be scheduled on the next regularly scheduled planning commission meeting agenda. In the event that the application is found to be incomplete or not in compliance with this chapter, the application will be returned to the applicant with notice of the incomplete or non-compliant sections.
- D. Action by planning commission.
  - 1. The planning commission shall hold at least two (2) public hearings and hear all interested parties. The planning commission shall render a decision on the application for a conditional use permit within 30 calendar days from the date of final public hearing. In recommending the granting of a conditional use, the planning commission shall state in writing the conditions of approval of the permit which it finds necessary to carry out the intent of this chapter.
  - 2. Public notice of the public hearings will be published in accordance with Denali Borough Charter, Article I, Section 1.05.
  - 3. The administration shall incorporate any conditions or requirements stipulated by the commission in the conditional use permit including permit timeframe.

#### 9.15.060 General standards

- A. A conditional use may be approved only if it meets the requirements of this section in addition to any other standards required by Denali Borough Code.
- B. In granting a conditional use permit, the planning commission must make the following findings:
  - 1. the conditional use will preserve or not detract from the value, character, and integrity of the surrounding area;

2. that granting the conditional use permit will not be harmful to the public health, safety, and welfare;
3. that sufficient setback, lot area, buffers, or other safeguards are being provided to meet the conditions listed in subsections (B)(1) and (B)(2) of this section; and
4. that the applicant has submitted evidence that all applicable state and federal permits have been obtained; and
5. the conditional use fulfills all other requirements of this chapter and is consistent with the Denali Borough Comprehensive Plan.

#### 9.15.070 Permit Stipulations

The final permit will include details including, but not limited to:

- A. site plan details such as buildings and structures on the site, access points, buffering, drainage, vehicular and pedestrian circulation patterns, parking areas, and the specific location of the use or uses to be made of the development
- B. applicable setbacks or buffers
- C. permit timeframe
- D. any other conditions identified by the planning commission

#### 9.15.080 Exemptions

Land owned by the State of Alaska, the federal government, and related entities, including but not limited to, the National Park Service, the University of Alaska, Alaska Mental Health Trust, and the Alaska Railroad Corporation, and including land that is leased from the State of Alaska, the federal government, and related entities, is not subject to conditional land use regulation as described in this chapter, and does not require a conditional use permit under section 9.15.040.

#### 9.15.090 Conditional use permit appeal

Within 30 calendar days of the planning commission decision, an applicant or their agent may appeal the decision of the planning commission by filing a written statement with the Denali Borough Clerk asking the assembly to review the decision made by the planning commission.

#### 9.15.100 Enforcement

The mayor or designee may inspect the permitted area, with notice, to ensure compliance with permit conditions. If the mayor or designee has received

reasonable information identifying specific violation(s), the mayor or designee may inspect the permitted area without notice to ensure compliance with permit conditions.

In the event that a violation of the conditional use agreement is observed by the mayor or designee, a written notice of violation will be sent by certified mail to the permit holder within 5 business days of the observed violation. Written notice will include:

- A. A legal description, address or similar description of each property on which an alleged violation is located;
- B. A citation to each provision of the permit that is alleged to have been violated, and a statement of the facts that constitute each alleged violation in sufficient detail to provide the recipient with a reasonable opportunity to respond to the allegations;
- C. A description of the action, if any, that is required to correct or abate the alleged violation and the time frame within which the correction or abatement must occur.
- D. Notification of the right and timeframe to respond to the allegations in writing;
- E. The consequence the borough can impose for the alleged violation, including but not limited to the suspension or revocation of a permit issued under this title; and
- F. The name and contact information of the borough representative to contact regarding the notice of violation.

#### 9.15.110 Suspension or revocation of conditional use permit

In the event that the violation remains unresolved beyond the timeframe stated in the notice of violation, the Mayor or designee shall issue a notice of suspension with a compliance timeframe defined. If the violation remains unresolved beyond the compliance timeframe, the Mayor or designee shall issue a notice of revocation. Operating without a valid conditional use permit shall result in legal action.

#### 9.15.120 Notice of violation, permit suspension, or permit revocation appeal

Upon receipt of a notice of violation, permit suspension, or permit revocation, the permit holder can request a hearing before the Planning Commission. The Planning Commission will:

- A. Schedule and publicly notice the hearing date, time and location.



- B. Hold a public hearing in which all parties may appear in person, or through counsel, to present evidence and testimony on their own behalf, call witnesses, and cross examine other parties' witnesses to the extent the Presiding Officer determines to be reasonable and necessary, and provide closing arguments. The permit issuing body may ask questions and seek additional information under the direction of the Presiding Officer.
- C. The Presiding Officer will adjourn the hearing.
- D. Within 30 days of the hearing, the Planning Commission will conclude deliberation and issue a written decision to be distributed by the Borough Clerk to all parties involved by certified mail. Any involved party may request a different contact method other than, or in addition to, certified mail by contacting the Borough Clerk.

#### 9.15.130 Request for violation, permit suspension, permit revocation reconsideration

Within 21 days of receipt of the written decision, any party that participated in the notice of violation hearing may request reconsideration of the decision by submitting a written request for reconsideration to the Borough Clerk. The clerk will forward the request for reconsideration to the Denali Borough Assembly. The Assembly will:

- A. Schedule and publicly notice the reconsideration hearing date, time and location.
- B. Hold a public reconsideration hearing in which all parties may appear in person, or through counsel, to present any new or additional, witnesses, and closing arguments. The assembly may ask questions and seek additional information under the direction of the Presiding Officer.
- C. The Presiding Officer will adjourn the reconsideration hearing and set a time, date and location for the body to deliberate and issue a written decision.
- D. Deliberation will conclude within 30 days of the reconsideration hearing and the written decision of reconsideration will be distributed by the Borough Clerk to all parties involve by the same method used for the initial written decision.
- E. The written decision of reconsideration will be considered final.

#### 9.15.140 Appeal to superior court

Any party that participated in the request for reconsideration hearing may appeal the decision of the assembly to superior court.

# HISTORY OF ZONING IN THE DENALI BOROUGH CURRENT DENALI BOROUGH CODE CHAPTER 9.15 TITLED ZONING

## ALASKA STATUTE SEC. 29.35.180 (b): LAND USE REGULATION

“A home rule borough shall provide for planning, platting, and land use regulation.”

### DENALI BOROUGH ORDINANCES:

June 9, 1996	ORDINANCE 96-04	An ordinance providing for land use regulation the initial zoning of the borough.
June 9, 1996	ORDINANCE 96-12	An ordinance providing for a subarea land use plan for Village View Subdivision
April 11, 1999	ORDINANCE 98-08	An ordinance establishing a Commercial/Industrial Zone surrounding the Denali Borough Landfill
August 12, 2001	ORDINANCE 01-05	An ordinance amending ordinance 96-04
June 9, 2002	ORDINANCE 02-05	An ordinance amending the subarea land use plan for the Village View Subdivision

### OTHER RELATED DOCUMENTS:

June 21, 1995	Letter from Mr. Kenneth Lougee, Attorney from Denali Borough Legal Firm	Regarding the need for land use planning in the Denali Borough
February 16, 2001	Letter from Mr. James Gorski, Denali Borough Attorney	Responding to specific questions regarding subarea plans and zoning.
January 25, 2006	Letter from Mr. James Gorski, Denali Borough Attorney	Describing legal concerns regarding Denali Borough Code Chapter 9.15 Titled Zoning.
May 18, 2006	Letter from Mr. James Gorski, Denali Borough Attorney	Describing the difference between a variance and conditional use permit.
January 6, 2015	Letter from Mr. James Gorski, Denali Borough Attorney	Describing “spot zoning”.

## Previous Land Use and Community Planning Efforts

March 1999 or 2000	Designing for Community	Organized by the Designing for Community Steering Committee	Efforts facilitated by Christopher Beck & Associates
March 2005	Denali Summit	Organized by the Denali Summit Steering Committee	Efforts facilitated by Delia Clark
April 2006	Yanert Community Plan	Organized by the Yanert Community Planning Team	Efforts facilitated by Agnew::Beck Consulting
November 2015	Recommendations for an improved Land Management System	Organized by the Denali Borough	Efforts facilitated by Agnew::Beck Consulting
January 2018	Denali Borough Land Use and Economic Development Plan	Organized by the Denali Borough	Efforts facilitated by Agnew::Beck Consulting

## Recent Zoning Efforts

SUMMARY OF RECENT ZONING EFFORTS		
July 2018 – January 2020	Over the course of this 18 month timeframe, the Denali Borough held 11 public meetings with Zoning on the agenda	
July 2018	Joint Work Session Assembly and Planning Commission	Developed a strategy to gather community thoughts and concerns regarding Zoning
September 2018 – January 2020	Planning Commission Regular Agenda	Zoning was on 6 of the 9 Planning Commission Regular Meeting agenda's during this 16 month timeframe
October 2018	Planning Commission Special Public Hearings	Traveled to all 4 communities to collect thoughts and concerns about Zoning

# DENALI BOROUGH

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PO Box 480 – Healy, AK 99743  
Phone (907) 683-1330 – Fax (907) 683-1340  
dbgovt@mtaonline.net – www.denaliborough.org



## DENALI BOROUGH, ALASKA RESOLUTION NO. 20-10

### A RESOLUTION TO PARTICIPATE IN THE AMLJIA LOSS CONTROL INCENTIVE PROGRAM FOR THE DENALI BOROUGH.

**WHEREAS**, the Denali Borough is a member of the Alaska Municipal League Joint Insurance Association (hereinafter AMLJIA); and

**WHEREAS**, the AMLJIA provides comprehensive risk management assistance and provides workers compensation, liability and property coverage for the Denali Borough; and

**WHEREAS**, the AMLJIA developed the Loss Control Incentive Program to help reduce member losses individually and pool wide; and

**WHEREAS**, the AMLJIA will provide all written program materials necessary, and offer assistance to participants; and

**WHEREAS**, pool members that participate in the Loss Control Incentive Program and complete the required activities will have the opportunity to earn a discount on their contribution; and

**WHEREAS**, it is the Denali Borough's policy to provide a safe environment for its employees, citizens, and the visiting public; and

**WHEREAS**, the Loss Control Incentive Program will enhance such an environment.

**NOW THEREFORE BE IT RESOLVED** by the Denali Borough Assembly to elect to participate in the AMLJIA Loss Control Incentive Program for the 2020-2021 policy year.

PASSED and APPROVED by the DENALI BOROUGH ASSEMBLY this XX day of July,  
2020.

\_\_\_\_\_  
Mayor Clay Walker

ATTEST: \_\_\_\_\_  
Amber Renshaw, Borough Clerk

*PASSED:*  
*ABSENT:*

# DENALI BOROUGH

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## DENALI BOROUGH, ALASKA RESOLUTION NO. 20-11

### A RESOLUTION TO APPROVE THE DENALI BOROUGH MULTI- JURISDICTIONAL HAZARD MITIGATION PLAN UPDATE

**WHEREAS**, the Denali Borough recognizes the threat that local natural hazards pose to people and property; and

**WHEREAS**, undertaking hazard mitigation projects before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

**WHEREAS**, an adopted Hazard Mitigation Plan is required as a condition of the Federal Emergency Management Agency (FEMA) grand funding for mitigation projects; and

**WHEREAS**, through a grant from FEMA, an update to the Plan has now been prepared; and

**WHEREAS**, the update has been presented to the public, with an opportunity to receive public comment on the update; and

**WHEREAS**, the update has now been approved by FEMA.

**NOW THEREFORE BE IT RESOLVED** by the Denali Borough Assembly that:

1. The Denali Borough Assembly hereby adopts the Denali Borough Multi-Jurisdictional Mitigation Plan as an official plan; and
2. The Denali Borough's Hazard Mitigation Planning Team will provide annual progress reports on the status of the implemented Mitigation Action Plan's projects to the Borough Assembly. The Planning Team will submit this report to the Denali Borough's Assembly annually by the Plan's adoption anniversary date; and
3. The Denali Borough Hazard's Planning Team, will continue to complete periodic updates of the Plan as indicated in the Plan Maintenance Section (Section 3), but

no less frequently than every five years or when determined by the State of Alaska or the Federal Emergency Management Agency (FEMA).

PASSED and APPROVED by the DENALI BOROUGH ASSEMBLY this XX day of July, 2020.

\_\_\_\_\_  
Mayor Clay Walker

ATTEST:

\_\_\_\_\_  
Amber Renshaw, Borough Clerk

*PASSED:*

*ABSENT:*

# Draft Denali Borough and City of Anderson Multi-Jurisdictional Hazard Mitigation Plan Update



*Prepared by the Denali Borough  
and the City of Anderson  
Mitigation Planning Team*

In Collaboration with:



**LeMay Engineering  
& Consulting, Inc.**

March 2020



DRAFT

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## Acronyms/Abbreviations

°F	Degrees Fahrenheit
ACS	American Community Survey
AFG	Assistance to Firefighters Grant
AFS	Air Force Station
AICC	Alaska Interagency Coordination Center
AKST	Alaska Standard Time
APA	American Planning Association
ARC	American Red Cross
ATV	All-Terrain Vehicle
BLM	Bureau of Land Management
Borough	Denali Borough
CC	Changes in the Cryosphere
CCP	Citizen Corps Program
CDBG	Community Development Block Grant
CDP	Census-Designated Place
CFR	Code of Federal Regulations
CWPP	Community Wildfire Protection Plan
City	City of Anderson
DCCED	Department of Commerce, Community, and Economic Development
DCRA	Division of Community and Regional Affairs
DEC	Department of Environmental Conservation
DHS	Department of Homeland Security
DHS&EM	Division of Homeland Security and Emergency Management
DGGS	Division of Geological and Geophysical Survey
DMA 2000	Disaster Mitigation Act of 2000
DMV	Department of Motor Vehicles
DMVA	Department of Military and Veterans Affairs
DNR	Department of Natural Resources
DOF	Division of Forestry
DOI	Division of Insurance
DOL	Department of Labor
DOT/PF	Department of Transportation and Public Facilities
EQ	Earthquake
F	Fire
FD	Fire Department
FEMA	Federal Emergency Management Agency
FL	Flood
FMA	Flood Mitigation Assistance
FY	Fiscal Year
g	gravity as a measure of peak ground acceleration
GF	Ground Failure
GVEA	Golden Valley Electric Association
HMA	Hazard Mitigation Assistance

HMGP	Hazard Mitigation Grant Program
HMP	Hazard Mitigation Plan
HSGP	Homeland Security Grant Program
LEPC	Local Emergency Planning Committee
M	Magnitude
MAP	Mitigation Action Plan
Mb	Millibars
MMI	Modified Mercalli Intensity
MP	Milepost
mph	miles per hour
Mt.	Mount
N/A	Not Applicable
NFIP	National Flood Insurance Program
NPS	National Park Service
NWS	National Weather Service
PDM	Pre-Disaster Mitigation
PGA	Peak Ground Acceleration
PWs	Project Worksheets
RAWS	Remote Automated Weather System
RD	U.S. Division of Rural Development
RDA	Rural Development Assistance
RV	Recreational Vehicle
SBA	U.S. Small Business Administration
Stafford Act	Robert T. Stafford Disaster Relief and Emergency Assistance Act
STAPLEE	Social, Technical, Administrative, Political, Legal, Economic, and Environmental
SW	Severe Weather
UAF	University of Alaska Fairbanks
UHMA	Unified Hazard Mitigation Assistance
U.S.	United States
USC	United States Code
USDA	United States Department of Agriculture
USFS	United States Forest Service
USFW	United States Fish & Wildlife
USGS	United States Geological Survey
VFA-RFA	Volunteer Fire Assistance and Rural Fire Assistance Grant
WRC	Western Region Climate
WUI	Wildland Urban Interface

# 1.0 Introduction

This section provides a brief introduction to hazard mitigation planning, the grants associated with these requirements, and a description of this Hazard Mitigation Plan (HMP). This HMP is an Update for the Denali Borough (Borough) and City of Anderson HMP that was developed in 2010. As part of this planning process, the 2020 HMP Update remains a multi-jurisdictional HMP that includes the Borough and the City of Anderson. The unincorporated communities of Cantwell, Ferry, Healy, and McKinley Village and smaller settlements are also included under the Borough.

## 1.1 Hazard Mitigation Planning

Hazard mitigation, as defined in Title 44 of the Code of Federal Regulations (CFR), Part §201, is “any action taken to reduce or eliminate the long-term risk to human life and property from natural hazards.” Many areas have expanded this definition to also include human-caused hazards. As such, hazard mitigation is any work done to minimize the impacts of any type of hazard event before it occurs and aims to reduce losses from future disasters. Hazard mitigation is a process in which hazards are identified and profiled, people and facilities at risk are analyzed, and mitigation actions are developed. Implementation of the mitigation actions, which include long-term strategies such as planning, policy changes, programs, projects, and other activities, is the result of this process. Hazard mitigation is the only phase of emergency management specifically dedicated to breaking the cycle of damage reconstruction and repeated damage. As such, State and Local governments are encouraged to take advantage of funding provided by Federal Hazard Mitigation Assistance (HMA) programs.

## 1.2 Local Mitigation Plans

On October 30, 2000, Congress passed the Disaster Mitigation Act of 2000 (DMA 2000) (P.L. 106-390) which amended the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act) (Title 42 of the United States Code [USC] 5121 et seq.) by repealing the act’s previous mitigation planning section (409) and replacing it with a new mitigation planning section (322). Section 322 directs State and Local entities to closely coordinate mitigation planning and implementation efforts. Additionally, it establishes the HMP requirement for the Federal Emergency Management Agency’s (FEMA) HMA programs.

On October 2, 2015, FEMA published the Mitigation Planning Final Rule in the Federal Register, [Docket ID: FEMA-2015-0012], 44 CFR Part 201, effective November 2, 2015. Planning requirements for Local entities are described in detail in Section §201.6. Locally-adopted and State- and FEMA-approved HMPs qualify jurisdictions for several HMA grant programs. This 2020 Multi-Jurisdictional HMP Update for the Borough and City of Anderson complies with Title 44 CFR Section §201.6 and applicable FEMA guidance documents as well as the 2018 State of Alaska HMP.

Section 322 of the Stafford Act (42 USC 5165) as amended by P.L. 106-390 provides for State and Local governments to undertake a risk-based approach to reducing risks from natural hazards through mitigation planning. The National Flood Insurance Act of 1968 (42 USC 4001 et seq.) as amended, further reinforced the need and requirement for HMPs, linking Flood

Mitigation Assistance (FMA) programs to State and Local HMPs. This change also required participating National Flood Insurance Program (NFIP) communities' risk assessments and mitigation strategies to identify and address repetitively flood damaged properties.

Neither the Borough nor the City of Anderson participate in the NFIP.

### 1.3 Grant Programs with Mitigation Plan Requirements

FEMA HMA grant programs provide funding to State and Local entities that have a FEMA-approved State or Local HMP. Two of the grants are authorized under the Stafford Act and DMA 2000, while the remaining three are authorized under the National Flood Insurance Act and the Bunning-Bereuter-Blumenauer Flood Insurance Reform Act. As of June 19, 2008, the grant programs were segregated. The Hazard Mitigation Grant Program (HMGP) is a competitive, disaster-funded grant program whereas the Unified Mitigation Assistance Programs (Pre-Disaster Mitigation [PDM] and FMA, although competitive) rely on specific grant pre-disaster grant funding sources, sharing several common elements.

“The Department of Homeland Security (DHS) FEMA HMA grant programs present a critical opportunity to protect individuals and property from natural hazards while simultaneously reducing reliance on Federal disaster funds. The HMA programs provide PDM grants annually to State and Local communities. The statutory origins of the programs differ, but all share the common goal of reducing the loss of life and property due to natural hazards. The PDM program is authorized by the Stafford Act and focuses on mitigation project and planning activities that address multiple natural hazards, although these activities may also address hazards caused by manmade events. The FMA program is authorized by the National Flood Insurance Act and focuses on reducing claims against the NFIP” (FEMA, 2019h).

### 1.4 HMA Unified Programs

The HMGP provides grants to State and Local entities to implement long-term hazard mitigation measures after a major disaster declaration. The purpose of the HMGP is to reduce the loss of life and property due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster. Projects must provide a long-term solution to a problem; for example, elevation of a home to reduce the risk of flood damages as opposed to buying sandbags and pumps to fight the flood. In addition, a project's potential savings must be more than the cost of implementing the project. Funds may be used to protect either public or private property or to purchase property that has been subjected to, or is in danger of, repetitive damage. The amount of funding available for the HMGP under a disaster declaration is limited. FEMA may provide a State, Borough, or City with up to 20% of the total aggregate disaster damage costs to fund HMGP project or planning grants. The cost-share for this grant is 75% Federal/25% non-Federal.

The PDM grant program provides funds to State, Borough, or City entities for hazard mitigation planning and mitigation project implementation prior to a disaster event. PDM grants are awarded on a nationally-competitive basis. Like HMGP funding, a PDM project's potential savings must be more than the cost of implementing the project. In addition, funds may be used to protect either public or private property or to purchase property that has been



subjected to, or is in danger of, repetitive damage. The total amount of PDM funding available is appropriated by Congress on an annual basis. In Fiscal Years (FY) 2018 and 2019, PDM program funding totaled approximately \$235 and \$250 million each year, respectively. The cost-share for this grant is 75% Federal/25% non-Federal.

The goal of the FMA grant program is to reduce or eliminate flood insurance claims under the NFIP. Emphasis for this program is placed on mitigating repetitive loss properties. The primary source of funding for this program is the National Flood Insurance Fund. Grant funding is available for three types of grants, including Planning, Project, and Technical Assistance. Project grants, which use most of the program's total funding, are awarded to State and Local entities to apply mitigation measures to reduce flood losses to properties insured under the NFIP. In FY 2018, FMA funding totaled \$160 million. In FY 2019, FMA funding totaled \$210 million. The cost-share for this grant is 75% Federal/25% non-Federal.

## 1.5 Plan Description

The remainder of this HMP Update consists of the following sections and appendices.

### **Prerequisites**

Section 2 addresses the prerequisites of plan adoption, which include adoption by the Borough and the City of Anderson. The adoption resolutions and FEMA approval letters are included in Appendix B.

### **Community Description**

Section 3 provides a general history and background of the Borough and the City of Anderson, including historical trends for population and the demographic and economic conditions that have shaped the area. Location figures are included.

### **Planning Process**

Section 4 describes the planning process and identifies the Planning Team Members, the meetings held as part of the planning process, and the key stakeholders within the Borough and the City of Anderson. In addition, this section documents public outreach activities (Appendix A) and the review and incorporation of relevant plans, reports, and other appropriate information.

### **Hazard Analysis**

Section 5 describes the process through which the Planning Team identified, screened, and selected the hazards to be profiled in this Multi-Jurisdictional HMP Update. The hazard analysis includes the characteristics, history, location, extent, impact, and recurrence probability for each hazard. In addition, historical and hazard location figures are included.

### **Vulnerability Analysis**

Section 6 identifies potentially vulnerable assets—people, residential and nonresidential buildings, and critical facilities and infrastructure—in the Borough and City of Anderson. The resulting information identifies the full range of hazards that the Borough and City of Anderson could face and potential damages. Trends in land use and development are also discussed.

## **Mitigation Strategy**

Section 7 defines the mitigation strategy which provides a blueprint for reducing the potential losses identified in the vulnerability analysis. The Planning Team provided a status update on mitigation actions that have been implemented since 2010 and developed additional mitigation goals and potential actions to address the risks facing the communities. Mitigation actions include preventive actions, property protection techniques, natural resource protection strategies, structural projects, emergency services, and public information and awareness activities.

## **Plan Maintenance**

Section 8 describes the Planning Team's formal plan maintenance process to ensure that the HMP Update remains an active and applicable document. The process includes monitoring, evaluating (Appendix E), and updating the HMP; implementation through existing planning mechanisms; and continued public involvement. This section also provides the Borough's and the City of Anderson's capacities in terms of regulatory tools, and staff and financial resources as well as potential funding sources.

## **References**

Section 9 lists the reference materials used to prepare this HMP Update.

## **Appendix A**

Appendix A provides public outreach information, including public survey results, meeting sign-in sheets, trip reports, and public comments.

## **Appendix B**

Appendix B provides the adoption resolutions for the Borough and City of Anderson as well as the final approval letters from FEMA for this 2020 Multi-Jurisdictional HMP Update.

## **Appendix C**

Appendix C provides the FEMA Local Mitigation Plan Review Tools for the Borough and City of Anderson; the review tools document compliance of this Multi-Jurisdictional HMP Update with FEMA criteria.

## **Appendix D**

Appendix D contains the Benefit-Cost Analysis Fact Sheet used to prioritize mitigation actions.

## **Appendix E**

Appendix E provides plan maintenance documents, such as an annual review sheet, a progress report form, and a community survey.

## **Appendix F**

Appendix F contains a glossary.

## 2.0 Prerequisites

The DMA 2000 requirements for the adoption of this HMP Update by the local governing bodies are described below.

<b>DMA 2000 Requirements</b>
<p><b>Local Plan Adoption</b></p> <p><b>§201.6(c)(5):</b> [The plan shall include...] Documentation that the plan has been formally adopted by the local governing body of the jurisdiction requesting approval of the plan (e.g., City Council, Borough Assembly). For multi-jurisdictional plans, each jurisdiction requesting approval of the plan must document that it has been formally adopted.</p>
<b>1. REGULATION CHECKLIST</b>
<b>ELEMENT E. Plan Adoption</b>
<p>E1. Does the plan include documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval? <b>[Requirement §201.6(c)(5)]</b></p> <p>E2. For multi-jurisdictional plans, has each jurisdiction requesting approval of the plan documented formal plan adoption? <b>[Requirement §201.6(c)(5)]</b></p>
<b>Source: FEMA, 2015.</b>

The Denali Borough Assembly and the Anderson City Council are represented in this Multi-Jurisdictional HMP Update that meets the requirements in Section 322 of DMA 2000 and Section 44 CFR §201.6.

On March 4, 2020, the Borough Local Emergency Planning Committee (LEPC) was introduced to this HMP Update at its regular meeting in Healy. On March 10, 2020, this HMP Update was introduced at a regular meeting of the Anderson City Council. On March 11, 2020, this HMP Update was introduced at a regular meeting of the Borough Assembly in McKinley Village. Then after comments made during all three public meetings were incorporated accordingly into a revised Draft HMP Update, a 30-day public comment period began March 31, 2020, where the public was afforded an opportunity to provide comments and ask questions. Appendix A documents all comments received. Comments were incorporated as appropriate, and the Draft 2020 HMP Update was submitted to the Alaska Division of Homeland Security and Emergency Management (DHS&EM) and FEMA for review.

Following approval of the 2020 HMP Update by the State of Alaska Hazard Mitigation Officer and FEMA, the Anderson City Council adopted this HMP Update on July \_\_, 2020, and the Borough Assembly adopted this HMP Update on July \_\_, 2020. A scanned copy of the formal adoption resolutions and FEMA's final approval letters are included in Appendix B.

## 3.0 Community Description

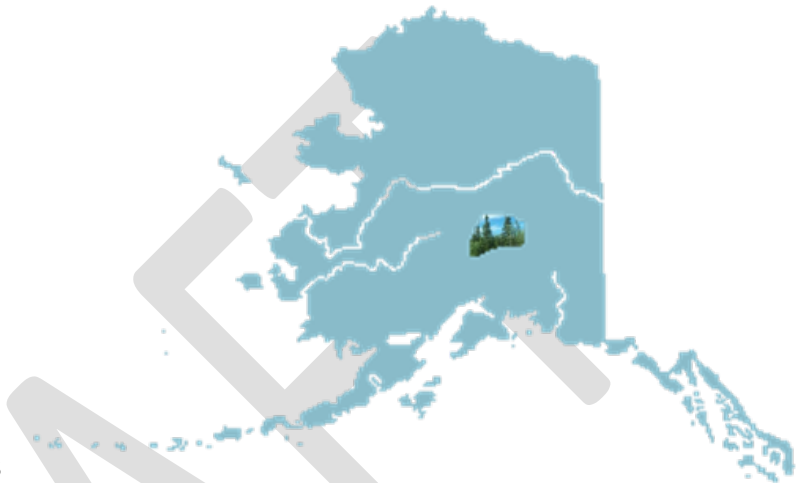
This section describes the location, geography, climate, community types, and history; demographics; economy of the Borough and the City of Anderson; and transportation options.

### 3.1 Location, Geography, Climate, Community Types, and History

#### Location and Geography

“Denali Borough” is in Interior Alaska, about 250 miles north of Anchorage and 108 miles south of Fairbanks (Figure 1). A significant portion of the Borough is within Denali National Park. The Borough encompasses approximately 12,637 square miles of land and 25.5 square miles of water. The Borough is located in the Nenana recording district. The Borough contains North America’s highest peak, Denali, from which it derives its name. Most of the Borough population is spread out along the George Parks Highway, from the town of Nenana (not located in the Borough), 26 miles north, to Healy, 40 miles south (Figure 2). Nenana is located at Milepost 305, the cut-off to Anderson/Clear is at Milepost 284, Healy is at Milepost 248, the cut-off to Denali National Park is at Milepost 237, and Cantwell is located at Milepost 210.

Figure 1. Location Map



#### Climate

The Borough is located within two major climatic zones: a continental climatic zone and a transitional climatic zone. The area south of the Denali Park entrance lies within the transitional climatic zone, characterized by long cold winters and warm summers. The Borough land north of the Alaska Range is within the continental climatic zone, characterized by moderate differences in temperature and high rain fall. Temperature ranges vary widely throughout the Borough (-60 degrees Fahrenheit [°F] to 90°F), and snow can occur at any month along higher stretches of the George Parks Highway. The first snow on the mountains at lower elevations occurs in late August. Rivers begin to freeze in late October, and breakup starts in late April or early May. Average annual precipitation is 12.7 inches with annual snowfall of 49.3 inches.

#### Community Types

There are five communities within the Borough: Anderson (includes Clear Air Force Station [AFS]), Cantwell, Ferry, Healy, and McKinley Village/Denali Park Area. Nearly all Borough residents live along the George Parks Highway, the major north/south highway in the State. The Alaska Railroad also bisects the Borough and serves the Borough’s communities. Table 1 provides an overview of community types within the Borough. Figure 2 shows the locations of each community within the Borough.

Table 1. Community Types in the Denali Borough

Jurisdiction	Classification	Year Incorporated	Form of Government	Population*
Denali Borough	Non-Unified Home Rule Borough	1990	Strong Mayor	1,825
Anderson	2 <sup>nd</sup> Class City	1962	Strong Mayor	269
Cantwell	Unincorporated/Census-Designated Place (CDP)	N/A	N/A	202
Ferry	Unincorporated/CDP	N/A	N/A	30
Healy, Borough Seat	Unincorporated/CDP	N/A	N/A	1,057
McKinley Village/Denali Park Area	Unincorporated/CDP	N/A	N/A	192

\*Alaska Department of Commerce, Community, and Economic Development (DCCED) 2018 Certified Population.

\*\*Note that the total population for the Borough in this table does not total to 1,825. Other settlements in the Borough include Carlo Creek, Panguingue Creek, Lignite, and Kantishna.

Anderson is located 76 miles southwest of Fairbanks on a six-mile-long spur road off the George Parks Highway at approximately 64.344170° north latitude and -149.186940° west longitude. The City has 47.2 square miles of land, and 0.4 square mile of water. The developed portion of the City, less than a one-half square mile area, lies six miles north of Clear AFS.

Cantwell is located 211 miles north of Anchorage on the George Parks Highway. The area encompasses 118.3 square miles of land and 0.5 square miles of water. It lies at approximately 63.391670° north latitude and -148.950830° west longitude.

Ferry lies on both shores of the Nenana River, 39 miles south of Nenana. It is located at Mile 371.2 of the Alaska Railroad. It lies at approximately 64.037080° north latitude and -148.944500° west longitude.

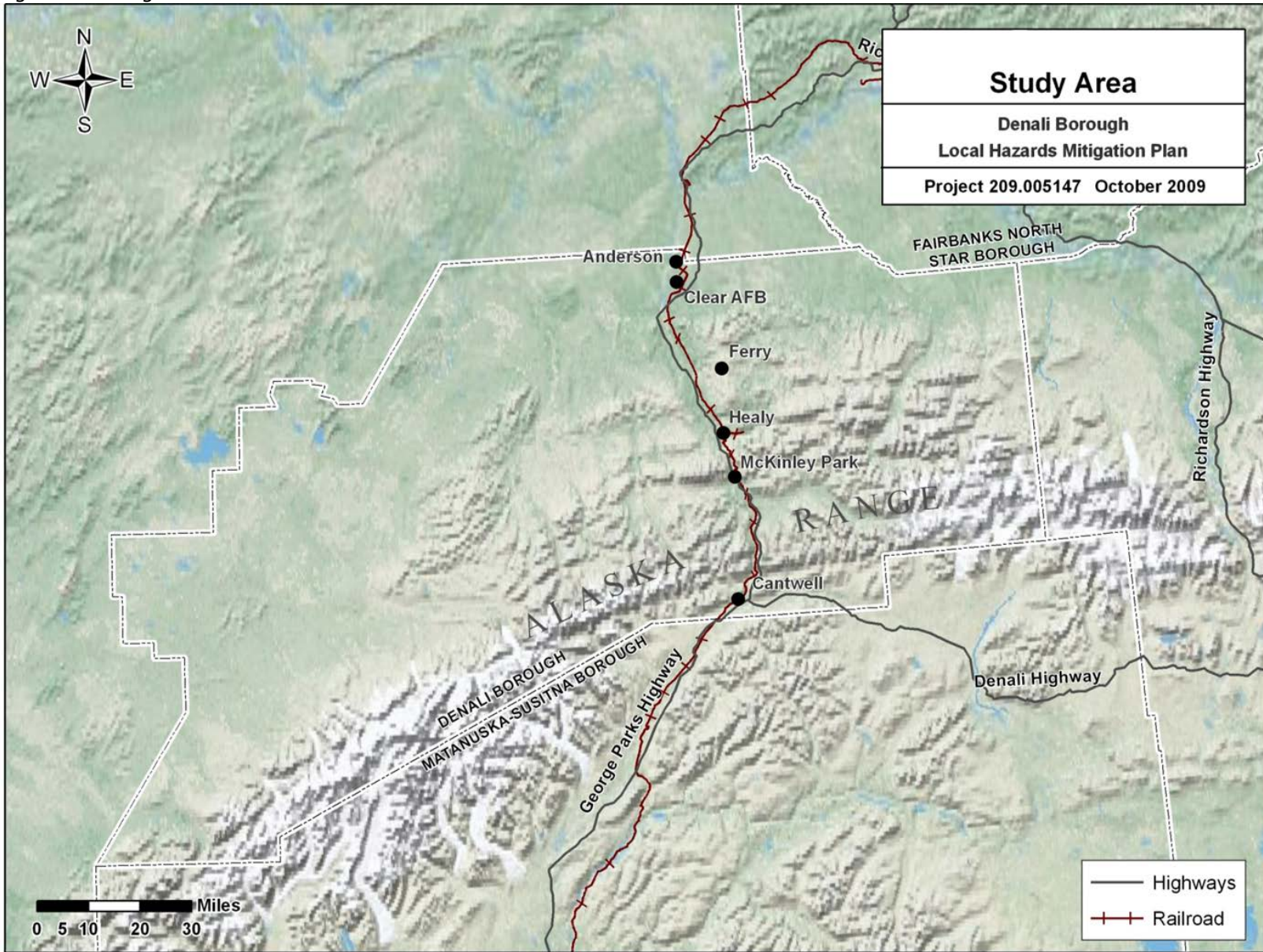
Healy lies at the mouth of Healy Creek on the Nenana River, 78 miles southwest of Fairbanks, and is located just north of the entrance to Denali National Park and Preserve at approximately 63.856940° north latitude and -148.966110° west longitude.

McKinley Village/Denali Park Area is on the George Parks Highway at the entrance to Denali National Park at approximately 63.732780° north latitude and -148.914170° west longitude.

## History

The earliest inhabitants of the Borough area were nomadic Natives, who fished, trapped, and hunted throughout the Interior. The first non-Native settlers were miners, who established a camp at Hoseanna Creek near Healy (later known as Lignite Creek) prior to 1902. Formation of Mount (Mt.) McKinley National Park in 1917 as a wildlife refuge and construction of the Alaska Railroad brought additional settlers to the area in the early 1920s. Coal mining began in the area in 1922. In 1980, Mt. McKinley National Park and Denali National Monument were incorporated and established into Denali National Park and Preserve. Clear AFS, the Usibelli

Figure 2. Borough Boundaries



Coal Mine, and tourism at the Park have brought growth and development. The Borough was incorporated in December 1990.

Anderson is located within the traditional territory of the Nenana-Toklat band of the lower Tanana Athabascan Natives. The area was historically used by Athabascan bands for hunting moose and small game animals as they moved across the land.

The City of Anderson was named after Arthur Anderson, a homesteader in the late 1950s. In 1959, Mr. Anderson subdivided his 80-acre homestead into ¼-acre lots and sold them to civilian workers from Clear AFS, a ballistic missile early warning site, completed in 1961. An elementary school was constructed in 1961. The City was incorporated in 1962. In 1968, a steel bridge, crossing the Tanana River, was completed, allowing access to Anderson from the north. In 1971, the George Parks Highway was constructed, allowing access from Anderson to Anchorage, 250 miles south.

As with the Borough, the earliest inhabitants of the Cantwell area were nomadic Natives who trapped, hunted, and fished throughout Interior Alaska. Cantwell began as a flag stop on the Alaska Railroad. The first Alaska Native to settle in Cantwell was Oley Nicklie. When fur prices dropped, he and his two brothers sought work with the railroad.

Ferry's history is tied to the railroad; its original settlers were workers at the railroad camps.

Healy was established in 1904 and is home to Alaska's only operating coal mine, the Usibelli Coal Mine. The mine produces an average between 1.2 and 2 million tons of coal per year, supplying coal to Golden Valley Electric Association (GVEA), the University of Alaska Fairbanks (UAF), Aurora Energy, Clear AFS, Eielson Air Force Base, and Fort Wainwright Army Post. The Usibelli Coal Mine began a successful environmental reclamation program in 1971. Dall sheep now graze where there was once a strip mine.

McKinley Village/Denali Park Area has developed around National Park Service (NPS) employment and tourism-related facilities. More than 600,000 individuals travel through the Borough to visit Denali National Park and Preserve annually (642,809 in 2017 per NPS, 2020).

### 3.2 Demographics

The 2010 U.S. Census population was 1,826 residents for the Borough. Figure 3 shows the Borough population by community as Alaskan boroughs were not established until the 1980 Census. The most recent 2018 DCCED certified population was 1,825 of which the median age was 43 years (ACS, 2018). The population of the Borough is expected to remain steady because well over half of the population is between 18 and 44 years of age. The racial makeup of the Borough is predominantly white at approximately 88.6% of the population. The second largest demographic is Asian with approximately 4.5% of the total population, and the third largest demographic is Alaska Native with approximately 2.0% of the total population (ACS, 2018). The male and female composition is each approximately 50.0%, respectively.

### 3.3 Economy

The Usibelli Coal Mine, Clear AFS, Alaska Railroad, GVEA, Borough School District, NPS, Holland American Princess, Aramark, and other tourism-related industries, and road services provide

the majority of employment opportunities in the Borough. Only four borough residents hold commercial fishing permits (ACF, 2018).

The Borough's uncertified population in 2020 is 2,066 with a growth rate of 1.32% in the past year (WPR, 2020). A total of 1,566 residents are employed, and 445 adults are not in the labor force (not seeking work) (ACS, 2018). Approximately 3% of residents are unemployed (ACS, 2018). The per capita income is \$34,956. The median and mean household incomes within the Borough are \$84,196 and \$91,022, respectively (ACS, 2018). Nearly 17% of residents live below the poverty level (WPR, 2020).

As of 2017, 1,530 people worked in the Borough year-round. Some of these workers commute from the Matanuska-Susitna Valley and Fairbanks North Star Boroughs. The largest industries in the Denali Borough are Accommodation & Food Services (392 people), Transportation & Warehousing (321 people), and Arts, Entertainment, & Recreation (209 people). The highest paying industries are Utilities (\$100,156), Mining, Quarrying, & Oil & Gas Extraction (\$100,114), and Agriculture and Forestry (\$96,875) (Data USA: Viz Builder, 2017). Seasonal tourism employment during the summer months is significant with at least over 40% of summer employee positions filled by people coming from outside Alaska. Unemployment swings from Alaska's lowest to its highest, from 3,656 jobs in August to 856 jobs in January (DB, 2018).

Clear AFS, the Anderson School, City and other government positions employ most of Anderson's residents. A \$106.5 million intercontinental ballistic missile radar warning system, "PAVE Phased Array Warning System," was completed in 2015 at Clear AFS. These radars are capable of detecting ballistic missile attacks and conducting general space surveillance and satellite tracking. The acronym PAVE is a military program identification code. Clear AFS has a permanent workforce of 300, with the large majority living on base or commuting to work for multi-day shifts from Fairbanks, Anchorage, or the Matanuska-Susitna Borough. Clear AFS is also currently undergoing \$1 billion in system upgrades, with up to 400 additional workers on station during the construction phase (DB, 2018). The Clear Fish Hatchery provides small stocks of game fish to area streams and lakes.

Cantwell's economy is based on tourism and transportation. Part-time seasonal construction jobs provide income. Cantwell's Native residents depend on subsistence hunting, fishing, trapping, and gathering.

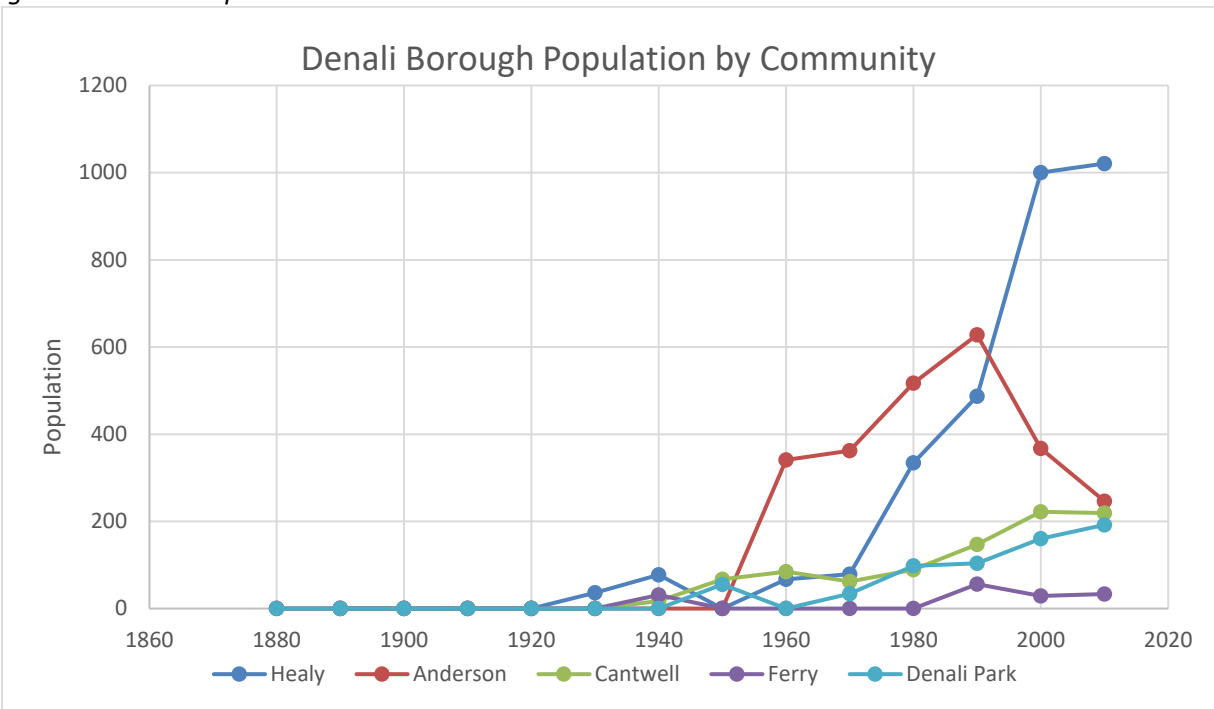
Ferry is primarily a residential area, and no major employers are located in the community. Many residents work in the Healy area.

Healy's economy has been dominated by the Usibelli Coal Mine for over 70 years. GVEA, the Alaska Railroad, and the School District are also major employers. Tourism-related activities, recreational vehicle (RV) parks, guided rafting trips, helicopter tours, and other businesses provide seasonal employment.

McKinley Village/Denali Park Area's economy is based on tourism to Denali National Park; park headquarters, Toklat Ranger Station, bus services, hotels, lodges, restaurants, guided rafting tours, and other seasonal tourist-related activities provide seasonal employment.



Figure 3. Historic Population



### 3.4 Transportation

The George Parks Highway provides access from the Borough to Anchorage and Fairbanks year-round. The George Parks Highway also provides access from Anderson to Anchorage and Fairbanks. The Denali Highway is open only during the summer, from Cantwell to Paxson, to provide a shorter route to the Alaska Highway. The Alaska Railroad also serves Interior Alaska. The Alaska Railroad also serves Anderson and Clear AFS. There are seven airstrips within the Borough. Tours by bus, aircraft, and helicopter operate during summer months. Four miles south of Anderson is a State-owned 4,000-foot lighted asphalt runway. A private 2,500-foot dirt airstrip is located at Clear Sky Lodge.

Cantwell is accessed by road, rail, and air. The George Parks Highway connects north to Fairbanks and south to Anchorage. There are two privately-owned airstrips; Cantwell Heights property owners operate a 2,080-foot-long by 70-foot-wide gravel airstrip for public use.

From the George Parks Highway, road access is available to Ferry only on privately-owned railroad or University land. Most residents park their cars on a private lot and walk into Ferry, across a railroad bridge and catwalk. Students are taken by all-terrain vehicle (ATV) across the river to the school bus.

The George Parks Highway provides access to and from Healy. A 2,920-foot by 60-foot wide asphalt runway provides facilities for helicopter and air tours of Denali National Park and Preserve.

The George Parks Highway connects McKinley Village/Denali Park Area south to Anchorage and north to Fairbanks. The community also has three airstrips located within Denali National Park. The NPS owns and operates the primary 3,000-foot-long by 100-foot-wide gravel airstrip.

## 4.0 Planning Process

This section provides an overview of the planning process; identifies the Planning Team members and key stakeholders; documents public outreach efforts; and summarizes the review and incorporation of existing plans, studies, and reports used to update this HMP. Additional information is provided in Appendix A.

The requirements for the planning process, as stipulated in DMA 2000 and its implementing regulations, are described below.

<b>DMA 2000 Requirements</b>
<p><b>Local Planning Process</b></p> <p><b>§201.6(b):</b> An open public involvement process is essential to the development of an effective plan. In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include Element A components in the Plan.</p>
<b>1. REGULATION CHECKLIST</b>
<b>ELEMENT A. Planning Process</b>
<p>A1. Does the Plan document the planning process, including how it was prepared and who was involved in the process for each jurisdiction? <b>[Requirement §201.6(c)(1)]</b></p> <p>A2. Does the Plan document an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, agencies that have the authority to regulate development, as well as other interests to be involved in the planning process? <b>[Requirement §201.6(b)(2)]</b></p> <p>A3. Does the Plan document how the public was involved in the planning process during the drafting stage? <b>[Requirement §201.6(b)(1)]</b></p> <p>A4. Does the Plan describe the review and incorporation of existing plans, studies, reports, and technical information? <b>[Requirement §201.6(b)(3)]</b></p>
<b>Source: FEMA, 2015.</b>

### 4.1 Overview of Planning Process

During the 2020 planning process, the Borough and City of Anderson updated their 2010 HMP. Updates to the 2020 HMP include:

- Revised community demographic and economic information;
- A review of the local hazards facing the Borough and City;
- A revised hazard vulnerability assessment;
- An assessment of the progress made towards minimizing or eliminating those hazards from the 2010 HMP; and
- Development of additional mitigation actions, and re-prioritization of hazards and all remaining mitigation actions to implement.

LeMay Engineering & Consulting, Inc. was hired by the Borough to guide development of the Planning Team to assist the Borough and City of Anderson with the HMP Update. The planning process began with Jennifer LeMay coordinating a Planning Team kick-off meeting on December 23, 2019. The Planning Team discussed the Borough's and City of Anderson's roles such as: acting as an advocate for the planning process, assisting with gathering information, and supporting public participation opportunities. There was also a brief discussion about hazards that affect the community (Section 5). Changes in the cryosphere was added to the HMP Update per the 2018 State of Alaska HMP.

The Planning Team updated critical facilities and evaluated mitigation goals and actions from the 2010 HMP. Some mitigation goals were changed due to the 2018 State of Alaska HMP requirements and a change in the Borough's and City of Anderson's priorities. Some mitigation actions are no longer a priority and were identified as such. Current statuses were added to mitigation actions from the 2010 HMP, and new projects were developed. All remaining projects were then prioritized (Chapter 7).

In summary, the following six-step process occurred from December 2019 through April 2020.

- Organize resources: Members of the Planning Team identified resources, including staff, agencies, and local community members, who could provide technical expertise and historical information needed in the 2020 HMP Update.
- Engage the public: The Planning Team developed an online survey to gauge Borough residents' concern with hazards that could potentially affect their areas. Three meetings were held during the updating process in three different communities to provide opportunities for input. Additionally, the 2010 HMP and the Draft 2020 HMP Update were posted on the Borough's website for a 30-day public comment period.
- Monitor, evaluate, and update the 2010 HMP: The Planning Team evaluated their implementation process to ensure compatibility with community needs and assessed how well the implementation process worked, making changes for an even better process starting in 2025.
- Assess risks: The Planning Team confirmed the hazards that were of concern to the community and updated the risk assessment for identified hazards. The Planning Team reviewed the risk assessment, including the vulnerability analysis, prior to and during the update and development of the 2020 mitigation strategy.
- Assess capabilities: The Planning Team reviewed current administrative and technical, legal and regulatory, and fiscal capabilities to determine whether existing provisions and requirements adequately address relevant hazards.
- Update the mitigation strategy: The Planning Team updated the mitigation goals and actions from 2010. Subsequently, the Borough and City of Anderson identified completed projects, and both jurisdictions jointly developed mitigation goals, actions, and prioritized future projects into a combined Mitigation Action Plan (MAP) strategy (Table 24 in Section 7).

## 4.2 Hazard Mitigation Planning Team

Table 2 identifies the Hazard Mitigation Planning Team.

*Table 2. Hazard Mitigation Planning Team*

<b>Name</b>	<b>Title</b>	<b>Organization</b>	<b>Contact Information</b>
Chris Noel	Emergency Planning and Projects Coordinator	Denali Borough	<a href="mailto:cnoel@denaliborough.com">cnoel@denaliborough.com</a>
Clay Walker	Mayor	Denali Borough	<a href="mailto:cwalker@denaliborough.com">cwalker@denaliborough.com</a>
Marsha Lambert	Planner	Denali Borough	<a href="mailto:mlambert@denaliborough.com">mlambert@denaliborough.com</a>
Steve Love	LEPC Vice Chair	Denali Borough	<a href="mailto:sloverm@mtaonline.net">sloverm@mtaonline.net</a>
Connie MacMaster	Clerk	Denali Borough	<a href="mailto:cmacmaster@denaliborough.com">cmacmaster@denaliborough.com</a>
Brad Randoll	Fire Department	Tri-Valley	<a href="mailto:trivalleyfirechief@gmail.com">trivalleyfirechief@gmail.com</a>
Joel Miner	Sergeant	Alaska State Troopers	<a href="mailto:Joel.miner@alaska.gov">Joel.miner@alaska.gov</a>
Therese (Tess) Morin	LEPC Liaison	National Park Service	<a href="mailto:Tess_morinenps.gov">Tess_morinenps.gov</a>
Temple Wingfield	LEPC Liaison	Clear AFS	<a href="mailto:Temple.wingfield.ctr@us.af.mil">Temple.wingfield.ctr@us.af.mil</a>
Keith Mitchell	Assistant Fire Management Officer	National Park Service	<a href="mailto:keith_mitchell@nps.gov">keith_mitchell@nps.gov</a>
Samantha Thompson	Mayor	City of Anderson	<a href="mailto:neal@mtaonline.net">neal@mtaonline.net</a>
Scott Thompson	Fire Chief, Director of Public Safety	City of Anderson	<a href="mailto:coaems@mtaonline.net">coaems@mtaonline.net</a>
William Morris	Health & Social Representative	Anderson City Council	<a href="mailto:alpineplumbing@live.com">alpineplumbing@live.com</a>
Robert Smith	Land Representative	Anderson City Council	<a href="mailto:MaryMcCall@DBSD.org">MaryMcCall@DBSD.org</a>
John J. Collura, Jr.	Department of Public Works	City of Anderson	<a href="mailto:jjcollurn@hotmail.com">jjcollurn@hotmail.com</a>
Trista Jennings	Clerk	City of Anderson	<a href="mailto:coaclerk@mtaonline.net">coaclerk@mtaonline.net</a>
Beth Johnson	Park Representative	Anderson City Council	<a href="mailto:Johnsonbeth23@gmail.com">Johnsonbeth23@gmail.com</a>
Lisa Miner	Assembly Member/Resident of Healy	Denali Borough Assembly	841.4732
Jake Hill	Assembly Member/Resident of McKinley Village	Denali Borough Assembly	<a href="mailto:jhill@denaliborough.com">jhill@denaliborough.com</a>
Eileen Holmes	Assembly Member/Resident of Anderson	Denali Borough Assembly	<a href="mailto:eiholmes@98@yahoo.com">eiholmes@98@yahoo.com</a>

Jared Zimmerman	Assembly President/Resident of Stampede	Denali Borough Assembly	683.2127
Jeff Stenger	Assembly Member/Resident of Anderson	Denali Borough Assembly	
Tallon Shreeve	Assembly Member/Resident of Healy	Denali Borough Assembly	
Dan Polta	Superintendent/Resident of Healy	Denali Borough School District	<a href="mailto:danpolta@dbsd.org">danpolta@dbsd.org</a>
Kris Capps	Resident/ Journalist for Fairbanks Daily News-Miner	McKinley Village	<a href="mailto:kcapps@newsminer.com">kcapps@newsminer.com</a>
Vanessa Jusczak	Director	Denali Chamber of Commerce	<a href="mailto:director@denalichamber.com">director@denalichamber.com</a>
Carrie Skinner	Denali Chamber of Commerce employee	McKinley Village	<a href="mailto:carrie@denalichamber.com">carrie@denalichamber.com</a>
Jill Boelsma	Resident	Cantwell	
Emma Watson	Resident	Denali Borough	<a href="mailto:ytalvezporquellueve@gmail.com">ytalvezporquellueve@gmail.com</a>
Jess Tiubma	Resident	Denali Borough	
Susan Gauvin	Resident	Healy	<a href="mailto:Got_younger@yahoo.com">Got_younger@yahoo.com</a>
James Gauvin	Resident	Healy	<a href="mailto:todsg@hotmail.com">todsg@hotmail.com</a>
George Haskins	Resident	Anderson	<a href="mailto:Haskins_george@hotmail.com">Haskins_george@hotmail.com</a>
Sandi Trumbower	Resident	Anderson	<a href="mailto:strumbower@hotmail.com">strumbower@hotmail.com</a>
Daniel Ligon	Resident	North Nenana	570.4422
Jennifer LeMay, PE, PMP	Hazard Mitigation Planner	LeMay Engineering & Consulting, Inc.	<a href="mailto:jlemay@lemayengineering.com">jlemay@lemayengineering.com</a>
Patrick LeMay, PE	Project Mitigation Expert	LeMay Engineering & Consulting, Inc.	<a href="mailto:Patrick.lemay@lemayengineering.com">Patrick.lemay@lemayengineering.com</a>
Rick Dembroski	PDM Program Manager	DHS&EM	<a href="mailto:rick.dembroski@alaska.gov">rick.dembroski@alaska.gov</a>
Brent Nichols, CFM	State Hazard Mitigation Officer	DHS&EM	<a href="mailto:Brent.nichols@alaska.gov">Brent.nichols@alaska.gov</a>

### 4.3 Public Involvement & Opportunity for Interested Parties to Participate

Table 3 lists the community’s public involvement initiatives focused to encourage participation and insight for the 2020 HMP Update effort.

*Table 3. Public Involvement Mechanisms*

<b>Mechanism</b>	<b>Description</b>
Notification of HMP Update and Request for Public Input (January 17, 2020)	A notice was added to the Borough’s website with an announcement of the HMP Update process. The summary, scope, and benefits of the upcoming planning project were posted. The public was invited to comment on the 2010 HMP which was also posted on the website. No comments were received.
Public Survey (January 17 to March 13, 2020)	Fifty-three people answered the public survey. A brief summary is provided below this table, and the entire survey results are provided in Appendix A.
LEPC Meeting (March 4, 2020) in Healy	The meeting was announced via a public notice posted in Anderson, Cantwell, Healy, and McKinley Park in three public places per community with one of the public places being the Post Office. The meeting was also announced on the Borough’s webpage and social media. The meeting was also listed on the Borough’s activity calendar on the Borough’s webpage. One of the agenda items at the March 4, 2020, LEPC meeting was the HMP Update. A PowerPoint presentation was given summarizing the Draft HMP Update; comments were summarized in the trip report, which was included in Appendix A. Comments were incorporated accordingly into the Draft HMP Update after the meeting.
City Council Meeting (March 10, 2020) in Anderson	The meeting was announced online. A public notice was also posted at the City Office and the Post Office. In particular, Table 23 of the Draft HMP Update was discussed as well as the City’s hazard history; comments were summarized in the trip report, which was included in Appendix A. Comments were incorporated accordingly into the Draft HMP Update after the meeting.
Borough Assembly Meeting (March 11, 2020) in McKinley Village	The meeting was announced via a public notice posted in Anderson, Cantwell, Healy, and McKinley Park in three public places per community with one of the public places being the Post Office. The meeting was also announced on the Borough’s webpage. Anyone who signed up for the Borough’s postings received personal emails with meeting announcements. The assembly meeting was also live-streamed with the link posted on the Borough’s website and on its Facebook page. In particular, Table 23 of the Draft HMP Update was discussed; comments were

	summarized in the trip report, which was included in Appendix A. Comments were incorporated accordingly into the Draft HMP Update after the meeting.
Public Notice, dated March 31, 2020	Notice of the 30-day public comment period was provided to the public via a public notice posted in Anderson, Cantwell, Healy, and McKinley Park in three public places per community with one of the public places being the post office. The meeting was also announced on the Borough's webpage. Anyone who signed up for the Borough's postings received a personal email with the public notice. An announcement was also posted on the City's and Borough's Facebook pages and websites. The Draft HMP Update was also posted on the Borough's and City's web pages and Facebook pages. The Draft HMP Update was also emailed to all public meeting attendees who provided email addresses on the meeting sign-in sheets.

In January 2020, the Borough posted the 2010 HMP Plan on its website and offered the community the opportunity to participate in the updating process. No comments were received during a two-month period. Additionally, from January 17 to March 13, 2020, the Borough posted a public survey regarding hazard mitigation on its website. Fifty-three people answered the survey. Survey results are briefly summarized below and are contained in their entirety in Appendix A.

- The top three communities that responded were Healy, McKinley Village, and Cantwell.
- The majority of respondents ranked email/ social media/mail, and the Borough website as their preferred method of obtaining information from the Borough.
- 68% ranked fires as their first priority hazard. Eighteen percent ranked earthquakes as their first priority hazard, and 6% ranked severe weather as their first priority hazard. Of the 68% who ranked fires as their first priority hazard, 22% ranked their second priority hazard as earthquakes.
- Hazard mitigation prevention measures such as planning, building codes, open space preservation, and floodplain regulations were determined to be extremely important (57%) and somewhat important (26%), respectively, to influence the way land is developed and buildings are built.
- Property protection actions such as removing homes from the floodplain and elevating homes to stay above water levels during flooding were determined to be somewhat important (43%) and neutral (28%), respectively, to lessen the risk of property damage to homes.
- Public education and awareness such as outreach programs, public service announcements, and notices to residents and property owners were determined to be extremely important (51%) and somewhat important (43%), respectively, to inform the

public about natural hazards and the actions necessary to avoid potential injury or damage.

- Natural resource protection actions such as floodplain protection, habitat preservation, slope stabilizations, riparian buffers, and forest management in addition to minimizing losses were determined to be extremely important (60%) and somewhat important (31%), respectively, to preserve or restore the functions of natural systems.
- Critical facility protection such as placing generators in hospitals to ensure electrical power during a widespread power failure was determined to be extremely important (58%) and very important (34%), respectively.
- Emergency service actions such as warning systems, evacuation planning, emergency response training, and protection of critical emergency facilities or systems were determined to be extremely important (79%) and somewhat important (13%), respectively, to protect people and property during and immediately after a hazard event.
- Sixty two percent of survey respondents thought that critical facilities had average vulnerability. Nineteen percent thought critical facilities were very vulnerable, and 17% thought critical facilities had minimal vulnerability.
- Two respondents in McKinley Village and one respondent in Healy stated that their property has a history of recorded damages.
- Of the nine responses received to the following open-ended question (Do you have other suggestions for possible mitigation actions/strategies?), responses included:
  - o Fire Adaptive Communities – <https://fireadaptednetwork.org/>; address network, contact book for local co-operators (GVEA, Matanuska Telephone Association, Fire Department’s [FD], State, State forestry, and Federal entities);
  - o Zoning;
  - o We need a comprehensive plan for hazmat responses on the highway;
  - o The items on this survey are too “non-specific” to be helpful in determining strategies or actions;
  - o We don’t need more and bigger bureaucracies ‘helping’;
  - o Maybe, not sure what has been done already;
  - o Don’t use this survey as a way to “justify” new taxes or unnecessary expenses. Wisely use the money you already have;
  - o Continue the programs of brush/tree removal close to our homes to help reduce the hazard of wildfires; and
  - o Make gravel available.

The Borough and City of Anderson share almost the same priorities with wildfire as the number one priority followed by earthquake as the second priority. The Borough’s third priority is



severe weather while the City's is flooding. The Borough's fourth priority is flooding while the City's is severe weather. The Borough's and City's fifth and sixth priorities are ground failure and changes in the cryosphere, respectively.

On March 4, 2020, the LEPC met for their regularly scheduled meeting. One of the agenda items was the HMP Update. LEPC members reviewed the Draft HMP Update, and their comments were incorporated. Comments were summarized in the trip report, which was included in Appendix A. Comments were incorporated accordingly into the Draft HMP Update after the meeting.

On March 10, 2020, the Draft HMP Update was introduced at the regularly-scheduled Anderson City Council meeting. The importance of the Borough and City of Anderson having an updated HMP was presented. Jennifer LeMay summarized the Draft HMP Update and proposed mitigation actions. Comments were summarized in the trip report, which was included in Appendix A. Comments were incorporated accordingly into the Draft HMP Update after the meeting.

On March 11, 2020, the Draft HMP Update was introduced at the regularly-scheduled Borough Assembly meeting in McKinley Village. The importance of the Borough and City of Anderson having an updated HMP was presented. Jennifer LeMay summarized the Draft HMP Update and proposed mitigation actions. Comments were summarized in the trip report, which was included in Appendix A. Comments were incorporated accordingly into the Draft HMP Update after the meeting.

A 30-day public comment period occurred from March 31 to April 30. The Borough posted the Draft HMP Update on its website and asked the public to provide input and comment. Comments were included in Appendix A. Comments were incorporated into the Draft HMP Update. The Draft HMP Update was then submitted to DHS&EM for review before being submitted to FEMA for review.

Additionally, the Draft HMP Update was emailed to the NPS, Clear AFS, the Native Village of Cantwell Council, and ADOT&PF. Keith Mitchell, NPS Assistant Fire Management Officer, provided comments on Section 5.3.6 as well as graphics for that section. His comments are provided in Appendix A.

Federal agencies operating within the Borough include:

- The NPS manages Denali National Park and Preserve.
- The U.S. Postal Service operates five locations in the Borough.
- The U.S. Fish and Wildlife Service (USFW) has authority over fish and wildlife on federal lands excluding the National Park.
- The Department of Defense has jurisdiction at Clear AFS. The U.S. Air National Guard provides workers.
- The Bureau of Land Management (BLM) has jurisdiction over all other federal lands in the Borough that are not managed by the above four federal agencies.

State agencies operating within the Borough include:

- The Alaska Department of Fish and Game has authority over fish and wildlife not on federal lands.
- The Alaska Railroad Corporation.
- The Alaska Department of Public Safety provides Alaska State Troopers and fish and wildlife protection officers.
- The Alaska Department of Natural Resources (DNR) has planning authority over State lands.
- The Alaska Department of Environmental Conservation provides air and water quality enforcement.
- The Department of Transportation and Public Facilities (DOT&PF) plans, constructs, and maintains state airports, public highways, and public highway service facilities. This includes the George Parks Highway, the main means of transportation between Borough communities and the rest of the State.
- The Alaska Department of Motor Vehicles (DMV) maintains an office in Anderson. The DMV has authority over vehicle registration and drivers' licenses.

Two Alaska Native regional corporations have land holdings within the Borough: Ahtna, Inc. and Doyon Limited.

#### 4.4 Incorporation of Existing Plans and Other Relevant Information

During the planning process, the Planning Team reviewed and incorporated information from existing plans, studies, and technical reports into the HMP. The following documents were incorporated:

- Denali Borough *All Hazards Emergency Response Plan*, prepared by and for Denali Borough, 2007. A partial update of some sections was completed in 2017.
- Denali Borough *Comprehensive Plan*, prepared by the Denali Borough Planning Commission, 2015.
- Denali Borough *Land Use and Economic Development Plan*, prepared by Agnew-Beck for Denali Borough, 2018.
- City of Anderson *Comprehensive Economic Development Plan*, prepared by ASCG Incorporated, December 2003.
- *Anderson Strategic Plan*, prepared by and for the City of Anderson, 2002.
- The Denali Borough and City of Anderson *Hazard Mitigation Plan*, 2010, prepared by WHPacific and Bechtol Planning & Development.
- State of Alaska, DCCED/Division of Community and Regional Affairs (DCRA) *Community Profile*, provided historical and demographic information.
- State of Alaska *Hazard Mitigation Plan*, 2018, defined statewide hazards and their potential locational impacts.

- State of Alaska Disaster Cost Index, 2018, identified State Disaster Declarations.

A complete list of references consulted is provided in Section 9.

DRAFT

## 5.0 Hazard Profiles

This section identifies and profiles the natural hazards with the potential to affect the Borough and the City of Anderson.

### 5.1 Overview of a Hazard Analysis

A hazard analysis includes the identification, screening, and profiling of each hazard. Hazard identification is the process of recognizing the natural events that threaten an area. Natural hazards result from unexpected or uncontrollable natural events of sufficient magnitude. Human and Technological, and Terrorism-related hazards are beyond the scope of this HMP Update. Even though a particular hazard may not have occurred in recent history in the study area, all-natural hazards that may potentially affect the study area are considered; the hazards that are unlikely to occur or for which the risk of damage is accepted as being very low, are eliminated.

Hazard profiling is accomplished by describing hazards in terms of their characteristics, history, breadth, magnitude, location, extent, impact, and recurrence probability. Hazards are identified through historical and anecdotal information, review of existing plans and studies, and preparation of hazard maps of the study area. Hazard maps are used to determine the geographic extent of the hazards and define the approximate boundaries of the areas at risk.

### 5.2 Hazard Identification and Screening

The DMA 2000 requirements for hazard identification and screening are described below.

DMA 2000 Requirements
<p><b>Identifying Hazards</b></p> <p><b>§201.6(2)(i):</b> The risk assessment shall include a] description of the type, location and extent of all-natural hazards that can affect the jurisdictions.</p> <p><b>§201.6(2)(i):</b> The Plan shall include information on previous occurrences of hazard events and on the recurrence probability of future hazard events for each jurisdiction.</p> <p><b>§201.6(2)(ii):</b> Is there a description of each identified hazard’s impact on the community as well as an overall summary of the community’s vulnerability for each jurisdiction and planning area?</p> <p><b>§201.6(2)(ii):</b> Does the Plan address NFIP-insured structures within the jurisdiction that have been repetitively damaged by floods?</p>
1. REGULATION CHECKLIST
ELEMENT B. Hazard Identification and Risk Assessment
<p>B1. Does the Plan include a description of the type, location, and extent of all-natural hazards that can affect each jurisdiction? <b>[Requirement §201.6(2)(i)]</b></p> <p>B2. Does the Plan include information on previous occurrences of hazard events and on the probability of future hazard events for each jurisdiction? <b>[Requirement §201.6(2)(i)]</b></p> <p>B3. Is there a description of each identified hazard’s impact on the community as well as an overall summary of</p>

the community's vulnerability for each jurisdiction? **[Requirement §201.6(2)(ii)]**

B4. Does the Plan address NFIP-insured structures that have been repetitively damaged by floods?  
**[Requirement §201.6(2)(ii)]**

**Source: FEMA, 2015.**

For the first step of the hazard analysis, on December 23, 2019, the Planning Team reviewed possible hazards that could affect the Borough and City of Anderson. They then evaluated and screened the comprehensive list of potential hazards based on a range of factors, including prior knowledge or perception of the threat and the relative risk presented by each hazard, the ability to mitigate the hazard, and the known or expected availability of information on the hazard (see Table 4). The Planning Team determined that four hazards pose the greatest threat to the community: wildland/conflagration fires, earthquakes, severe weather, and floods. Hazards excluded through the screening process were considered to pose a lower threat to life and property in the community due to the low likelihood of occurrence or the low probability that life and property would be significantly affected.

*Table 4. Identification and Screening of Borough and City of Anderson Hazards*

Hazard Type	Should It Be Profiled?	Explanation
Changes in the Cryosphere	Yes	The Borough and City of Anderson are experiencing an increase in fires and increased temperatures. The Borough is also susceptible to changes in the cryosphere as its geographical area includes glaciers, permafrost, and mountains where snow avalanches occur. While one incident of avalanche was documented in the Borough in 2004, it was not within a community. However, increased snow machine activity could result in a higher risk of avalanche.
Earthquakes	Yes	Alaska is an earthquake-prone state. The Borough and the City of Anderson are located in an active earthquake region which includes the Denali and Hines Creek Faults. The <i>2018 State of Alaska HMP</i> designates this hazard with a medium probability.
Erosion	No	Erosion is not a hazard.
Flooding	Yes	The National Weather Service (NWS) operates a flood-forecasting network in the Borough. Predictions are often difficult for many of the smaller rivers because of the short time span between when the precipitation occurs and flooding starts. Significant flooding on the Nenana River has been caused by ice jams, snow melt, and unusual amounts of precipitation. The <i>2018 State of Alaska HMP</i> designated this hazard with a medium probability.
Ground Failure (Landslide/Debris Flow)	Yes	The Borough designated this as a hazard in conjunction with river activity, road development in canyon areas, and seismic hazards. The <i>2018 State of Alaska HMP</i> designated this hazard with a medium probability. The City of Anderson does not have the potential to be impacted by ground failure due to its flat topography.

Severe Weather	Yes	High winds are the Borough’s and City of Anderson’s concern. Annual weather patterns, severe cold, and blizzards also are predominant threats. High winds can reach hurricane force and have the potential to seriously damage community infrastructure, especially above ground utility lines. The 2018 State of Alaska HMP designated this hazard with a high probability.
Tsunami/Seiche	No	The Borough and City of Anderson are landlocked in Interior Alaska and have no danger of tsunami.
Wildfire and Conflagration Fires	Yes	The Borough and City of Anderson have experienced an increase in fires due to increased temperatures and high availability of fuel. The 2018 State of Alaska HMP designated this hazard with a high probability.
Volcanos	No	The Alaska Volcano Observatory identified the closest active volcano to the Borough as Buzzard Creek craters, two tuff rings at the headwaters of Buzzard Creek, a tributary of the Totatlanika River near Healy at the northern foot of the central Alaska Range. The two craters are shallow and contain small lakes. “The Buzzard Creek craters, though insignificant in the volume of ejecta, are of regional tectonic interest because they occur on trend with the Aleutian arc structure and are situated directly over the northernmost corner of the subducting Pacific plate.” Closer to the Borough is the inactive Prindle Volcano approximately 50 miles away. Prindle’s last eruption is estimated to have occurred more than 160,000 years ago (DB, 2010).

**5.3 Hazard Profile**

The Planning Team reviewed the Borough’s and City of Anderson’s local hazards using the following criteria:

- Characteristics (Type);
- History (Previous Occurrences);
- Location;
- Extent (to include breadth, magnitude, and severity);
- Impact (Section 5 provides general impacts associated with each hazard. Section 6 provides detailed impacts and a vulnerability summary of potential hazards to the Borough’s and City of Anderson’s residents and critical facilities); and
- Recurrence Probability.

The hazards profiled for the Borough and City of Anderson are presented in the rest of Section 5.3. The order of presentation is in alphabetical order and does not signify the level of importance or risk.

**5.3.1 Changes in the Cryosphere**

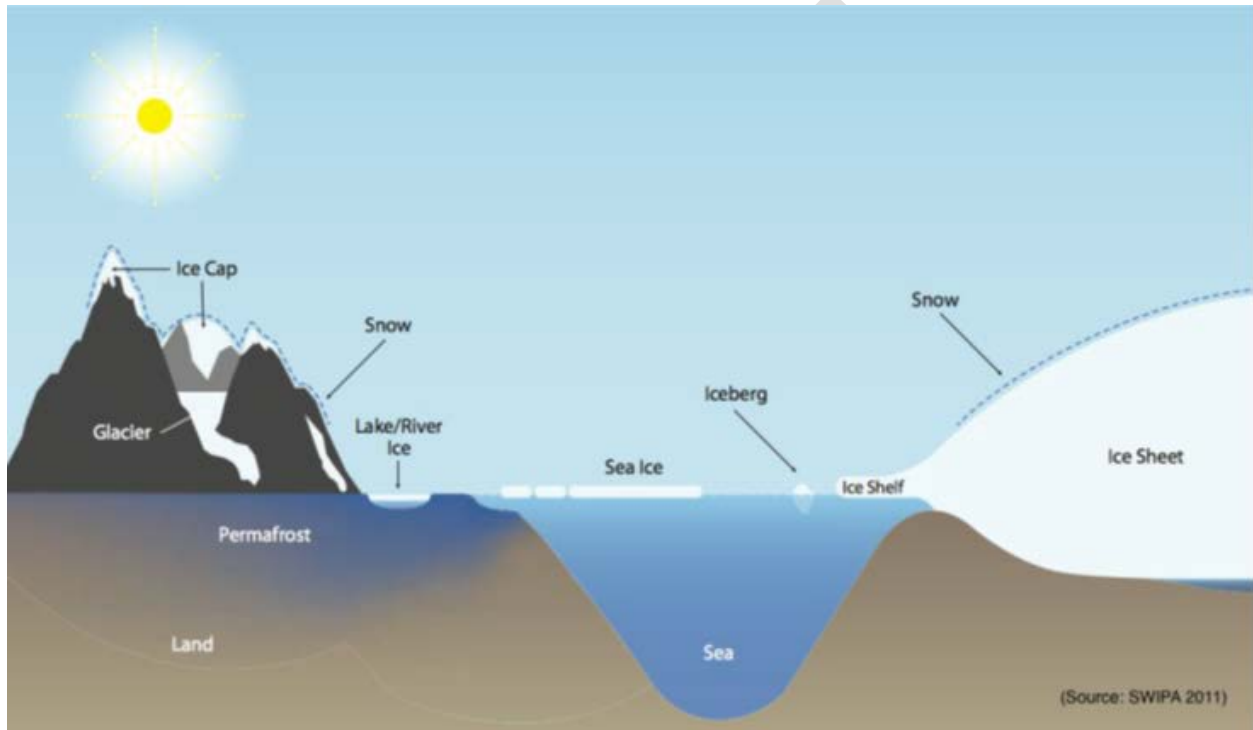
*5.3.1.1 Hazard Characteristics*

The “cryosphere” is defined as those portions of Earth’s surface and subsurface where water is in solid form, including sea, lake, and river ice; snow cover; glaciers; ice caps and ice sheets; and

frozen ground (e.g., permafrost) (Figure 4). The components of the cryosphere play an important role in climate. Snow and ice reflect heat from the sun, helping to regulate the Earth's temperature. They also hold Earth's important water resources, and therefore, regulate sea levels and water availability in the spring and summer. The cryosphere is one of the first places where scientists can identify global climate change.

Related hazards to the cryosphere include flooding and thawing permafrost which affect the Borough and City of Anderson region.

Figure 4. Cryosphere Components Diagram



Source: DHS&EM, 2018a

Hazards of the cryosphere can be subdivided into four major groups:

- Glaciers;
- Permafrost and Periglacial Features;
- Sea Ice; and
- Avalanches.

Of these four major groups, glaciers, permafrost, and avalanches affect the Borough, and thawing ground affects the City of Anderson.

Glaciers are made of compressed snow, which has survived summer and transformed into ice. Over many years, layers of accumulated ice build into large, thickened ice masses. Due to the sheer mass of accumulated ice, glaciers flow like very slow rivers. Presently, glaciers occupy about 10% of the world's total land area, with most located in polar regions. Today's glaciers

are much reduced from the last Ice Age, when ice covered nearly 32% of the land and 30% of the oceans. Most glaciers lie within mountain ranges that show evidence of a much greater extent during the ice ages of the past two-million years, and recent retreat in the past few centuries. Hazards related to glaciers include ice collapse (e.g., glacial calving and ice fall avalanche), glacial lake outburst flood, and glacial surge.

Permafrost and periglacial hazards are caused by the effects of changing perennially frozen soil, rock, or sediment (known as permafrost) and the landscape processes that result from extreme seasonal freezing and thawing. Permafrost is found in nearly 85% of Alaska and is thickest and most extensive in Arctic Alaska north of the Brooks Range. It is present virtually everywhere and extends as much as 2,000 feet below the surface of the Arctic Coastal Plain. Southward from the Brooks Range, permafrost becomes increasingly thinner and more discontinuous, broken by pockets of unfrozen ground until it becomes virtually absent in Southeast Alaska, with the exception of pockets of high-elevation alpine permafrost (DHS&EM, 2018a).

A snow avalanche is a mass of snow, ice, and debris that releases and slides or flows rapidly down a steep slope, either over a wide area or concentrated in an avalanche chute or track. Avalanches reach speeds of up to 200 miles per hour (mph) and can exert forces great enough to destroy structures and uproot or snap large trees. A moving avalanche may be preceded by an “air blast,” which is also capable of damaging buildings. Snow avalanches commonly occur in the high mountains of Alaska during the winter and spring as the result of heavy snow accumulations on steep slopes.

Alaska is particularly vulnerable to cryosphere hazards, as much of its social and economic activity is connected to the existence of snow, ice, and permafrost.

## **Glaciers**

**Glacial outburst flooding** is called a jökulhlaup and is the result of a sudden release of water from a glacier or glacially-dammed lake, resulting in rivers rapidly rising downstream. This can happen on many Alaskan rivers. Sometimes, glacial outburst flooding is predictable, but not always.

## **Permafrost and Periglacial**

In the periglacial environment, the effects of freezing and thawing drastically modify the ground surface. Types of modification include the displacement of soil materials, migration of groundwater, and the formation of unique landforms. Many periglacial regions are underlain by permafrost that strongly influences geomorphic processes acting in these parts of the world.

**Permafrost**, defined as ground with a temperature that remains at or below freezing (32°F) for two or more consecutive years, can include rock, soil, organic matter, unfrozen water, air, and ice. Figure 5 is a generalized permafrost hazard potential map of Alaska that was produced in 2018 as part of the State of Alaska HMP Update (DHS&EM, 2018a). The Borough is generally in a moderate or high permafrost hazard area. Regions with permafrost are typically categorized by percent of surface area underlain by permafrost (Figure 6): continuous (>90%), discontinuous (50-90%), sporadic (10-50%), and isolated (<10%) permafrost. The Borough has isolated, sporadic, and discontinuous permafrost.



**Frost cracking** results from freezing soil contraction. This contraction can be forceful enough that the ground cracks in order to release tensile stress, similar to what happens when mud dries to form mud cracks. In extreme cases, polygons may form from thermal contraction in very cold environments and develop ice wedges within the cracks from meltwater and blowing snow accumulation. Frost cracking can be hazardous when it occurs in road surfaces, breaking pavement, and road bed structure.

**Frost heaving** occurs when the soil surface is lifted with great strength from below by seasonal ice lens development in fine-grained soils. The temperature gradient from the freezing surface into the unfrozen ground drives liquid water to the freezing front, where it can freeze into solid ice lenses. Buildings and roads are affected by the lifting force of the growing ice lenses, but the most destructive conditions occur when there is differential frost heave. Differential frost heave occurs when ice lens formation is non-uniform, and only portions of the soil surface are pushed up—this can break building foundations and roads to pieces. A compounding effect of the seasonal ice lenses that cause frost heaving is that, upon thawing, the soil is left supersaturated, meaning that the liquid is carrying the weight of the soil. Pressure on the supersaturated soil, such as driving on a road across the thawed ice heave area, causes horizontal (lateral) movement of the soil and destruction of the overlying roadbed. This is the reason that roads can fail in spring, and why there are restrictions on axle weight.

**Frost jacking** occurs when a solid object, such as a fence post or foundation block, is incrementally jacked out of the ground due to ice lens formation within the soil during repeated freeze-thaw cycles. Two mechanisms are believed to be responsible for frost jacking:

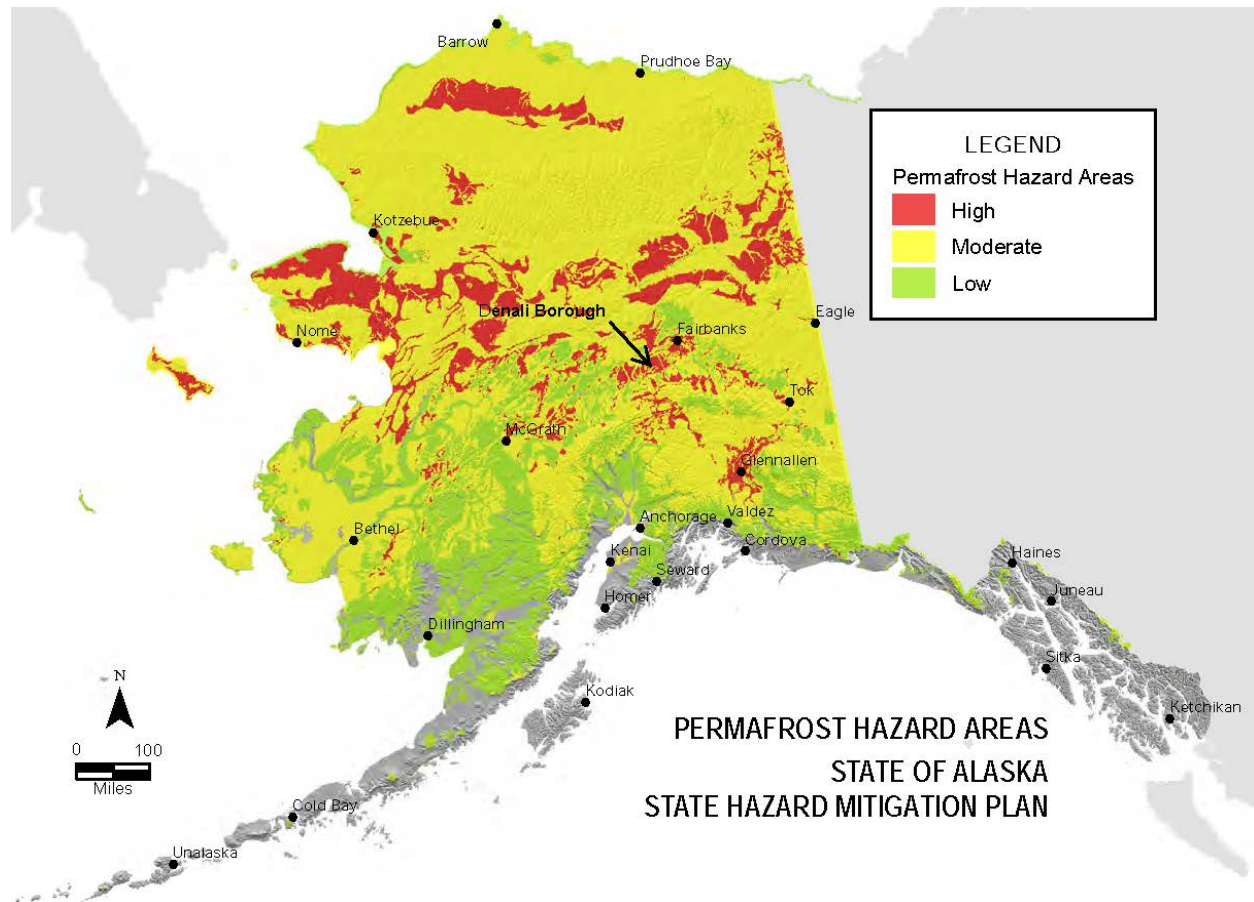
- Freezing soil grips the object and heaves upward due to expanding ice, thereby lifting the object out of the ground; and
- Water trickles underneath a solid object, and resultant ice growth during freezing pushes the object out of the ground. This process can cause foundations to break and buildings to collapse.

### **Snow Avalanche**

Snow avalanche is a downhill mass movement of snow or fluidized snow. The damage caused by an avalanche varies based on the avalanche type, the consistency and composition of the avalanche flow, the flow's force and velocity, as well as the avalanche path. Their size, run-out distance, and impact pressure vary. Large avalanches have the potential to kill people and wildlife, destroy infrastructure, level forests, and bury entire communities. Significant avalanche cycles (multiple avalanches naturally releasing across an entire region) are generally caused by long periods of heavy snow, but avalanche cycles can also be triggered by rain-on-snow events, rapid warming in the spring, and earthquakes.

An avalanche releases when gravity-induced shear stress on or within the snowpack becomes larger than its shear strength. Triggers can be natural (e.g., rapid weight accumulation during or just after a snowstorm or rain event, warming temperatures, and seismic shaking) or artificial (e.g., human weight or avalanche-control artillery).

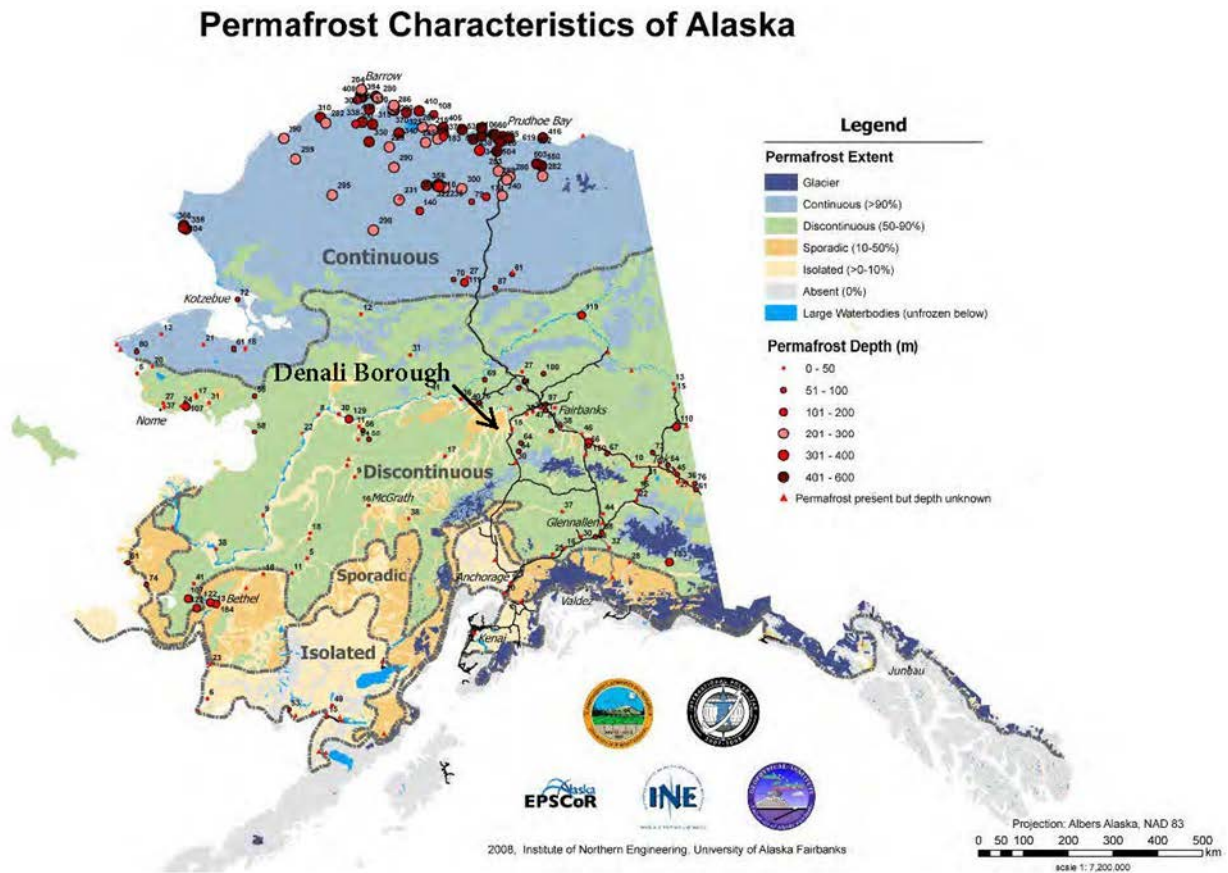
Figure 5. Permafrost Hazard Areas Distribution Map



Terrain factors that influence avalanche release are slope angle, aspect, and curvature, as well as topography (terrain roughness). Avalanches are also controlled by vegetation cover and elevation, which are both factors in getting enough snow accumulation on the slope. Avalanches typically release on slopes greater than 25 degrees and less than 60 degrees; this is the slope range where the snow can accumulate enough to build a slab, but also where snow tends to remain in place without sluffing off due to gravity. It is important to remember that avalanche run-out (deposition) can occur on all slopes. Figure 7 is a generalized avalanche-potential map of Alaska that was produced in 1980 by compiling and cross-correlating topographic relief, snow-avalanche regions, climatic zones, snowpack characteristics, and known and suspected avalanche activity. The map includes regions that had little or no snow avalanche occurrence data and is therefore provisional until better data are available and new analysis methods and avalanche modeling can be applied.

New Alaska avalanche studies are currently being carried out by the Division of Geological and Geophysical Survey (DGGs) and the University of Alaska Fairbanks (UAF). Figure 8 depicts potential snow avalanche release areas within a six-mile buffer of roads in Alaska. The modeling uses digital topographic information as input and determines the potential release zones based on geostatistical parameters (e.g., elevation, slope, and curvature) and land cover (e.g., trees).

Figure 6. Permafrost Characteristics of Alaska



This is a preliminary model result that does not include weather or snowpack parameters, but more advanced studies that will incorporate these elements are planned (DHS&EM, 2018a).

Alaska experiences many avalanches every year. The exact number is undeterminable as most occur in isolated areas and go unreported. Avalanches tend to occur repeatedly in localized areas and can shear trees, cover communities and transportation routes, destroy buildings, and cause death. Alaska leads the nation in avalanche accidents per capita.

### **Avalanche Types**

A snow avalanche is a swift, downhill-moving snow mass. The amount of damage is related to the type of avalanche, the composition and consistency of the material in the avalanche, the force and velocity of the flow, and the avalanche path. There are two main types of snow avalanches: loose snow and slab. Other types that occur in Alaska include: cornice collapse, ice, and slush avalanches.

**Loose snow avalanches**, sometimes called point releases, generally occur when a small amount of un-cohesive snow slips and causes more un-cohesive snow to go downhill. They occur frequently as small local cold dry 'sluffs', which remove excess snow (involving just the upper layers of snow), keeping the slopes relatively safe. They can be large and destructive, though. For example, wet loose snow avalanches occur in the spring and are very damaging. Loose

snow avalanches can also trigger slab avalanches. Loose snow avalanches typically occur on slopes above 35 degrees, leaving behind an inverted V-shaped scar. They are often caused by snow overloading (common during or just after a snowstorm), vibration, or warming (triggered by rain, rising temperatures, or solar radiation).

**Slab avalanches** are the most dangerous type of avalanches. They happen when a mass of cohesive snow breaks away and travels down the mountainside. As it moves, the slab breaks up into smaller cohesive blocks. Slab avalanches usually require the presence of structural weaknesses within interfacing layers of the snow pack. The weakness exists when a relatively strong, cohesive snow layer overlies weaker snow or is not well bonded to the underlying layer. The weaknesses are caused by changes in the thickness and type of snow covers due to changes in temperature or multiple snowfalls. The interface fails for several reasons. It can fail naturally by earthquakes, blizzards, temperature changes or other seismic and climatic causes, or artificially by human activity. When a slab is released, it accelerates, gaining speed and mass as it travels downhill. The slab is defined by fractures. The uppermost fracture delineating the top line of the slab is termed the “crown surface”, the area above that is called the crown. The slab sides are called the flanks. The lower fracture indicating the base of the slab is called the “stauwall”. The surface the slab slides over is called the “bed surface”. Slabs can range in thickness from less than an inch to 35 feet or greater.

**Cornice Collapse:** A cornice is an overhanging snow mass formed by wind blowing snow over a ridge crest or the sides of a gully. The cornice can break off and trigger bigger snow avalanches when it hits the wind-loaded snow pillow.

**Ice fall avalanches** result from the sudden fall of broken glacier ice down a steep slope. They can be unpredictable as it is hard to know when ice falls are imminent. They are unrelated to temperature, time of day, or other typical avalanche factors.

**Slush avalanches** occur mostly in high latitudes such as in the Brooks Range. They have also occurred in the mountain areas of Alaska’s Seward Peninsula and occasionally in the Talkeetna Mountains near Anchorage. Part of the reason they are more common in high-latitudes is because of the rapid onset of snowmelt in the spring. Slush avalanches can start on slopes from 5 to 40 degrees but usually not above 25 to 30. The snow pack is totally or partially water saturated. The release is associated with a bed surface that is nearly impermeable to water. It is also commonly associated with heavy rainfall or sudden intense snowmelt. Additionally, depth hoar is usually present at the base of the snow cover. Slush avalanches can travel slowly or reach speeds over 40 mph. Their depth is variable as well, ranging from one foot to over 50 feet deep.

Alaska leads the nation in avalanche accidents per capita and experiences multiple fatalities each year due to this hazard. In addition to human risk, road closure due to avalanches is very costly. For example, a typical road closure with roughly 1,500 cubic feet of snow covering the road costs the DOT&PF approximately \$10,000 to remove. In the winter of 1999 to 2000, unusually high snowfall from the Central Gulf Coast Storm fueled avalanches in Cordova, Valdez, Anchorage, Whittier, Cooper Landing, Moose Pass, Summit, the Matanuska-Susitna Valley, and Eklutna. Damages in these communities exceeded 11 million dollars, resulting in the first presidentially-declared avalanche disaster in U.S. history.

Figure 7. Map Depicting Alaska's Potential Snow-Avalanche Areas

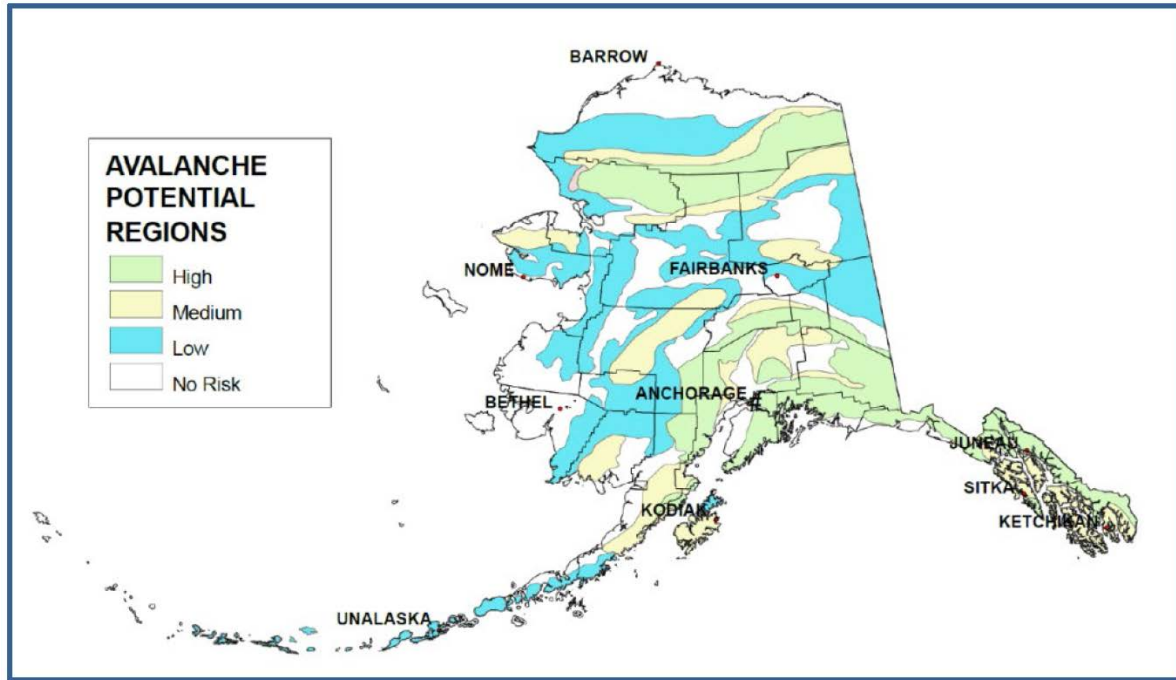
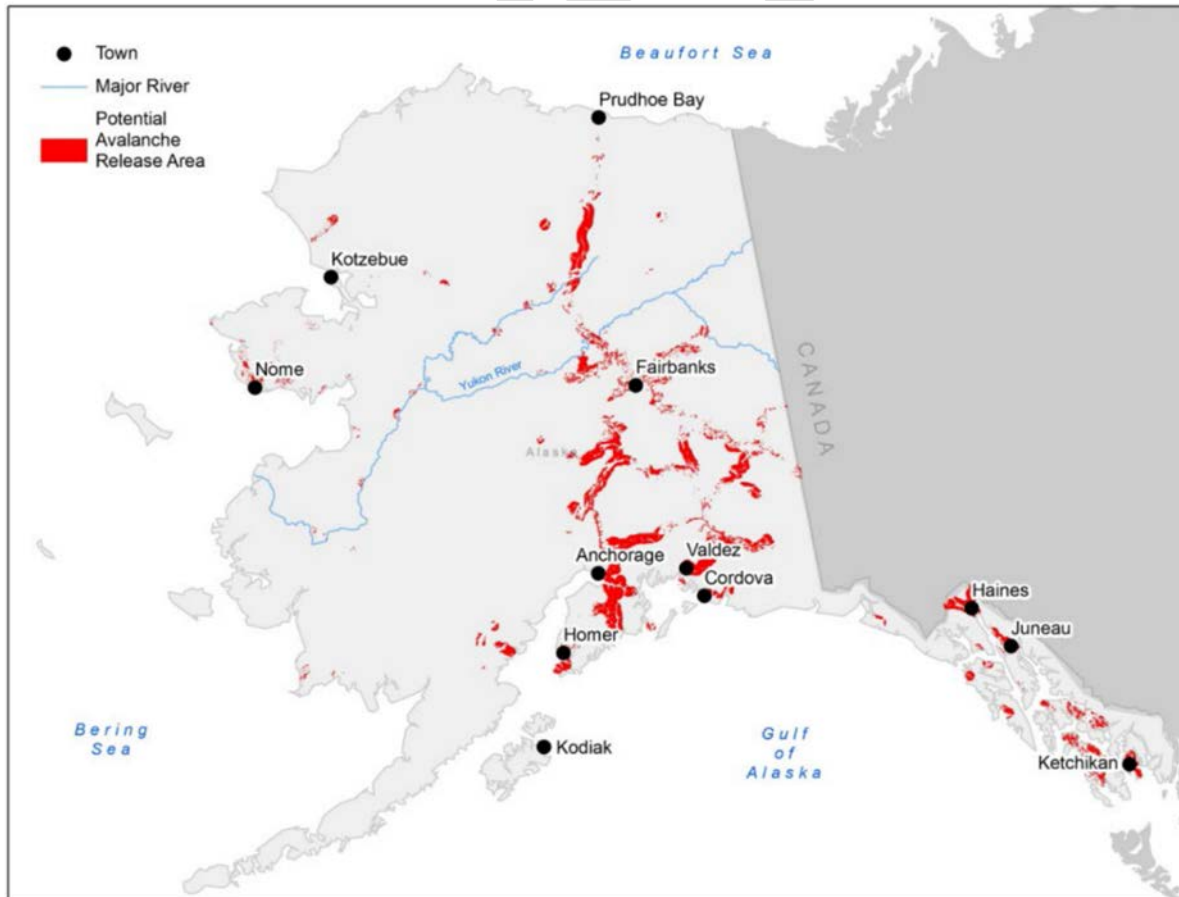


Figure 8. Potential Snow-Avalanche Release Areas



Colorado and Alaska have the highest annual per capita death and injuries caused by avalanches. This is because some of the most-traveled roads pass through avalanche-prone areas and because there is a high frequency of backcountry avalanches triggered by the many hikers, skiers, and snow machine users. There is growing exposure to this hazard as development continues to occur in avalanche-prone areas and participation in winter recreational activities increases.

#### *5.3.1.2 Climate Factors*

Climate has a major effect on changes in the cryosphere hazards because these hazards are closely linked to snow, ice, and permafrost. Changes can modify natural processes and increase the magnitude and recurrence frequency of certain geologic hazards (e.g., floods, erosion, and permafrost thaw), which if not properly addressed, could have a damaging effect on Alaska's communities and infrastructure, as well as on the livelihoods and lifestyles of Alaskans.

During the last several decades, Alaska has warmed twice as fast as the rest of the U.S. Alaska's glaciers are in steep decline, and are among the fastest-melting glaciers on Earth. New ice-dammed lakes are being formed in valleys formerly occupied by glaciers, and as climate change continues on its current trajectory, more ice-dammed lakes can be expected. Glacier retreat also causes debulking and valley-wall unloading, potentially increasing rockfall and landslide incidences.

Permafrost is at an increased risk of thawing as a result of climate change. The major climatic factor leading to warming and thawing permafrost is an increase in air temperature. Another important factor is the potential increase in snow depth predicted by most climate models. Snow insulates permafrost from low winter temperatures, which leads to an increase in ground temperatures and diminishes permafrost stability. When soils are warm, permafrost becomes unstable and is sensitive to catastrophic collapse in conjunction with flooding and erosion. Even in non-ice-rich soils, process-driven models show more material is available for erosion and transport when the soil is thawed, which leads to increased exposure of underlying or adjacent frozen material to thermal and physical stressors.

Human-induced ground warming can often thaw permafrost much faster than natural degradation caused by a warming climate. Permafrost thaw can be caused by constructing warm structures on the ground surface, allowing heat transfer to the underlying ground. Under this scenario, improperly-designed and constructed structures can settle as the ground subsides, resulting in loss of the structure or expensive repairs. Permafrost is also degraded by damaging the insulating vegetative ground cover, allowing the summer thaw to extend deeper into the soil, causing subsidence of permafrost.

Scientific data on the impacts of changing climate on the active layer (i.e., the surface layer above the permafrost that thaws each summer) is sparse, but on the decadal timescale (i.e., tens of years), the depth of the active layer looks to be increasing. This is potentially destructive to permafrost stability because the ground is not completely refreezing in winter.

Some studies suggest that warming climate may increase avalanche risk due to changes in snow accumulation and moisture content, as well as loss of snowpack stability because of changing air temperature. Increased rain-on-snow event frequency is leading to an increase in avalanche

hazards all across Alaska.

The Borough has one main road (George Parks Highway) connecting to the rest of the State's road systems. Most Alaskan communities have road choke points such as bridges and steep terrain that are susceptible to multiple natural hazard impacts from earthquakes, floods, and changes to the cryosphere events such as landslides, mudslides, and avalanches.

Rural community road systems may experience the same threats. However, remote-rural locations have very limited road access to their immediate neighboring community via one road. If road access is blocked from natural hazard impacts, these communities will be restricted to receiving resupply by boat or aircraft.

### 5.3.1.3 Hazard History

There is no written history of changes to the cryosphere for the Borough and City of Anderson. Visual evidence includes:

- Frost heaves on the George Parks and Denali Highways and roads;
- Powerlines tilting to the side;
- Subsidence as the active layer melts; and
- A glacial outburst flood occurred on the Yanert River in Winter 2014 and was discovered in February 2015. No damage occurred. The only evidence was a highwater mark delineated by ice chunks well above the normal ice level. If this event re-occurs, there could easily be impacts to boaters in the river and on or immediately adjacent to the floodplain. Fortunately, the lake is far enough back that the worst flooding scenario would have a quite a bit of time and space to attenuate. However, glaciers are dynamic, and the situation could change either for the better or worse.

A brief summary from *Alaska's Changing Environment: Documenting Alaska's physical and biological changes through observations* is provided below (Thoman and Walsh, 2019).

- Temperatures have been consistently warmer than at any time in the past century.
- The growing season has increased substantially in most areas, and the snow cover season has shortened.
- Precipitation overall has increased. In Interior Alaska, annual precipitation since the 1990s has increased 8.8%. Flooding has increased.
- Recent years have brought many temperature extremes to Alaska, including the warmest year (2016) and the warmest month (July 2019).
- Warmer springs and earlier snow melt have lengthened the wildfire season. Wildfire seasons with more than one million acres burned have increased 50% since 1990, compared to the 1950 – 1989 period. The frequency of large wildfire seasons has increased dramatically.
- The earliest breakup of the Tanana River at Nenana occurred in 2019.

Power was knocked out in 2004 to McKinley Village from an avalanche that occurred between the Village and Cantwell. Travel delays occurred to avalanche control work.

The rate of subsidence has increased substantially, causing impacts to roadways, including the Polychrome slump along the Denali Park road. Frost heaves continue to develop along the George Parks Highway and have the potential to impact other roadways in the Borough.

The City of Anderson has noticed thawed ground by the railroad tracks in Winter 2019/2020. Areas of wood pits that are normally frozen are now soft. The water table is higher than normal, and there has been a change in surface water flow.

#### 5.3.1.4 Location

Glaciers and icefields currently occupy many of the mountain ranges in Alaska. Much of Alaska has been shaped by glaciation and deglaciation, and recent changes in climate are causing Alaska's glaciers to melt faster than most other places on the planet. These long- and short-term changes generate a range of glacier hazards, such as unstable water discharge rates, glacier lake outburst floods, glacier and slope instabilities, erosion and sedimentation, iceberg production, and glacier surges that can impact infrastructure and threaten public safety. Glacier hazards can also start a chain reaction of other hazards, such as snow avalanches and debris flows. Because of Alaska's rapidly retreating glaciers, glacier hazard frequency is expected to increase, for example, more significant ice calving events during the summer, and greater flooding and erosion caused by outburst floods from lakes forming in valleys previously occupied by glacier ice.

There are 31 glaciers in the Borough. Glacier names and U.S. Geological Survey (USGS) Topographic Maps are listed in Table 5.

Table 5. *Glaciers within the Denali Borough*

Brooks (Denali A-2)	Gillam (Healy C-1)	Jeffery (Denali A-3)	Northwest Fork Ruth (Denali A-2)	Straightaway (Denali A-3)	Traleika (Denali A-2)	Yanert (Healy C-2)
Cantwell (Healy B-5)	Great Icefall (Denali A-2)	Lower Icefall (Denali A-2)	Peters Basin (Denali A-3)	Sunrise (Denali B-1)	Traleika Icefall (Denali A-2)	
Chedotiothna (Talkeetna D-4)	Harper (Denali A-2)	Muldrow (Denali A-2)	Peters (Denali A-3)	Sunset (Denali B-1)	West Fork (Denali B-1)	
East Fork Kahiltna (Denali A-3)	Harper Icefall (Denali A-2)	Nenana (Healy C-2)	Peters (Denali A-3)	Susitna (Healy B-6)	West Fork (Healy C-1)	
Foraker (Denali A-3)	Herron (Talkeetna D-4)	Northeast Fork Kahiltna (Denali A-3)	Polychrome (Healy B-6)	Tiuna Icefall (Denali A-3)	West Fork Traleika (Denali A-2)	

According to a permafrost map completed by UAF located in the 2018 State of Alaska HMP, and comments received from the Planning Team, the Borough is underlain by isolated, sporadic, and discontinuous permafrost. (Figure 6). Numerous snow avalanches occur in Alaska every year due to abundant avalanche-susceptible terrain and large amounts of snowfall. Many



highways, the railroad, and multiple communities are at risk of avalanche hazards every winter, some of which can be particularly destructive. The most recent extreme avalanche event took place near Valdez in January 2014 after a mid-winter rain event that triggered many full-depth wet snow avalanches throughout Southcentral Alaska. This avalanche blocked the only road connection to Valdez and dammed a river in Keystone Canyon. The steep slopes within the Borough are subject to large and small-scale avalanches. Slopes near Denali National Park and Cantwell are of particular concern.

#### *5.3.1.5 Extent*

Alaska is at risk of affects from climate change. Historical climate data shows that the average annual temperature in Alaska has warmed about 4°F since the 1950s and 7°F in winter. The growing season has lengthened by about 14 days. Models predict continued warming, including an increase in temperature by 1.5 to 5°F by 2030 and 5 to 18°F by 2100.

Permafrost is found beneath nearly 85% of Alaska. Thawing causes ground subsidence, flooding, and erosion. The damage magnitude could range from minor with some repairs required and little to no damage to transportation, infrastructure, or the economy to major if a critical facility (such as the George Parks Highway or the Alaska Railroad tracks) was damaged, and transportation was affected. Periglacial hazards result from the effects of repeated freezing and thawing and include frost cracking, frost heaving, and frost jacking, and can occur anywhere in the State.

More and more people are snow machining and skiing in the Borough recreationally. Increased snow machine and ski activity increases the likelihood that injuries or fatalities will occur. Avalanches near the highway or railroad tracks can cut off travel and reduce mobility of people and goods across the state. Avalanches and landslides are triggered by a variety of occurrences including earthquakes, seasonal freezing and melting, heavy rain, and human alterations.

#### *5.3.1.6 Impact*

Impacts associated with thawing the active layer of permafrost include surface subsidence, infrastructure, building, and/or road damage. Changes in the cryosphere do not pose a sudden and catastrophic hazard, but improperly-designed and constructed buildings can settle as permafrost thaws and the ground subsides, resulting in loss of the structure or expensive repairs. Permafrost restricts use of the ground surface, and affects the location and design of roads, buildings, communities, and airfields. To avoid costly damage to these facilities, careful planning and design in the location and construction of facilities is warranted.

Permafrost and periglacial impacts include a full range of damage from comparatively minor bending or buckling of manmade features due to heterogeneous movement, to complete destruction of infrastructure and buildings due to catastrophic ground failure and flooding. Permafrost and periglacial processes have generated comparatively slow ongoing phenomena in the past, but warming climate is expected to increase the magnitude and frequency of damaging permafrost collapse. Frost cracking, frost heaving, and frost jacking are annually occurring events.

Indicators of a possible ground failure (involving melting permafrost) include:

- Springs, seeps, or wet ground that is not typically wet;
- New cracks or bulges in the ground or pavement;
- Soil subsiding from a foundation;
- Secondary structures (decks, patios) tilting or moving away from main structures;
- Broken water line or other underground utility;
- Leaning structures that were previously straight;
- Offset fence lines;
- Sunken or dropped-down road beds;
- Rapid increase in stream levels, sometimes with increased turbidity;
- Rapid decrease in stream levels even though it is raining or has recently stopped; and
- Sticking doors and windows, visible spaces indicating frames are out of plumb.

Large avalanches have the potential to kill people and wildlife, destroy infrastructure, level forests, and bury entire communities. In many areas of the State, avalanches lead to lengthy closures of important transportation routes. The economic impacts of such avalanches, from impeding traffic to removing avalanche debris blocking the transportation corridor, can be significant at both the Local and State levels. Large avalanche cycles (multiple avalanches naturally releasing across a wide region) are generally caused by long periods of heavy snow, but avalanche cycles can also be triggered by rain-on-snow events, rapid warming in the spring, and earthquakes. Large avalanche cycles are more common in Alaska during pronounced climate events driven by changes in the Pacific Ocean, such as during La Nina/El Nino and the larger-scale Pacific Decadal Oscillation, that cause warmer air temperatures and heavier precipitation than normal. However, the effects on air temperature and precipitation during these climate abnormalities vary across the State, consequently, the resulting likelihood of avalanche activity depends on the region.

Some studies suggest that warming climate is increasing avalanche risk due to changes in snow accumulation, moisture content, and loss of snowpack stability because of changing air temperature. Increased rain-on-snow event frequency is leading to an increase in avalanche hazards.

#### *5.3.1.7 Recurrence Probability*

Changes to the cryosphere in the Borough and the City of Anderson are occurring and will continue to do so. The active layer of permafrost continues to thaw because of warmer summers and winters than what was typically experienced in the past although the Winter 2019/2020 is more like a “normal” winter than the past several years. The probability of future events is highly likely.

### **5.3.2 Earthquakes**

Alaska is one of the most seismically active regions in the world and is at risk of societal and economic losses due to damaging earthquakes. On average, Alaska has one “great” magnitude

[(M) >8] earthquake every 13 years and one M 7-8 earthquake every year. Earthquakes have killed more than 130 people in Alaska during the past 60 years (DHS&EM, 2018a).

It is not possible to predict the time and location of the next big earthquake, but the active geology of Alaska guarantees that major damaging earthquakes will continue to occur and can affect almost anywhere in the State. Scientists have estimated where large earthquakes are most likely to occur, along with the probable levels of ground shaking to be expected. With this information, as well as information on soil properties and landslide potential, it is possible to estimate earthquake risks in any given area.

Alaska earthquake statistics include:

- Alaska is home to the second-largest earthquake ever recorded (1964 Great Alaska Earthquake, M 9.2);
- Alaska has 11% of the world's recorded earthquakes; and
- Three of the eight largest earthquakes in the world occurred in Alaska.

Since 1900, Alaska has had an average of:

- 45 M 5-6 earthquakes per year;
- 320 M 4-5 earthquakes per year; and
- 1,000 earthquakes located in Alaska each month.

Source: UAF Earthquake Center

### 5.3.2.1 Hazard Characteristics

An earthquake is a sudden motion or trembling caused by a release of stress accumulated within or along the edge of Earth's tectonic plates. The effects of an earthquake can be felt far beyond the site of its occurrence. Earthquakes usually occur without warning, and after only a few seconds, can cause massive damage and extensive casualties. The most common effect of earthquakes is ground motion, or the vibration or shaking of the ground during an earthquake.

Ground motion generally increases with the amount of energy released and decreases with distance from the rupture area. An earthquake causes waves in the earth's interior (i.e., seismic waves) and along the earth's surface (i.e., surface waves). Two kinds of seismic waves occur: P (primary) waves are longitudinal or compressional waves similar in character to sound waves that cause back and forth oscillation along the direction of travel (vertical motion), and S (secondary) waves, also known as shear waves, are slower than P waves and cause structures to vibrate from side to side (horizontal motion). There are also two types of surface waves: Raleigh waves and Love waves. These waves travel more slowly and typically are more damaging than seismic waves because they cause larger motions and their frequency is close to harmonic frequencies for human structures and for sedimentary deposits.

In addition to ground motion, several secondary natural hazards can occur from earthquakes such as:

- **Strong Ground Motion** is ground shaking. Strong ground motion intensity is directly

correlated with earthquake magnitude (i.e., the larger the earthquake magnitude, the more intense and widespread the ground shaking will be). The strong ground motion severity is also dependent on the distance from the energy source.

- **Surface Rupturing** occurs when the subsurface patch of fault that slips in an earthquake intersects the earth's surface. This causes discrete, differential ground movement during intense earthquake shaking. The relative crustal block motion is dictated by the rupture's fault type, which can be horizontal, vertical, or a combination of both. Earthquakes larger than a M of 6.5 have sufficient energy to create surface ruptures, but whether or not this occurs is dependent on the earthquake's depth. The shallower a depth at which a significant earthquake occurs, the more likely it is to create a surface rupture. Permanent displacement along faults can be substantial. Surface ruptures, as a product of intense strong ground motion, can cause severe damage to existing structures.
- **Landslides/Debris Flows** occur as a result of horizontal seismic inertia forces induced in the slopes by ground shaking. The most common earthquake-induced landslides include shallow, disrupted landslides such as rock falls, rockslides, and soil slides. Debris flows are created when surface soil on steep slopes becomes completely saturated with water. Once the soil liquefies, it loses the ability to hold together and can flow downhill at very high speeds, taking vegetation and/or structures with it. Slide risks increase after an earthquake during a wet winter.

The severity of an earthquake can be expressed in terms of intensity and M. Intensity is based on the damage and observed effects on people and the natural and built environment. It varies from place to place depending on the location with respect to the earthquake rupture (where the fault moved). While the area directly above the rupture usually experiences the most intense earthquake effects (e.g., shaking), the total area affected can cover hundreds of thousands of square miles, depending on the earthquake's M.

Larger earthquakes are less common than smaller earthquakes, such that the smallest earthquakes are extremely frequent, while the largest earthquakes are relatively infrequent.

Earthquakes are also classified by their felt effects (e.g., perceived shaking intensity). However, the effects of an earthquake are directly related to the distance from the earthquake rupture, among other parameters such as the type of crust where the earthquake occurs. In general, the closer one is to an earthquake's epicenter, the more severe the felt effects and damage will be. An earthquake's intensity is described by the Modified Mercalli Intensity (MMI) Scale. As shown in Table 6, the MMI Scale consists of 10 increasing levels of intensity that range from imperceptible to catastrophic destruction. Peak ground acceleration (PGA) is also used to measure earthquake intensity by quantifying how hard the earth shakes in a given location. PGA can be measured as acceleration due to gravity (g) (MMI, 2006).

M is the measure of the earthquake's strength and is related to the amount of seismic energy released at the earthquake's hypocenter, the actual location of the energy released inside the earth. It is based on the amplitude of the earthquake waves recorded on instruments, known as

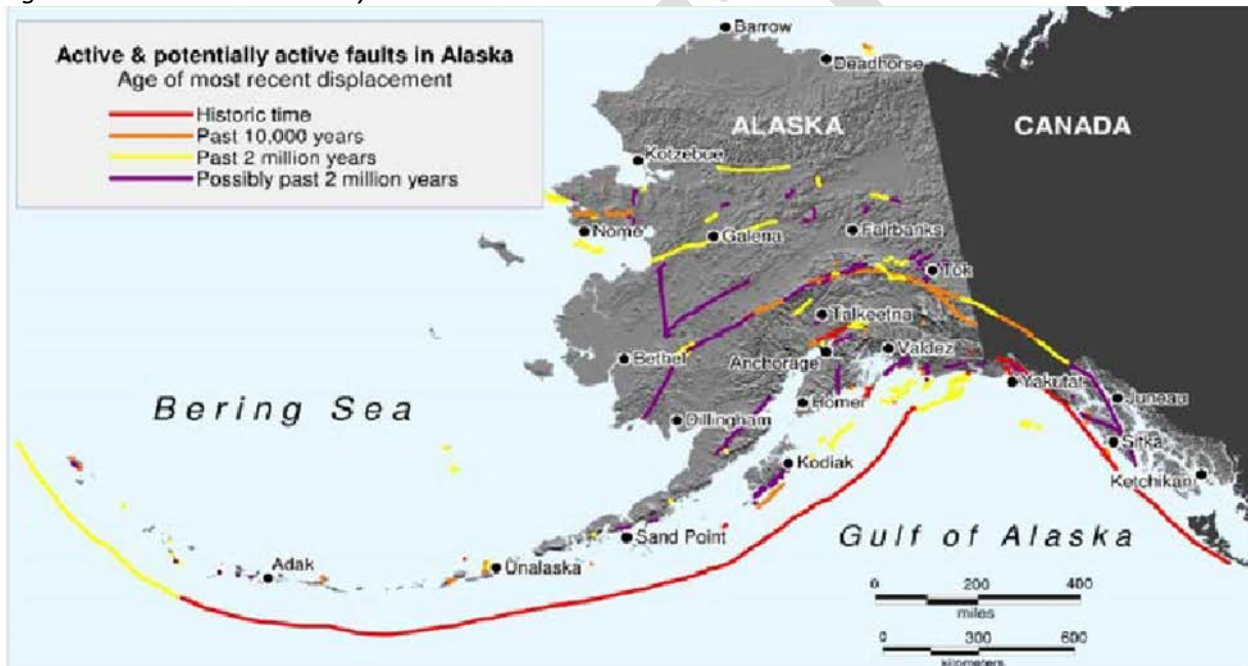
Table 6. Perceived Shaking, Potential Damage, and Peak Ground Acceleration

PERCEIVED SHAKING	Not felt	Weak	Light	Moderate	Strong	Very strong	Severe	Violent	Extreme
POTENTIAL DAMAGE	none	none	none	Very light	Light	Moderate	Mod./Heavy	Heavy	Very Heavy
PEAK ACC.(%g)	<0.05	0.3	2.8	6.2	12	22	40	75	>139
PEAK VEL.(cm/s)	<0.02	0.1	1.4	4.7	9.6	20	41	86	>178
MMI scale	I	II-III	IV	V	VI	VII	VIII	IX	X+

the Richter magnitude test scales, which have a common calibration.

Since the Borough and the City of Anderson lie in an active seismic area, large regional deformations could occur during earthquakes. Figure 9 shows active and potentially active faults throughout the State of Alaska.

Figure 9. Active and Potentially Active Faults in Alaska



### 5.3.2.2 Hazard History

Since 1920, 13 earthquakes have been recorded with a M of 6.0 or greater within a 150-mile radius of the approximate center of the Borough (63.850000° N, 148.966667° W) (Table 7). Within the same area, there have been 109 earthquakes greater than a M of 5.0 and 809 greater than a M of 4.0. The largest two recorded earthquakes within 150 miles of the Borough within the last 20 years measured a M of 7.9 occurring on November 3, 2002, and a M of 6.6 occurring on October 23, 2002.

Table 7. Historical Earthquakes within a 150-Mile Radius of the Center of the Borough

Date	Latitude	Longitude	Depth	M	Location
2002-11-03	63.5141	-147.4529	4.2	7.9	Central Alaska
2002-10-23	63.5144	-147.9116	4.2	6.6	Central Alaska
1991-05-01	62.476	-151.413	114.2	6.3	Central Alaska
1968-10-29	65.393	-150.072	10	6.7	Central Alaska
1962-05-10	61.96	-150.11	82	6.0	Central Alaska
1959-08-28	63.42	-148.85	44	6.0	Central Alaska
1948-08-19	63	-150.5	100	6.25	Central Alaska
1947-10-16	64.131	-148.613	26	7.2	Central Alaska
1937-07-22	64.726	-146.565	10	7.0	Central Alaska
1935-09-04	63.75	-152.5	UK	6.25	Central Alaska
1929-07-04	64.355	-147.852	20	6.5	Central Alaska
1929-07-03	62.5	-149		6.25	Central Alaska
1929-01-21	64	-148		6.25	Central Alaska

Additionally, as a result of the 2002 Denali Fault earthquake, FEMA provided disaster assistance to the Borough per the DHS&EM Disaster Cost Index (DHS&EM, 2018b).

**03-203 Denali Fault Earthquake (AK-DR-1440) Declared November 6, 2002 by Governor Knowles, then FEMA-Declared November 8, 2002:**

- A major earthquake with a preliminary magnitude of 7.9 occurred on the Denali Fault in Interior Alaska on November 3, 2002, with strong aftershocks. The earthquake caused severe and widespread damage and loss of property, and threat to life & property in the Fairbanks North Star Borough, **the Denali Borough**, and the Matanuska-Susitna Borough. The areas experienced severe damage to numerous personal residences requiring evacuations and sheltering of residences; extensive damage to primary highways including the Richardson Highway, the Tok Cutoff, **the Parks Highway**, and road links to communities including the road to Mentasta and Northway. Damage to supports for the Trans-Alaska Pipeline necessitated the shutdown of the pipeline. Additionally, fuel spills from residential storage tanks, significant damage to water, septic, sewer, and electrical systems also occurred. The Denali Borough stated that damage from the 2002 Earthquake was minimal and limited.

The President declared a disaster (DR-4413) for the November 30, 2018 Earthquake with a M of 7.1 with its epicenter at Point MacKenzie, Alaska within the Matanuska-Susitna Borough, but a description has not yet been added to the DHS&EM Disaster Cost Index (DHS&EM, 2018b). This earthquake was located 10 miles north of Anchorage, at a depth of 29 miles and occurred at 8:29 am. It was followed by numerous significant aftershocks. Prior to the 2018 earthquake, the Cantwell Fire Station had a wall that had been slowly separating from the slab. The 2018 earthquake exasperated the separation, and the wall has since been repaired. The City of Anderson Public Works noted damage to their sewer system manholes after the earthquake that cost the City \$3,000 to fix. Cracks developed in the sewer main near F Street; there is now infiltration into the sewer system on F Street. Additionally, the Anderson school had an exhaust fan cover fall from the ceiling; this issue has been corrected.

### *5.3.2.3 Location*

The Uniform Building Code rates the entire State of Alaska in Earthquake Zone 4, the highest hazard level. Approximately 75% of Alaska's detected earthquakes occur in the Alaska Peninsula, Aleutian, Cook Inlet, and Anchorage areas. About 15% occur in Southeast Alaska, and the remaining 10% occur in the Interior. The greatest earthquake in North American history occurred in the Alaska-Aleutian Seismic zone. That earthquake was a M of 9.2, lasting between four and five minutes and was felt over a 7,000,000 square mile area. It caused a significant amount of ground deformation as well as triggering landslides and tsunamis resulting in major damage throughout the region. The megathrust zone where the North Pacific Plate plunges beneath the North American Plate still has the potential to generate earthquakes up to a M of 9.

An earthquake hazard event could potentially impact any part of the Borough including the City of Anderson and damage could be area-wide. Major fault lines in the Borough include the Denali Fault which runs eastward from Denali to Mt. Deborah and the Hines Creek Fault running north of the Alaska Range in the Denali National Park and Preserve area and east to Mt. Deborah. The communities of Cantwell and McKinley Village lie closest to the Denali Fault, and Healy and Denali National Park are most likely to be impacted by seismic activity on the Hines Creek Fault. Since the Borough lies on the main overland access route between Anchorage and Fairbanks, damage to the Parks Highway would have a significant impact on transport of people and cargo. Roads, bridges, railroad infrastructure, and airport facilities in the area are also of particular concern.

### *5.3.2.4 Extent*

The Denali Fault and Hines Creek Fault are located within the Borough and are active faults subject to strong earthquakes. Roads into and out of the Borough are vulnerable to earthquakes. While not all communities within the Borough are likely to be at the epicenter of a high-magnitude earthquake, the secondary impacts of an earthquake could include an inability to bring in goods over the highway and railroad tracks, creating shortages of supplies and a disruption of the economy through interruption of tourism. Additionally, if the nearby airport and airstrips are rendered unusable, medical evacuations and other flights could be impacted, which in turn, could affect nearby communities dependent on the Borough. One area of special concern is McKinley Village, the gateway to Denali National Park and Preserve. If an earthquake caused damages to bridges north and south of McKinley Village, thousands of Park visitors as well as residents could be stranded with limited supplies and egress from the area. The George Parks Highway and the Alaska Railroad cross the Nenana River several times, and the potential for damage is high.

### *5.3.2.5 Impact*

The impact on the Borough and its communities (including the City of Anderson) from a high M earthquake could be extensive. Earthquake damage could be area-wide with potential damage to critical infrastructure. Limited building damage assessors are available in the Borough to determine structural integrity following earthquake damage. Priority would be given to critical infrastructure, including: public safety facilities, health care facilities, shelters and potential

shelters, and public utilities. Road and rail access to the region could be cut off from the north, south, or both. Tourists and residents could be stranded with limited medical and food supplies.

### 5.3.2.6 Recurrence Probability

While it is not possible to predict an earthquake, the USGS has developed earthquake probability maps that use the most recent earthquake rate and probability models. These models are derived from earthquake rate, location, and M data as well as from mapping of active faults, from the USGS National Seismic Hazard Mapping Project.

The measure of peak ground acceleration is relative to the acceleration due to gravity (1 g). At 1 g vertical acceleration, objects will be lofted off the ground as it moves down, and then experience twice their own weight when the ground moves up. One g of horizontal acceleration will make flat ground feel as though it is sloped at 45 degrees – steep enough that most things would fall. Figure 10 indicates that the USGS earthquake probability model places the probability of an earthquake in the Borough with a likelihood of experiencing severe shaking (0.30g to 1.80g peak ground acceleration) at a 2% probability in 50 years. A 2% probability in 50 years is the rare, large earthquake, and statistically, it happens on average every 2,500 years.

Figure 11 from the *Denali Borough All Hazards Emergency Response Plan*, clearly shows that no area of the Borough is very far removed from the possibility of an earthquake. The probability of future earthquake events is highly likely.

Figure 10. Earthquake Probability Map

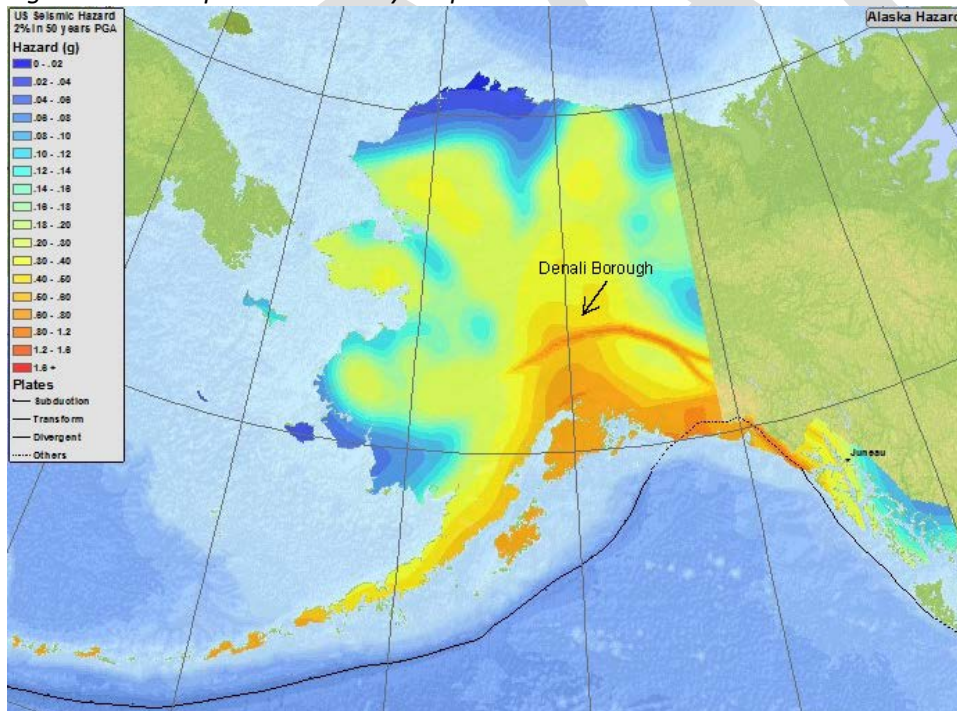
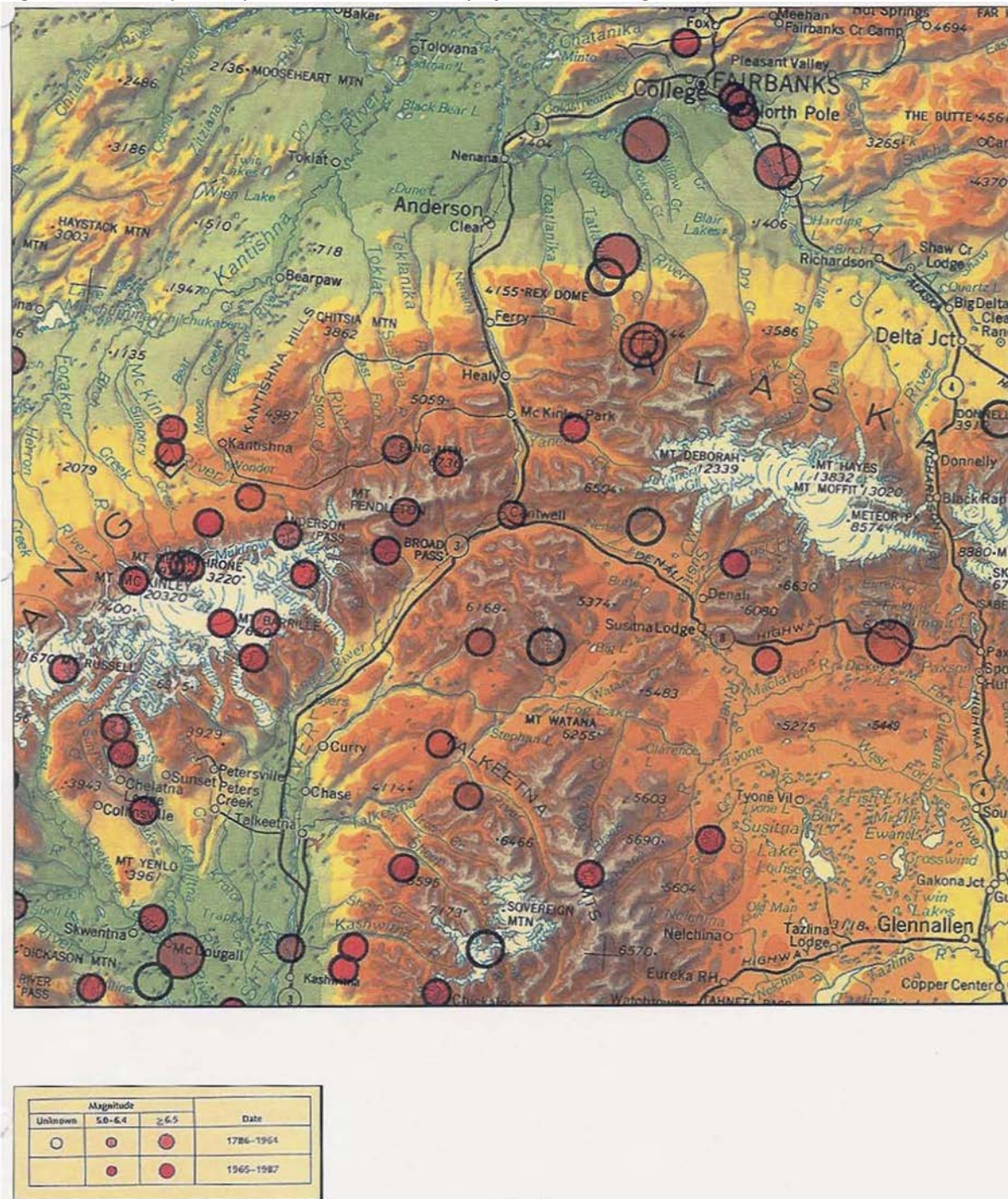




Figure 11. Earthquake Epicenters in the Vicinity of Denali Borough



### 5.3.3 Flooding

#### 5.3.3.1 Hazard Characteristics

Floods in the Borough and City of Anderson can occur as a result of a combination of factors, including heavy snow pack, temperature, sunshine, and precipitation. The sequence of events affects the flooding potential. Spring floods on streams may occur as a result of an above-normal snowfall during the winter followed by an unusually cold spring and a rapid snowmelt. Summer and fall floods usually result from intense precipitation. In addition, an ice jam could occur during winter or spring breakup, causing overbank flooding. The principal flood problems are natural obstructions such as trees and vegetation along the banks, manmade obstructions such as bridges and boat docks, ice jams, the accumulation of brush and debris along and within the streambed which can be carried downstream by high water and block bridge openings or other constrictions, and inadequately-sized culverts.

Flooding is Alaska's most common disaster, often costing in excess of one million dollars annually, causing major disruptions to society and occasionally loss of life (DHS&EM, 2018a). Many floods are predictable based on rainfall patterns.

The primary flooding hazards in the Borough are ice jams, snowmelt, and rainfall floods. Much of the Borough's infrastructure development is located near the Nenana River including the Alaska Railroad, the George Parks Highway, Cantwell, Ferry, Healy, McKinley Village/Denali Park Area, and Anderson. These areas are susceptible to significant river flooding. River flooding is caused by ice jams, snowmelt, and rainfall.

**Ice jam floods** occur after an ice jam develops, causing water to rise upstream behind the jam. When the jam releases, the stored water causes downstream flooding. Damage from ice jam floods is usually worse than from rainfall-runoff or snowmelt floods because the ice jam floods are usually higher, the water levels change more rapidly, and the ice causes physical damage. Ice jams usually develop where the channel slope decreases, gets shallower, or where constrictions occur such as at bridges, bends in the river, headwaters, and reservoirs. During spring breakup, ice jams commonly dam water along big rivers. This flooding is exacerbated by snowmelt.

**Snowmelt flooding** typically occurs from April through June, but is most common in the spring when rapidly warming temperatures quickly melt snow. Snowpack depth, spring weather patterns, and geomorphic characteristics of the watershed influence the magnitude of flooding.

**Rainfall-runoff flooding** typically occurs in late summer through early fall. Rainfall intensity, duration, distribution, as well as pre-existing soil moisture conditions and geomorphic characteristics of the watershed all contribute to the flood's magnitude. These floods result from high rainfall amounts and accompanying high surface runoff rates. Rainfall and high temperatures can exacerbate snowmelt floods.

The thawing of permafrost also causes changes in hydrology. Where it has high ice content, thawing can result in severe, uneven subsidence of the surface, called thermokarst, which has been observed to exceed 16 feet. Flooding or draining of an area may result from permafrost melt, affecting the uses of the surface.

### 5.3.3.2 Climate Factors

Climate and weather are the two primary drivers of flooding in Alaska. Weather (i.e., the day-to-day state of the atmosphere) affects these hazards in the short-term with individual episodes of rainfall, wind, and temperature that initiate or intensify individual episodes of flooding. Climate is affecting the long-term incident rate and severity of these hazards, especially in Alaska, which is particularly vulnerable due to its high northern latitude and the unique importance of snow, ice, and permafrost.

### 5.3.3.3 Hazard History

The Borough has a history of flood events in the DHS&EM Disaster Cost Index (DHS&EM, 2018b). These events are listed below.

In 1979, Nenana River floodwaters reached a depth of six- to eight-feet on the west side of the **Anderson** community near Lost Slough. Near the northwest section of Anderson, the floodwaters reached a depth of 12 inches. Floodwater marks were four inches above the doorsill of a house located on C Street. Notches were cut into trees at the six- and eight-foot levels by overflow ice on West First Street and the trail to the river. Watermarks were several inches above the floor in a house on D Street. The cause of the flood was glaciation.

#### **July Riverine Flooding (AK-04-206) Administrative Order Number 212 by Governor**

**Murkowski:** Heavy flooding during the period July 14 through August 3, 2003 caused damages to the DOT roads and bridges, local businesses, and some residential homes. The **Denali Borough** declared a local disaster and requested assistance from the State. An Emergency Management Specialist and assistant were sent to assess damages. The Division of Emergency Services procured and provided 2,000 sandbags and 24 potable water containers to the Borough for emergency response. DOT damages included areas on the Chena Hot Springs Road, the Elliot Highway, and the **Parks Highway at Honolulu Creek and Carlo Creek**. Several businesses in the affected area were damaged. The American Red Cross responded to the area, but residents did not require services. The Small Business Administration provided financial counseling to local residents and businesses. The Borough's request for State assistance, beyond what was provided for emergency response, was denied by the Governor. Disaster Assistance for Debris Removal, Emergency Protective Measures, and Permanent Work category C were approved under the State Public Assistance Program. The total for this disaster was \$340,000. There were two applicants and 11 project worksheets (PWs) for Public Assistance.

#### **August Southcentral Flooding (AK-06-220) declared August 29, 2006 by Governor Murkowski, then FEMA-declared (DR-1663) on October 16, 2006:**

Beginning on August 18 and continuing through August 24, 2006, a strong weather system centered, causing severe flooding, resulting in severe damage and threats to life and property, in the Southcentral part of the State including the Matanuska-Susitna Borough, the City of Cordova and the Copper River Highway area, the Richardson Highway area and Delta/Greely area, the **Denali Highway** area, and the **Alaska Railroad** and **Parks Highway** areas in the Matanuska-Susitna Borough and the **Denali Borough**. Damage cost estimates were near \$21 million in Public Assistance, primarily for damage to roads, bridges, and rail lines. Individual Assistance estimates were near \$2 million.

#### **2008 Tanana Basin Flooding (AK-09-226) declared August 4, 2008 by Governor Palin, then**

**FEMA-declared (DR-1796) on September 26, 2008:** Beginning on July 27 through August 6, 2008, a strong large area of low-pressure developed in the Beaufort Sea near the northern border of the State, bringing a series of storms that moved from the northwest coast into the Interior. These severe storms caused losses of property and threats to life and property in the Fairbanks North Star Borough, the North Slope Borough, the City of Nenana, and the **Denali Borough**. The preliminary life safety assessments and joint preliminary damage assessments with FEMA indicated the most severe impacts were to highways, roads, buildings, sea walls, runways, water, sewer, electric utilities, homes, and businesses.

The City of Nenana suffered major damages to lift stations which were critical to the City sewer system. All of the lift stations serving the City of Nenana were either operating at reduced capacity or completely inoperable, placing the City at increased risk for public health hazards. The City of Nenana, Nenana City School District, and Nenana Native Tribal Council all experienced significant impacts to buildings and/or equipment requiring major repairs or total replacement.

The Fairbanks North Star Borough experienced damages to local roads, and flood waters caused many homes and businesses to be inaccessible. GVEA's supply routes in the Borough were impacted, leaving some residents without power for several days.

The **Denali Borough** experienced damages to local roads and bridges, preventing access to homes, requiring transient accommodations until access could be re-established.

The Alaska Railroad Corporation suffered damages to their facilities as a direct result of this event. Damages were more extensive, requiring total shutdown of all northbound freight and passenger service due to track failures in Nenana and in the Healy Canyon in the **Denali Borough**.

The following events were obtained from the NWS.

After a few days of heavy rainfall along the south slopes of the Alaska Range that amounted to several inches of rain, the Nenana River flooded at Nenana and Healy. Minor flooding began around 1000 Alaska Standard Time (AKST) on September 21, 2012, at Healy. The boat launch was flooded, and water was over the bank and rising up the shoulder of the coal hauling road. The Nenana River rose to the highest stage on record when the river crested at 14.9 feet at Healy on the 22<sup>nd</sup>, and a surge of water continued downstream. The crest was protracted as the water levels remained at the crest for nearly 24 hours. This resulted in the flooding of several structures at Denali National Park, and erosion of the southbound lane at Milepost (MP) 240 of the Parks Highway. At Nenana, flooding was observed on the 23<sup>rd</sup>. Up to one foot of water was reported over 10<sup>th</sup> Avenue west of the railroad tracks. The road to the cemetery was also reported to be flooded. Water filled the drainage ditches and low-lying areas on the east side of the City of Nenana. Water levels dropped, and the flooding was over by the morning hours of the 24<sup>th</sup>.

In September 2013, Nenana River flooding caused damage to the Parks Highway.

A weather system moved west over Denali National Park on the night of June 26, 2014, and morning of the 27<sup>th</sup>, dropping four and one quarter inches of rain over the western portion of

the Park in a short amount of time, according to the Wonder Lake Remote Automated Weather System (RAWS). Moose Creek and Eureka Creek, located about five miles west of Wonder Lake, both flooded on the morning of the 26<sup>th</sup>. Flood waters from Moose Creek moved into the Denali Wilderness Lodge property, reaching the buildings on the morning of the 29<sup>th</sup>. The guests and some Lodge staff, a total of 103 persons, were evacuated to Wonder Lake the evening of the 27<sup>th</sup>, where buses transported them to hotels near the NPS Headquarters. Moose Creek crested around 0900AKST on the 27<sup>th</sup>. The nearby airstrip at Kantishna also flooded and remained under water until the evening of the 27<sup>th</sup>, when flights could be made to evacuate people. There were a few road washouts as well on the Denali Park Road from Wonder Lake to the Denali Wilderness Lodge. During the evening of the 27<sup>th</sup>, flood waters receded, and the only damage to the Lodge was that outdoor propane tanks floated, and their lines broke.

Dry Creek flooded in 2019 in Healy, damaging DOT maintained roads, and a number of private driveways. The Borough declared a local disaster and funded an emergency road repair. At the March 11, 2020 Assembly Borough meeting, two residents testified regarding the flooding. Figure 12 illustrates flooding in their Otto Lake neighborhood in Healy. Dry Creek ranges from “dry” as the name suggests to the flow of the Mississippi River. Changes in Dry Creek began impacting their neighborhood as early as 2016 when the Dry Bluffs slumped. **Need article from Kris Capps here for info. She said she’d send it on 3/11.** Five parcels of land in the Otto Lake neighborhood are affected as well as other lots near Healy where Dry Creek loops back.

#### 5.3.3.4 Location

In 1979, flooding in the City of Anderson occurred in low-lying areas near the Nenana River on the west side of the community, which was inundated with flood water reaching eight feet deep. Usibelli built an earthen berm dike approximately three feet tall, thereby creating Riverside Park. Riverside Park is a 616-acre park that is located along the Lost Slough area of the Nenana River. Flooding from the Nenana River has never risen above the earthen berm dike since its construction. In 2004, residents of the City of Anderson added more material to the earthen berm dike.

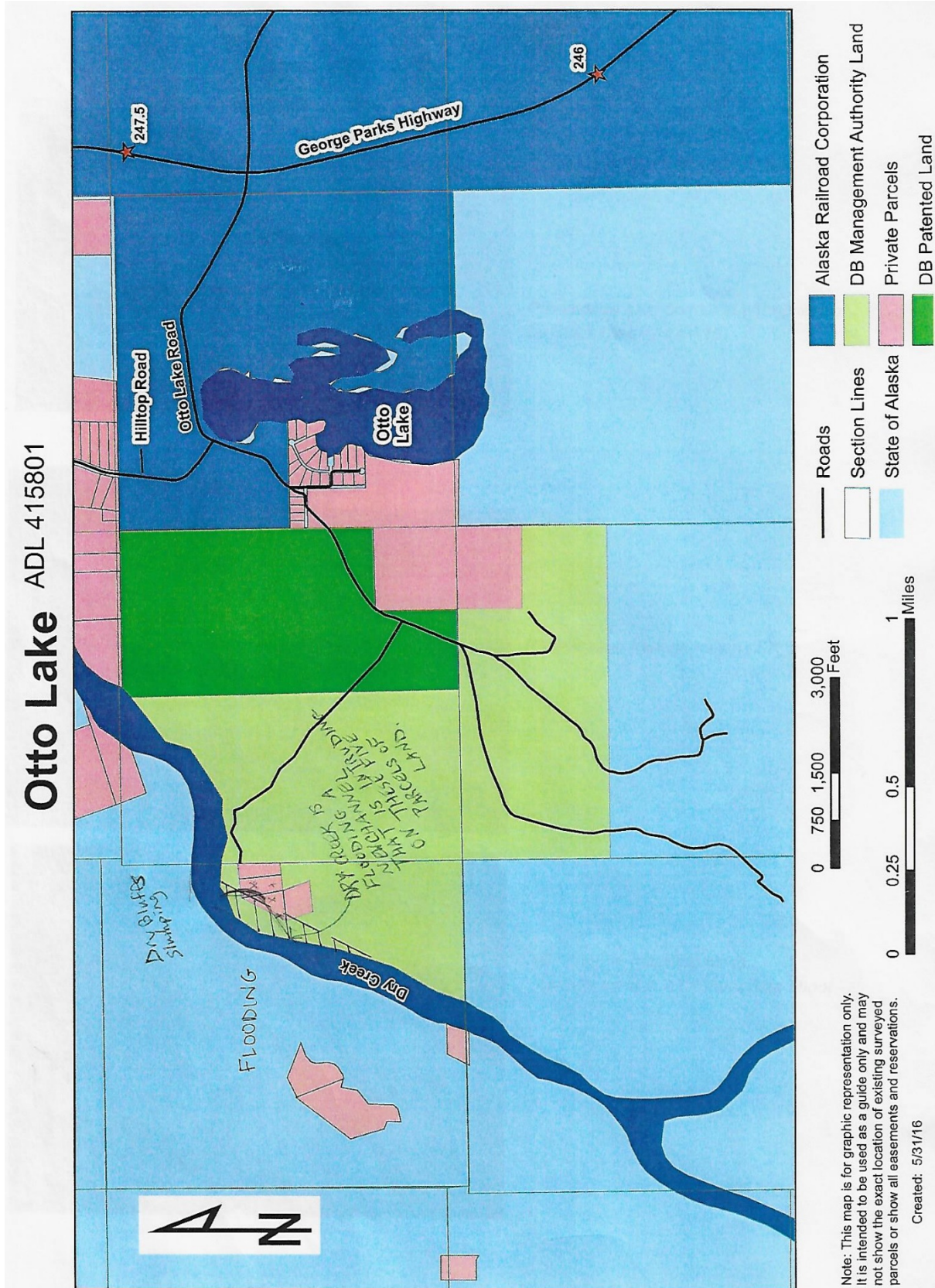
The Alaska Railroad and the George Parks Highway run roughly parallel to the Nenana River, making it the most accessible large river in the Borough. A majority of Borough residents also live along its corridor. The Nenana River is a glacial river with a winter mean flow of 100-400 cubic feet per second. The depth of the 100-year flow ranges from 11.6 feet to 21.7 feet. During the occurrence of a 100-year flood, the Nenana River would stay within the main channel.

#### 5.3.3.5 Extent

Floods are described in terms of their extent (including the horizontal area affected and the vertical depth of floodwaters) and the related probability of occurrence. The following factors contribute to flooding frequency and severity:

- Rainfall intensity and duration.
- Antecedent moisture conditions.
- Watershed conditions, including terrain steepness, soil type, amount, vegetation type,

Figure 12. Otto Lake Neighborhood Flooding



and development density.

- The attenuating feature existence in the watershed, including natural features such as swamps, lakes, and human-built features.
- Flow velocity.
- Availability of sediment for transport, and the bed and embankment watercourse erodibility.

#### *5.3.3.6 Impact*

Nationwide, floods result in more deaths than any other natural hazard. Physical damage from floods includes the following:

- Structure flood inundation, causing water damage to structural elements and contents.
- Erosion or scouring of stream banks, roadway embankments, foundations, footings for bridge piers, and other features.
- Damage to structures, roads, culverts, and other features from high-velocity flow and debris carried by floodwaters. Such debris may also accumulate in culverts, increasing loads on these features or causing overtopping or backwater damages.
- Sewage and hazardous or toxic materials released as wastewater treatment plants or sewage lagoons are inundated, storage tanks are damaged, and pipelines are severed.
- Floods also result in economic losses through business and government facility closure, communications, utility (such as water and sewer), and transportation services disruptions. Floods result in excessive expenditures for emergency response, and generally disrupt the normal function of a community.

Flooding in the low-lying portion of the City of Anderson could cut off portions of the community from critical services located out of the flood zone. For example, road closures, impacts to public safety (access and response capabilities), and limited availability of perishable commodities will impact even those properties not flooded. Because of this, while the actual area subject to flooding is limited, the impact of the flooding could affect the entire community.

Flooding would have the highest impact on individual residences near rivers and creeks scattered throughout the Borough. Traffic on surface streets and the George Parks Highway could be interrupted by flooding, and highway and railroad infrastructure could be damaged as was the case with the 2008 flood. The power plant, located in Healy, is potentially at risk for flooding in the event of an ice jam. This could be serious, as it supplies power to the grid. Additional infrastructure to consider includes the Easy Street Bridge on Rex Trail over Fish Creek which provides fire and ambulance access to residences and is vulnerable to river flooding. The Aramark property in Denali Canyon is extremely vulnerable to ice jam flooding which could inundate structures in that portion of the community.

#### *5.3.3.7 Recurrence Probability*

Flooding will continue in the Borough. Climate change may also play a part in increased flooding. The 1979 flooding in the City of Anderson has not reoccurred. Flooding occurred in

Healy in 2019 from Dry Creek. The probability of future events is likely.

### 5.3.4 Ground Failure

#### 5.3.4.1 Hazard Characteristics

Ground failure results when rock and soil deform or move downhill under the influence of gravity. “Mass wasting” and “mass movement” are terms used for events that include downslope movement from the originating location. Topography (i.e., slope), geologic setting, lithology (i.e., rock or sediment type), vegetation, and water content are important factors that influence the movement type (i.e., style) and speed as well as the amount and type of damage that may result from failure. Ground failure can occur due to natural processes, human activities, or a combination of the two.

#### Ground Failure Types

**Landslide** is a catch-all term that describes a wide variety of processes that result in the downward and outward movement of slope-forming materials including rock, soil, artificial fill, or a combination of these. “Landslide” is often used interchangeably with “slope failure” or “mass movement.” Anything that alters the slope gradient, vegetation cover, surface drainage, or groundwater infiltration can potentially destabilize vulnerable slopes and lead to landslides. In Alaska, degrading permafrost, steep slopes, heavy rain, retreating glaciers, and ground shaking from earthquakes are some of the important natural mechanisms that can trigger devastating landslides. By changing the controls on slope stability, human activity can increase landslide risk. Typically, this increased risk results from undercutting the base of a slope (e.g., with a road-cut), loading the top of a slope with debris, changing water levels by diverting flow onto a slope or removing trees that tie up moisture, or by weakening the slope by killing vegetation.

In general, landslides are classified based on the type of material being transported and the mechanics of material movement. Transported materials include rock, soil (fine-grained material), and debris (coarse-grained materials). The materials may move by falling, toppling, sliding, spreading, or flowing.

Landslides are often complex, involving multiple movements and material types, and they may begin as one mass movement type and evolve into another as materials collect and continue to move downslope. The most common landslide types can be categorized as listed in Table 8 and displayed in Figure 13.

Table 8. Landslide Types

- Rotational Landslide
- Translational Landslide
- Directed Blast
- Rockfall
- Topple
- Debris Flow
- Debris Avalanche
- Earthflow
- Creep
- Lateral Spread

A **Rotational Landslide** is a landslide in which earthen material slides on a failure surface or thin failure zone that curves upward. The slide movement is more-or-less rotational about an axis that is parallel to the slope contour. Rotational landslides generally occur on steep slopes (greater than 20 degrees).



A **Translational Landslide** moves downslope along a relatively planar failure surface, and has little rotational movement or backward tilting. Translational landslides commonly occur along geologic discontinuities, such as faults, joints, bedding surfaces, or at the contact between rock and soil. If the failure surface slope is steep, these slides can have considerable run-out distances.

**Block Slides** occur when material remains relatively coherent as it moves downslope, with little or no internal deformation. The sliding surface may be curved or planar.

A **Rockfall** is an abrupt, downward rock movement that detaches from a steep slope or cliff. Falling material may bounce or break on impact and then continue to roll downslope. Rockfalls can occur where natural processes (such as weathering and erosion) or human activities (such as digging or blasting) have resulted in an over-steepened slope.

A **Topple** describes the forward rotation of a mass of soil or rock about a pivot point that separates it from adjacent material. Toppling can be caused by natural processes, for example, stress from the weight of upslope material, or freeze-thaw action in cracks or fractures. Columnar-jointed rocks are notably susceptible to toppling.

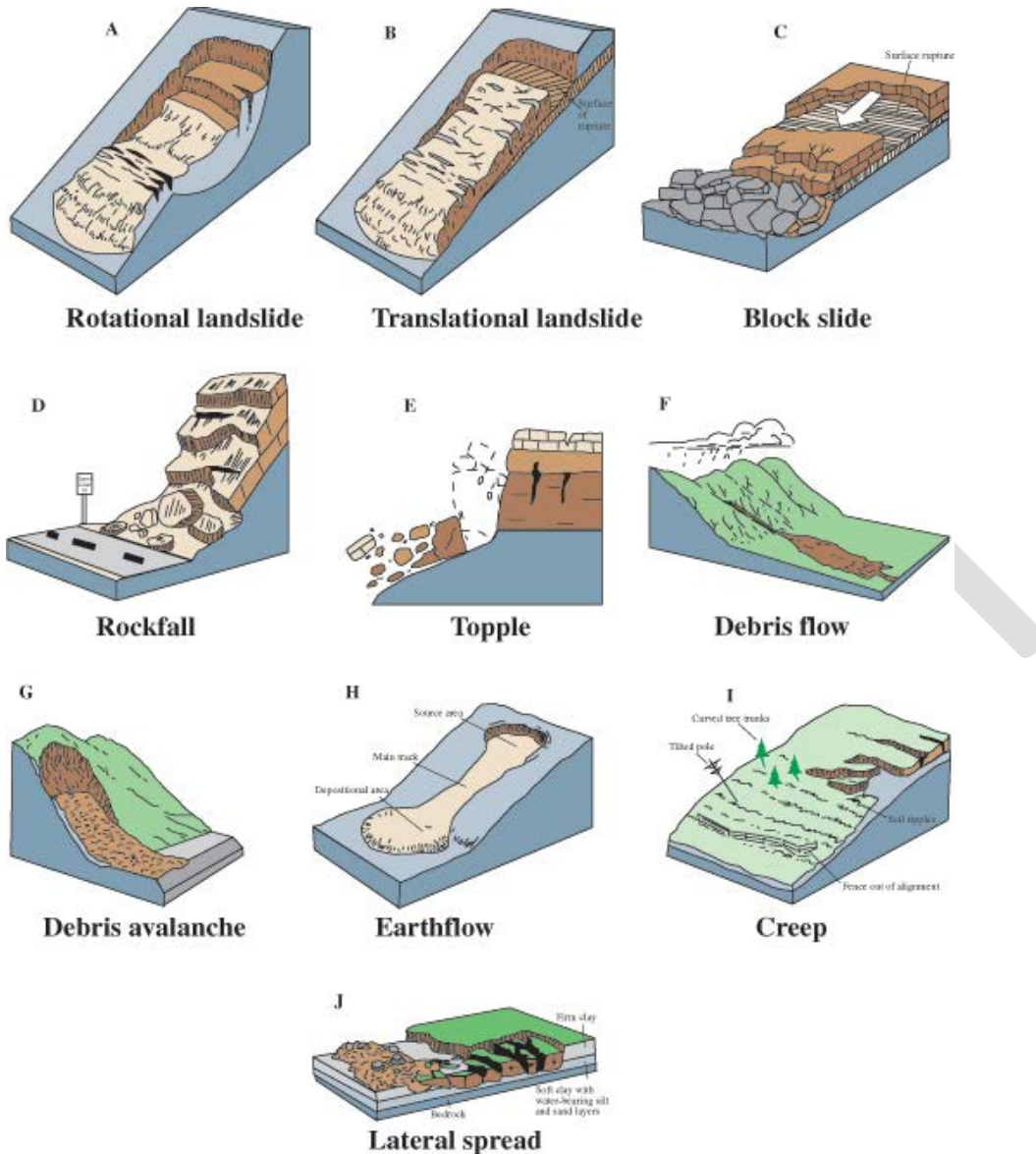
**Debris Flow** is a rapid mass movement in which a saturated slurry of loose soil, rock, organic matter, air, and water flows downslope. Debris flows are commonly composed of a large proportion of silt- and sand-sized material, and are either triggered by landslides of other types or intense surface-water flow, due to heavy precipitation or rapid snowmelt, that erodes and mobilizes loose soil or rock on steep slopes. This landslide type is prevalent in areas with steep canyons and gullies, de-vegetated areas, and in volcanic regions with weak soils. Debris flows may develop from other types of landslides (such as rotational or translational) as they increase in velocity and the internal mass loses cohesion and/or gains water.

**Debris Avalanches** are very fast-moving debris flows. Debris avalanches occur in steep terrain from collapse of weathered slopes, or when bedrock disintegrates during a rotational or translational landslide as material moves downslope at high velocity.

**Earthflows** occur on moderately steep slopes, usually under saturated conditions, when earth materials lose shear strength and behave like a liquid. The flows are elongate and commonly occur in fine-grained soil (e.g., marine clay [quick clay] or silt), but granular materials or weathered bedrock with high clay content are also susceptible. Earthflows grow in size through a process known as “head scarp retrogression,” which is erosion of the upper portion of a failure surface, and may evolve from slides or lateral spreads as they move downslope. Earthflows can destroy large areas and flow for several miles.

**Soil Creep** is a slow earthflow that is characterized by almost imperceptibly slow, steady, downslope movement of the uppermost few feet of soil or rock. Creep can pull apart or crack highways and other manmade structures. Creep is indicated by curved tree trunks, bent fences or retaining walls, tilted poles or fences, and small soil ripples or ridges. Creep may be seasonal, where movement within the soil is affected by changes in moisture or temperature, or it may be continuous. In some cases, creep may progressively increase and produce other landslide types.

Figure 13. Diagram – Most Common Types of Landslides



**Solifluction** is soil creep resulting from alternating cycles of freezing and thawing. It occurs when fine-grained soil thaws, becomes oversaturated due to poor drainage, and then begins to flow. If sufficient water is present, debris flows may develop.

**Lateral Spread** is the extension or disruption of a normally coherent upper rock or soil layer on top of a softer, weaker layer that has liquefied or flowed. During a lateral spread event, the stronger upper unit may subside into the weaker lower unit, or material from the lower unit may be squeezed into the upper unit. This mass-movement type generally occurs on flat or very gentle slopes.

A **Slump** is a form of mass wasting that occurs when a coherent mass of loosely consolidated materials or rock layers moves a short distance down a slope. Slumps often occur as material drops off an eroding surface, for example, on the cutbanks of rivers or along undercut coastal

bluffs.

**Subsidence** is any sinking or settling of the earth's surface, often due to removal of subsurface material. Its causes include underground mining; groundwater and petroleum extraction or movement; and degassing and other changes in hydrothermal systems. In Alaska, sediment compaction, thawing ice-rich permafrost, and earthquakes are common subsidence causes.

**Tectonic subsidence** is the type of subsidence that could occur in the Borough and occurs when the ground surface is lowered by the sinking of the Earth's crust as crustal plates move.

#### *5.3.4.1 Climate Factors*

Studies show that changing climate conditions can increase the frequency of fast-moving, catastrophic landslides. Alaska's warming surface temperatures are impacting slope stability and increasing a variety of ground failure risks. Warming climate has caused many areas to become unstable, and future warming will increase landslide risk.

Population growth and the expansion of settlements and lifelines over potentially hazardous areas are increasing the likelihood of landslide impacts. Increased permafrost thaw causes thermokarst and subsidence due to loss of ground ice. Additionally, increased water from thawing amplifies the potential for ground failure slides, flows, and creep.

#### *5.3.4.2 Related Hazards*

Ground failure is associated with many other hazards because these hazards can directly initiate mass movement or destabilize slopes, making them more susceptible to failure. For example,

- Flooding can add weight to a surface (through water and sediment), causing it to be overloaded and unstable.
- Erosion can remove material at the base of a steep slope, resulting in loss of lateral support.
- Thawing permafrost can weaken rock and soil, leading to ground failure, or leave voids in the ground, resulting in subsidence.
- Shaking from earthquakes commonly initiates a variety of ground failures.

#### *5.3.4.3 Hazard History*

Some of the most dramatic ground failure events in Alaska were associated with the 1964 Great Alaska Earthquake, which triggered a wide variety of falls, slides, flows, and lateral spreads throughout Southcentral Alaska.

The 1964 Great Alaska Earthquake also caused extensive subsidence. The subsidence zone covered about 110,000 square miles, including the north and west parts of Prince William Sound, the west part of the Chugach Mountains, most of the Kenai Peninsula, and almost all of the Kodiak Island group. In some areas, subsidence exceeded seven feet. Part of the Seward area is about 3.5 feet lower than before the earthquake, and portions of Whittier subsided more than five feet. The Village of Portage, at the head of Turnagain Arm of Cook Inlet, subsided six feet, partly due to tectonic subsidence and partly due to sediment compaction

during the earthquake.

Ground failure events have included rockfalls in the canyon area along the George Parks Highway. Historic occurrences of rockfalls or slides appear to occur from heavy rain (see Table 9). A few years ago, a landslide impacted the railroad in a known slide area near Cantwell. In 2016, mass wasting events occurred west of Healy on DNR lands. No damage occurred.

#### *5.3.4.4 Location*

In the canyon area, just north of McKinley Village, cliffs over the Nenana River are susceptible to rockfall. DOT&PF mitigates for rock fall along the George Parks Highway by scaling and hanging fencing to prevent future rockfall. Various areas in the Nenana River canyon require bank stabilization.

#### *5.3.4.5 Extent*

Damage from ground failure could range from minor—with some repairs required and little to no damage to transportation, infrastructure, or the economy—to major if a critical facility (such as the George Parks Highway or Alaska Railroad tracks) were damaged and transportation was affected.

The extent of ground failure impacts throughout Alaska will vary (depending on the type of failure, its size or extent, and location). Impacts can occur quickly or over time with warning signs. This hazard could cause injuries or death, or shut down critical facilities and services without foreknowledge, and property could be severely damaged.

Ground failure in the canyon north of McKinley Village/Denali Park Area could result in limited damage to McKinley Village/Denali Park Area. The community is built on several levels with the greatest portion of the community higher on the bluff.

#### *5.3.4.6 Impact*

Impacts associated with ground failure include surface subsidence or upheaval, and infrastructure, building, and/or road damage. Ground failure can pose a sudden and catastrophic hazard in the event of a large landslide. Most ground failure damage from non-landslide causes occurs from improperly designed and constructed buildings that settle as the ground subsides, resulting in structure loss or expensive repairs. Ground failure may also impact buildings, the highway, the railroad, and airstrips, not only causing damage, but also impacting passenger and cargo delivery.

#### *5.3.4.7 Recurrence Probability*

The Borough may experience recurring landslides (debris flows) and other ground failure damages to residential and public structures, railroad tracks, and roads. The probability for ground failure is location-specific. Prolonged periods of extreme rain may be more likely as the climate warms. A bit further east, in areas with more glaciers, there have been a number of very large landslides in recent decades, likely driven by a combination of climate factors. Ground failure will become more frequent with warming temperatures and longer thaw seasons in addition to changing precipitation patterns. The probability of future rockfall events is likely.

### 5.3.5 Severe Weather

#### 5.3.5.1 Hazard Characteristics

Severe weather occurs throughout Alaska with extremes experienced by the Borough and the City of Anderson that include high winds, heavy and drifting snow, freezing rain/ice storm, extreme cold, and heavy rain. The Borough and City of Anderson experience periodic severe weather events such as the following:

- **High Winds** occur when there are winter low-pressure systems in the North Pacific Ocean and the Gulf of Alaska. Alaska's high winds can equal hurricane force but fall under a different classification because they are not cyclonic nor possess other hurricane characteristics. High winds in excess of 60 mph occur rather frequently.
- **Heavy Snow** generally means snowfall accumulating to four inches or more in depth in 12 hours or less or six inches or more in depth in 24 hours or less.
- **Drifting Snow** is the uneven distribution of snowfall and snow depth caused by strong surface winds. Drifting snow may occur during or after a snowfall.
- **Freezing Rain and Ice Storms** occur when rain or drizzle freezes on surfaces, accumulating 12 inches in less than 24 hours. Ice accumulation can damage utility poles and communication towers which disrupts transportation, power, and communications.
- **Extreme Cold** varies according to the normal climate of a region. In areas unaccustomed to winter weather, near freezing temperatures are considered "extreme". In Alaska, extreme cold usually involves temperatures between -20 to -50°F. Excessive cold may accompany winter storms, be left in their wake, or can occur without storm activity. Extreme cold accompanied by wind exacerbates exposure injuries such as frostbite and hypothermia.

Strong winds occur over Interior Alaska due to strong pressure differences, especially where influenced by mountainous terrain, but the windiest places in Alaska are generally along the coastlines.

#### 5.3.5.2 Climate Factors

Increases in carbon dioxide, methane, and other gases in the atmosphere are generally warming and changing the climate worldwide by trapping heat that would have escaped back into space. Trees and other plants cannot absorb as much carbon dioxide through photosynthesis as is produced by burning fossil fuels. Therefore, carbon dioxide builds up and changes precipitation patterns; increases storms, wildfires, and flooding frequency and intensity; and substantially changes flora, fauna, fish, and wildlife habitats.

Alaska's temperature rise rate has been twice the average of the rest of the U.S. in recent decades. During the period from 1949 to 2014, the Statewide average annual air temperature increased by 3°F, and the average winter temperature increased by 6°F (ACRC, 2018). This included considerable annual and regional variability, and was accompanied by a greater number of extremely warm days and fewer extremely cold days (CCSP, 2008). The Statewide average annual precipitation during this same period increased by about 10%, with recent

decades showing amounts largely above normal, but with substantial annual and regional variability (Shulski and Wendler, 2007, ACRC, 2018).

Global climate is projected to continue changing over this century, and changes to Alaska’s climate are expected to be unprecedented (Chapin et al, 2014). Average annual temperatures in Alaska are projected to rise by an additional 2°F to 4°F by 2050, and by 6°F to 12°F by the end of the century depending on emission levels (Stewart et al, 2013). Projections of annual precipitation show an increase across Alaska as part of the broad pattern of increases projected for high northern latitudes.

Snow cover extent and depth have been decreasing in most places in Alaska for nearly three decades. Warmer winter temperatures change the precipitation frequency of snow and rain, and are producing more frequent rain-on-snow events.

### 5.3.5.3 Hazard History

The Borough had one severe weather event in the DHS&EM Disaster Cost Index (DHS&EM, 2018b). This event is listed below.

**00-191 Central Gulf Coast Storm declared February 4, 2000 by Governor Murkowski, then FEMA-declared (DR-1316) on February 17, 2000:** The Governor declared a disaster due to high impact weather events throughout an extensive area of the State. The State began responding to the incident on December 21, 1999. The declaration was expanded on February 8 to include the City of Whittier, City of Valdez, Kenai Peninsula Borough, Matanuska-Susitna Borough, and the Municipality of Anchorage. On February 17, 2000, President Bill Clinton determined the event disaster warranted a major disaster declaration under the Robert T. Stafford Disaster Relief and Emergency Assistance Act, P.L. 93-288 as amended (the Stafford Act). On March 17, 2000, the Governor again expanded the disaster area and declared that a condition of disaster existed in Aleutians East, Bristol Bay, **Denali**, Fairbanks North Star, Kodiak Island, and Lake and Peninsula Boroughs and the census areas of Dillingham, Bethel, Wade Hampton, and Southeast Fairbanks, which was of sufficient severity and magnitude to warrant a disaster declaration. Effective on April 4, 2000, Amendment No. 2 to the Notice of a Major Disaster Declaration, the Director of FEMA included the expanded area in the presidential declaration. Public Assistance, for 64 applicants with 251 PWs, totaled \$12.8 million. Hazard Mitigation totaled \$2 million. The total for this disaster was \$15.66 million.

Table 9 lists major storm events NWS identified for the Borough’s Weather Zone (AKZ225).

*Table 9. Severe Weather Events*

Location	Date	Event Type	Magnitude
225	3/4/2001	High Wind	With a stationary but strong low over the western Alaska Peninsula, a ridge of high-pressure strengthened over the Copper River Basin, causing a brief period of strong winds through Windy Pass of the western Alaska Range, where the Healy weather observer reported a peak gust of 55 mph.
225	4/10/2001	High Wind	A building ridge south of the Alaska Range coupled with a lee-side trough north of the range produced a substantial pressure differential through the Windy and Isabel Pass areas. Wind

			gusts to 67 mph were reported by the weather observer at Healy during this time.
225	5/2/2001	Heavy Snow	A cold front moving slowly east of the zone produced heavy snow due to northwest winds, providing upslope cooling motion of the atmosphere over the area. The Healy weather observer reported 12.8 inches of snowfall; likewise, the Cooperative Observation at Denali Park recorded 11.4 inches of new snow.
225	10/3/2001	High Wind	A strengthening pressure gradient in advance of an approaching occluded front created gusty south winds through the Alaska Range. The highest recorded wind at the Healy observation site was a gust to 58 mph.
225	12/21/2001	High Wind	A 971 millibar (mb) low in the central Gulf of Alaska on the afternoon of the 21st moved northwest to near Galena by noon on the 22nd and weakened to 982 mb. Strong southeast winds developed in the passes of the Alaska Range as the pressure gradient strengthened in response to the associated occluded front moving north towards the Alaska Range. Wind gusts to 55 mph were reported by the Healy weather observer.
225	1/8/2002	High Wind	High winds in the channeled areas of the Alaska Range developed as an occluded front moved northward across the area, increasing the surface pressure gradient. Wind gusts to 52 mph occurred across the northeast slopes of the Alaska Range. Wind gusts to 73 mph were reported by the Healy weather observer. Portions of a roof at a lodge in Healy were blown off by the strong winds.
225	1/16/2002	High Wind	A very brief period of winds meeting warning criteria were reported along the north slopes of the central Alaska Range. These winds developed in response to a building ridge of high-pressure south of the mountain range, and a low-pressure trough to the north. A sufficient pressure differential between these two systems helped create strong winds at Healy where the weather observer reported wind gusts to 60 mph.
225	1/17/2002	Freezing Rain	A brief period of freezing rain was reported by the weather observer in Healy. This freezing rain developed ahead of an occluded frontal boundary that moved across the region from the southwest.
225	4/17/2002	High Wind	A 982 mb low pressure system and associated frontal system moved from the Pribilof Islands northeast across Norton Sound, across northwest Alaska, and offshore of the eastern Arctic Coast. The warm front portion of the frontal system produced heavy snow over western and northern Alaska, and strong winds gusted through Windy Pass of the central Alaska Range. High winds occurred at Healy, where the weather observer recorded a peak gust of 63 mph.
225	4/27/2002	Heavy Snow	Heavy snow fell at the Denali Park Headquarters as a slow-moving cold front became stationary across the region. Southwest flow brought moisture from the Bering Sea, resulting in a steady rate of snowfall. A storm total of 10 inches was reported by the Park Headquarters Cooperative Observation.

225	7/6/2002	Heavy Rain	Heavy rains on the night of the 5th caused mudslides on the Parks Highway at MP 238.5, closing the highway briefly, and causing it to be only one lane for a large portion of the day thereafter. Denali National Park dispatch also reported some visitors were stranded on a river island due to the high water.
225	8/28/2002	Tornado	A funnel cloud was sighted by two hikers in the vicinity of the Kantishna Hills of Denali National Park.
225	8/28/2002	Tornado/Hail	From the Anchorage Daily News, August 29th: "A funnel cloud dropped from the sky several miles north of Wonder Lake in Denali National Park. About a dozen people watched from near the lake as the cloud formed, descended nearly to the ground, then disappeared as pea-sized hail began to fall."
225	2/3/2003	High Wind	A strong low-pressure system and associated occluded front over the northern Gulf of Alaska moved north, resulting in a significant pressure gradient over the Alaska Range. This gradient, coupled with the channeling affects in the narrow passes of the mountains, resulted in very strong winds in these channeled areas. Wind gusts to 67 mph were recorded by the weather observer in Healy with gusts estimated at 63 mph along the eastern slopes of the Alaska Range.
225	4/12/2003	High Wind	A series of low-pressure centers moved north over western Alaska beginning the night of the 11th through the morning of the 13 <sup>th</sup> . Strong high-pressure over the Arctic Ocean moved eastward slowly. This brought blizzard conditions to the Arctic Coast, and high winds at certain exposed locations over the West coast. Additionally, as the frontal system moved across the Alaska Range, it brought strong winds through Windy Pass in the Denali region. The Healy weather observer reported gusts to 69 mph.
225	7/28/2003	Heavy Rainfall	Record rainfall occurred over Interior Alaska, bringing rivers and streams above their banks. Rainfall amounts of one to three inches fell in the Denali area. Some rock slides occurred along the Parks Highway; Carlo Creek south of Denali Park overflowed its banks and flooded cabins, roadways, and businesses, as well as eroding sections of the Parks Highway. Minor flooding occurred at Nenana.
225	12/30/2003	Heavy Snow	Cold air moving from Interior Alaska southward over the north slopes of the Alaska Range produced heavy snowfall. The Healy weather observer reported 9.5 inches.
225	1/7/2004	High Wind	Low-pressure centers moved along the Aleutian Islands into the Gulf of Alaska through the 10th helping to slowly weaken the high further, but not before producing a strong pressure gradient in areas across Northern Alaska...resulting in blizzard conditions, high winds, and extreme wind chills. Strong winds were reported at the Wonder Lake RAWs; sustained winds of 40 to 45 mph were reported with peak gusts to 62 mph.
225	2/10/2004	High Wind	Strong high-pressure over the Arctic Ocean moved east to northwest Canada while a low-pressure center moved north over the eastern Bering Sea. The combination caused a strong pressure gradient over northern Alaska with locally strong easterly winds. Blizzard conditions developed over portions of



			the North Slope, along with extreme wind chills due to a persistent colder airmass over this region. Strong chinook winds developed over the Alaska Range during this event. Healy reported gusts to 69 mph.
225	2/14/2004	Heavy Snow	A low-level push of moist air over the Arctic Front rested along the south slopes of the Alaska Range, producing heavy snowfall at locations on the north side of the Alaska Range. Healy reported seven inches of snow.
225	12/22/2004	Avalanche	A weather front associated with a low brought strong winds and local blizzards to the Alaska Range, and the low itself created strong winds and blizzards over Cape Romanzof on the west coast. Heavy snows were generated over the western and northern interior, and in the Alaska Range. At Parks Highway MP 218 near Panorama Peak, just north of Cantwell and south of Denali National Park, unofficial reports noted that an avalanche covered the highway for up to a quarter of a mile to a depth of 16 feet. The highway was closed for nearly two days. There were no deaths or injuries from this avalanche, though one truck with an empty propane trailer encountered the edge of the moving snow mass. Snowfall amounts in the area of the avalanche were reported to be 12-16 inches by DOT. At the Denali Park Co-operative observing station, 7.5 inches of snow was recorded by 0800AST. The avalanche knocked out power to the community of Cantwell for 6 to 8 hours on the 23rd, and in the Denali Park Entrance on the 23rd and into the 24th. The Parks Highway was closed at Panorama Peak most of the 23rd and the 24th. Land transportation of mail and goods was halted between Fairbanks and Anchorage. Blizzard conditions followed the heavy snowfall as north winds developed due to the high-pressure over western Alaska moving into the Interior. This hampered quick removal of the snow on the Parks Highway.
225	1/3/2005	Freezing Rain	An occluded front moved north from the Bering Sea over western Alaska on the 2nd and moved east across the North Slope and through the central Interior on the evening of the 2nd and on the 3rd...stalling near Fairbanks into the 4th until an Arctic cold front swept in from the west and pushed the old frontal system into Canada by the evening of the 4th. Snow lingered over the southeast interior behind the cold front until the morning of the 5th. Heavy snow was reported by the Healy Observer: 6.0 inches for a 24-hour total. DOT reported on the morning of the 4th that 16 to 30 inches of new snow existed in the Cantwell section, of which the northernmost portion lay in the southern end of the zone. Jan. 4th: Freezing rain and very icy roads were reported through the Healy section, with heavy snowfall in the Cantwell section. The amount of freezing rain was not reported, but could have been up to one-quarter of an inch near Denali Park as the reported amount of rain and melted snow was 0.45 inches with 1.5 inches of snowfall, both on the morning of the 4th.
225	1/5/2005	Heavy Snow	A small low-pressure center north of Galena with a warm front extending southeast toward the Alaska Range moved east

			across the Interior of Alaska. The Denali Co-operative Observer recorded 12 inches of new snow.
225	2/13/2005	High Wind	A low-pressure center of 976 mb near Nunivak Island moved north to near Cape Lisburne, weakening to 991 millibars. The associated weather front moved north over northern Alaska though it dissipated near the Brooks Range on the 15th. A ham radio operator in Healy reported gusts to 64 mph.
225	4/18/2005	Heavy Snow	Heavy snow occurred in several places in the Interior as an Arctic front moved southeast on the 17th through 19th. Along the Alaska Range zones, the front pushed moist air upslope to increase the cooling and produced 10.7 inches of snow in 24 hours at Denali National Park Headquarters. Snow began early in the morning of the 17th with a total accumulation of 15.5 inches through the early morning of the 19th.
225	4/21/2005	High Wind	A strong weather front moved north from the Gulf of Alaska, producing high south winds through Alaska Range passes. An amateur radio observer reported gusts to 67 mph.
225	8/18/2006	Heavy Rain	Heavy rains produced flooding of small streams in the Alaska Range. Three to five inches of rain were reported across the central and western Alaska Range, with the DOT Camp at Trims reporting 5 inches. No washouts were reported on the Parks Highway in Zone 225; however, immediately to the south, washouts in four locations on the Parks Highway occurred the morning of the 19th.
225	4/24/2008	Blizzard	An upper low near the Bering Strait pushed into northwest Alaska. This caused a strong cold front to cross the Alaska Range. The cold front stalled out across the area, and cold air behind the front combined with significant moisture from the south to produce a period of heavy snow across the Alaska Range. Although significant snow was observed across the lower elevations, the greatest snowfall totals were observed above 2,500 feet. Twelve inches of snow were observed at MP 230 on the Parks Highway.
225	7/29/2008	Heavy Rain	On the night of the 27 <sup>th</sup> , a frontal system moved from the Gulf of Alaska northwest over the Southern Interior to near Fairbanks on the evening of the 28th, then moved slowly back to the southeast before dissipating on the 29th. This system dropped 2 to 5 inches of rain over the Central and Eastern Interior from Tok to western Fairbanks...with heaviest amounts over the central Alaska Range as well as the hills north of the Tanana River from Salcha to Tok. This caused the flooding of rivers and streams draining into the Tanana River, particularly on the Goodpaster and Salcha Rivers, as well as the rivers draining north from the Alaska Range, but east of Denali Park. In addition, the Tanana River itself rose rapidly on the 29th through the 31 <sup>st</sup> , flooding areas around Salcha, Fairbanks, and Nenana. A frontal system from the Arctic moved southeast over the interior on the 29th and 30th, helping to push the Gulf of Alaska front back toward Canada, and dropping another 0.5 to 1.5 inches of rain over the Chena River Basin, the middle Tanana River Tributaries, as well as the Nenana River from southeast of Healy to Nenana. This precipitation event caused flooding of

			<p>several subdivisions in the Denali Borough, and added to or prolonged the flooding in the areas already mentioned. The flood crest of the Tanana River of 26.53 feet was the highest level since the record 1967 flood. The Alaska Railroad initially stopped passenger trains north of Denali Park to Fairbanks, due to a washout between Anderson and Nenana; once their stop in Nenana had flooded on the 31st, the railroad halted freight service. Specific impacts included: Dry Creek at Healy went over bank on the 29th, and was highest on the 30th and 31st, and ended on the 3rd. This flooding impacted nine residences along Killion Road, resulting in \$10,000 in property damages due mainly to water in sheds or in crawl spaces of residences. June Creek flooded as well, impacting several residences along June Creek Road, though there was no reportable damage. Additionally, the high water in the Nenana River caused \$95,000 damage to the Alaska Railroad in Healy.</p>
225	12/27/2008	Extreme Cold	<p>A significant cold snap developed across Interior Alaska on December 27th and continued into January. A cold upper level low across Siberia moved into northern Alaska on December 26th, and remained in place through the end of the month. Although no new temperature records were established, it brought the first widespread significant cold to Interior Alaska. Temperatures at the Fairbanks International Airport dropped to -40°F. The cold temperatures produced significant ice fog in Fairbanks, and the visibilities were frequently reduced to 1/4 mile or less in Fairbanks on New Year's Eve. The coldest temperatures were observed on the Yukon Flats, where temperatures dropped into the 50s below on New Year's Eve. Denali Park Headquarters reached -34°F.</p>
225	1/1/2009	Extreme Cold	<p>The significant cold snap that developed across interior Alaska on December 27th continued through January 12th. Zone 225: Denali Park HQ: 41 below, on the 4th.</p>
225	1/8/2009	Extreme Cold	<p>The combination of a very cold airmass that was established in late December, and a period of strong wind, combined to produce low wind chills in the passes of the Alaska Range and in the Upper Yukon Valley on January 8th and 9th. Antler Creek RWAS: -66°F.</p>
225	1/14/2009	Heavy Rain	<p>A 965 mb low across the eastern Aleutians re-developed across southwest Alaska, and lifted north to northwest Alaska. The low brought heavy snow and freezing rain to a large portion of northern Alaska. The snow combined with high winds to produce blizzard conditions in parts of the Brooks Range. Denali Park Co-operative Observer reported a 24-hour rainfall of 0.27 inches of rain at 0800 AKST on the 15th, then 0.02 inches at 0800 AKST on the 16th, and 0.40 inches of rain at 0800 AKST on the 17th. A long-time Park employee said the roads were sheets of ice and that DOT sanding trucks were slipping backwards and sideways.</p>

225	1/14/2009	High Wind	A strong chinook developed as a ridge of high-pressure across the eastern Pacific, and a trough of low-pressure developed across eastern Russia. This produced a period of high winds in the Alaska Range as well as parts of the Deltana Flats and the Upper Tanana Valley. In Denali National Park and Preserve, a number of trees were reported blown down. The highest wind gusts that were measured or observed were at Antler Creek RWAS (on the Parks Highway MP 244) at 74 mph.
225	2/18/2009	Heavy Snow	A 970 mb low in the central Bering Sea tracked to the southern Chukchi Sea, and then along the arctic coast. This storm system brought heavy snow and blizzard conditions to much of northern Alaska. High winds were also observed in the passes of the Alaska Range. Heavy snow was observed along the Parks Highway. The DOT reported 12 inches of snow at MP 215.8. In addition to the heavy snowfall, strong winds were observed in the passes, with wind gusts to 73 mph at the Antler Creek RAWS at MP 244.
225	11/30/2009	High Wind	A strong chinook brought a period of high winds to the passes of the Alaska Range. The wind frequently gusted over 60 mph, and a peak wind gust of 75 mph was observed at the Antler Creek RAWS at MP 244.
225	12/5/2009	High Wind	A strong chinook produced a period of high winds in and near the Alaska Range. High winds occurred at the Antler Creek RAWS at MP 244 along the Parks Highway where a peak wind gust of 71 mph was observed.
225	12/21/2009	High Wind	The combination of a deep upper low in the Bering Sea and a large upper ridge across eastern Alaska brought a period of strong Chinook flow across the Alaska Range. The wind at one of the Healy sites gusted to 58 mph, and there was an unconfirmed report of wind gusts as high as 85 mph in the Healy area. The report of 85 mph winds seemed reasonable given the meteorological conditions. There was a peak wind gust of 72 mph at the Antler Creek RAWS at Mile 244 along the Parks Highway.
225	11/22/2010	Freezing Rain	An extremely warm and moist air mass moving around a large ridge of high-pressure in the north Pacific produced a prolonged period of freezing rain across much of Interior Alaska. Freezing rain fell at Healy as well as at the Denali National Park Visitor Center. A total of 6 tenths of an inch of rain was observed at the Denali Visitor Center with 42 hundredths of an inch observed at Healy. According to reports from DOT, the Parks Highway had about an inch of ice from MP 260 north (about 10 miles north of Healy) to the Fairbanks area.
225	2/24/2011	Heavy Snow	A 968 mb low in the central Bering Sea moved to the Gulf of Anadyr as a 976 mb low. The low tracked to the northeast as a 978 mb low in the southern Chukchi Sea. The low then tracked to the east and passed just south of Banks Island as a 980 mb low. The storm produced widespread blizzard conditions along the West Coast as well as the Arctic Coast and heavy snowfall and high winds in parts of the Interior. Heavy snow fell at Denali National Park Headquarters. The storm total was 17 inches.

225	12/3/2011	High Wind	A strong chinook produced high winds, freezing rain, and snow in parts of the Interior. High winds were observed at Antler Creek. There was a peak wind gust of 81 mph. There were also reports from the DOT of freezing rain along the Parks Highway during the morning hours on the 4th. The weather observer in Healy reported that the roads were completely glazed over with ice with 3 tenths of an inch of freezing rain. Denali Park Headquarters observed two tenths of an inch of freezing rain, and one tenth of an inch of freezing rain was observed at Nenana. As temperatures fell during the afternoon, the freezing rain changed over to snow, with a total of 5 inches of snow at the Denali Park Headquarters by the morning of the 5th.
225	6/1/2012	Heavy Rain	Heavy rain caused a rock slide in the Nenana River Canyon at MP 239.5 along the Parks Highway that sent debris onto the Parks Highway just north of Denali National Park. Rainfall amounts ranged from 1.53 inches at Denali Park Headquarters to 1.66 inches at the Healy River Airport.
225	6/13/2012	Heavy Rain	Heavy rainfall of approximately 1.25 inches on the 12th caused a rock slide and debris to fall on the Parks Highway in the Nenana River Canyon at MP 239.5. Additional rock slides were reported. Delays were experienced in the area, but the Highway remained open as crews removed the rocks and debris from the road. This followed on the heels of a rock slide in the same area due to heavy rainfall the previous week.
225	9/4/2012	High Wind	A 970 mb low-pressure center in the Southcentral Bering Sea moved to Kotzebue and weakened to 990 mb. The associated weather front moved across the eastern Interior, moving into Canada. The resulting strong chinook flow over the Alaska Range produced high winds in and near the Alaska Range. There was a peak wind gust to 63 mph at Otto Lake in Healy.
225	9/16/2012	Falling Rocks	There were four reports of rocks falling on vehicles on the Denali Park Road. The wind gusted as high as 63 mph at the Eielson Visitor Center RAWS. It is likely that the wind gusted over 70 mph at Windy Pass, but the DOT RWAS at Antler Creek was inoperable during the event. There were also reports of power outages in Nenana, Fairbanks, and North Pole, but there were no reports of damage or winds that reached warning criteria.

225	9/21/2012	Heavy Rain	After a few days of heavy rainfall along the south slopes of the Alaska Range that amounted to several inches of rain, the Nenana River flooded, at Nenana and Healy. Minor flooding began around 1000AKST on the 21st at Healy. The boat launch was flooded and water was over the bank and rising up the shoulder of the coal hauling road. The Nenana River rose to the highest stage on record when the river crested at 14.9 feet at Healy on the 22nd and a surge of water continued downstream. The crest was protracted as the water levels remained at the crest for nearly 24 hours. This resulted in the flooding of several structures at Denali National Park, and erosion of the southbound lane at MP240 of the Parks Highway. At Nenana, flooding was observed on the 23rd. Up to one foot of water was reported over 10th Avenue west of the railroad tracks. The road to the cemetery was also reported to be flooded. Water filled the drainage ditches and low-lying areas on the east side of the City of Nenana. Water levels dropped, and the flooding was over by the morning hours of the 24th.
225	3/7/2013	High Wind	A 957 mb low-pressure center in the Southcentral Bering Sea moved northward. The associated weather front moved across the eastern Interior. The resulting strong chinook flow over the Alaska Range produced high winds in and near the Alaska Range. There was a peak wind gust to 63 mph at Otto Lake at 1615AKST on the afternoon of the 7th.
225	9/24/2013	High Wind	A low-pressure center of 968 mb moved along the South Bering Sea into Bristol Bay on the 25th while the associated weather front moved east across the Alaska range. High winds occurred in Alaska Range passes. Antler Creek RAWS reported a gust to 70 mph.
225	10/8/2013	High Wind	A 964 mb low moved north over southwest Alaska while the associated weather front moved northeast toward the Alaska Range. Peak wind gust of 77 mph reported at Antler Creek RAWS.
225	10/15/2013	High Wind	A weather front moving from southwest Alaska over the Interior brought strong southerly winds to Alaska Range passes. High wind gusts to 75 mph were reported at the Antler Creek RAWS.
225	11/13/2013	High Wind	Very strong westerly winds gusting from 50 to 75 mph developed just behind a warm front as it moved across the west coast and Interior of northern Alaska. In addition to the wintry mix of precipitation and strong winds, temperatures soared into the lower 40s when the wind arrived. About 0.30 inch of rain/ice was reported by the Denali Park Cooperative station. The RAWS at Antler Creek reported a gust to 70 mph.
225	3/12/2014	High Wind	A weather system moving north from the Gulf of Alaska to the central western interior of Alaska, brought high winds briefly to the Alaska Range, and snow and local blizzard conditions to the Seward Peninsula. The RAWS at Antler Creek reported winds gusting as high as 76 mph.

225	6/26/2014	Heavy Rain	A weather system moved west over Denali National Park, dropping four and one quarter inches of rain over the western portion of the Park in a short amount of time, according to the Wonder Lake RAWS. Moose Creek and Eureka Creek, located about 5 miles west of Wonder Lake, both flooded. Flood waters from Moose Creek moved into the Denali Wilderness Lodge property, reaching the buildings on the morning of the 29th. The guests and some Lodge staff, a total of 103 persons, were evacuated to Wonder Lake the evening of the 27th, where buses transported them to hotels near the park headquarters. Moose Creek crested around 0900AKST on the 27th. The nearby airstrip at Kantishna also flooded and remained under water until the evening of the 27th, when flights could be made to evacuate people. There were a few road washouts as well on the Denali Park Road from Wonder Lake to the Denali Wilderness Lodge. During the evening of the 27th, flood waters receded, and the only damage to the Lodge was that outdoor propane tanks floated, and their lines broke.
225	12/28/2014	High Wind	A strong pressure gradient developed in channeled areas of the Alaska range. A 1,055 mb high over the Yukon and a 990 low over the Bering Sea induced the pressure gradient. A surface trough moved across the range as well. High winds were reported on the 29th at the RAWS at Antler Creek: 79 mph.
225	1/23/2015	Heavy Snow	A low-pressure center in the Gulf of Alaska moved inland and to the Fairbanks. A strong west to southwest flow aloft transported significant amounts of moisture across the central portions of the Interior, with the highest amounts in the eastern portion of the Middle Tanana Valley and the eastern Alaska Range. The heaviest snow occurred from the Parks Highway east. Storm totals ranged from 10 to 14 inches in Denali Park.
225	2/16/2015	High Wind	A 968 mb low-pressure center in the northern Gulf of Alaska moved northward. The associated weather front moved across the eastern Interior, resulting in a strong chinook flow over the Alaska Range that produced high winds in Alaska Range passes. There was a peak wind gust to 70 mph at Antler Creek RAWS at MP 244 along the Parks Highway.
225	6/24/2015	Lightning	A thermal trough helped produce numerous thunderstorms. Lightning from one of these thunderstorms struck a residence in Healy. The lightning entered a phone box on the side of the house and traveled through the wires of the house and then exited through the rain gutter. The phone box and gutter were both destroyed as well as some inside appliances.
225	8/8/2015	Tornado	A possible funnel cloud was observed at Denali Park. It was photographed about two miles east of East Fork cabin from the Park road.
225	8/26/2015	Heavy Rain	Heavy rain occurred over several days at Denali National Park, causing streams to run high. 1.8 inches of rain was reported at the Eielson Visitors Center RAWS. A 28-year-old female camping in the backcountry perished while trying to cross a swollen tributary of Stony Creek on the 27th.
225	9/28/2015	Heavy Snow	A 987 mb low in the Gulf of Alaska brought an abundance of moisture into the Tanana Valley. Record setting snow was

			reported across much of the Fairbanks area. Fairbanks airport set a new daily snowfall record on the 29th of September receiving 11.2 inches of snow...breaking the record of 7 inches set in 1972. Numerous power outages and fallen trees were reported due to the heavy wet snow. At the peak of the storm nearly 30,000 people were without power and some roads impassable with fallen trees. Denali Park Headquarters reported 11.8 inches.
225	11/8/2015	High Wind	A peak wind gust to 75 mph occurred at the Antler Creek RAWS at MP 244 along the Parks Highway.
225	11/19/2015	High Wind	A 969 mb low-pressure system moved into the Bering Sea, and the associated occluded front moved across the west coast. This system brought snow to areas of the west coast from the afternoon of the 18th into the early morning hours of the 20th. Higher elevations received an estimated 8 to 12 inches of snow. Strong winds and snow produced blizzard conditions along the coast. This system also set up strong southerly flow across the Alaska Range at the same time, resulting in high winds there. There was a peak wind gust to 70 mph at Antler Creek RAWS at MP 244 along the Parks Highway.
225	11/24/2015	Heavy Snow	An estimated 17.3 inches of snow fell at Denali Park Headquarters.
225	9/11/2016	High Wind	A strong pressure gradient developed in channeled areas of the Alaska range. A 1,030 mb high over the Arctic and a 989 low over the Bering Sea induced the pressure gradient. A surface trough moved across the range as well. A peak wind gust to 70 mph was reported at Antler Creek RAWS.
225	9/20/2016	High Wind	A strong pressure gradient developed in channeled areas of the Alaska Range. A 980 mb low over the Bering Sea induced the pressure gradient and associated weather front moved across the range as well. A peak wind gust to 70 mph was reported at Antler Creek RAWS.
225	9/5/2017	High Wind	A strong pressure gradient developed in channeled areas of the Alaska Range. A 980 mb low over the Bering Sea induced the pressure gradient and associated weather front moved across the range as well. A peak wind gust to 70 mph was reported at Antler Creek RAWS.
225	10/25/2017	High Wind	A strong pressure gradient developed in channeled areas of the Alaska Range. A peak wind gust to 70 mph was reported at Antler Creek RAWS.
225	12/4/2017	High Wind	A strong pressure gradient developed in channeled areas of the Alaska Range. A peak wind gust to 70 mph was reported at Antler Creek RAWS.

#### 5.3.5.4 Location

In the Borough and City of Anderson, there is potential for weather disasters. High winds can topple trees, damage roofs and windows, and result in power outages. Heavy snow can cause power outages or collapse roofs of buildings. Storms can make commuter travel to Anchorage or Fairbanks difficult. Extreme weather is most prevalent during the winter with any combination of cold temperatures, strong winds, and heavy snow.



Unpredictable weather extremes have the potential of causing people to be more unprepared for more natural disasters. There has been more variability in when extreme weather events occur, and the increased likelihood for unusual precipitation events that impact Borough weather will increase as the climate and oceans warm.

#### 5.3.5.5 Extent

The entire Borough is affected. Table 10 lists mean weather conditions for select communities in the Borough. Severe weather is a normal part of living in Alaska. However, sometimes the confluence of elements produces extreme conditions. Being prepared is the key to survival. Alternate forms of home heat and lighting, stored food, appropriate clothing, and advance planning are critical.

Table 10. Denali Borough Community Weather Summary

Characteristic	Cantwell	McKinley Village/Denali Park Area	Healy	Anderson/Clear AFS
Mean Summer High	66	66	69	71
Mean Summer Low	29	39	44	37
Mean Winter High	20	18	26	24
Mean Winter Low	-9	-7	-6	-28
Extreme High	89	91	90	96
Extreme Low	-54	-45	-46	-64
Rain (inches)	15	15	17	13
Snowfall (inches)	78	76	66	61

Source: 2010 updated with most recent WRC data as available in 2020

The most common forms of damage to structures as a result of severe wind include loss of roofing materials, damage to doors and hinges, broken water lines due to freezing, fallen trees, structural failure of out-buildings, fallen or damaged exterior lights, flag poles, and antennae. Overhanging signs on businesses and satellite dishes become airborne projectiles under certain conditions.

Heavy snow brings another set of damages. Structural deflection or collapse of structures is common. Deflection causes cracks or breakage of interior walls and finishes. Falling ice from roof eaves can knock out electric meters, damage vehicles, break windows, and threaten injury to passersby. Sliding snow can cause damages described above and also cause damage to roof-mounted vents and other equipment. Wind-packed snow and ice can block windows and emergency exits.

Travel can be restricted by extreme low temperatures, fuel can gel, and visibility be impaired by ice fog. Pipes can freeze particularly if there is a lack of snow cover. Prolonged exposure to extremely low temperatures can result in hypothermia and death.

#### 5.3.5.6 Impact

The intensity, location, and the land's topography influence the impact of severe weather

conditions on a community.

Heavy snow can immobilize a community by bringing transportation to a halt. Until the snow can be removed, the airport, roadways, and railways are impacted, even closed completely, stopping the flow of supplies and disrupting emergency and medical services. Accumulations of snow can cause roofs to collapse and knock down power lines. Heavy snow can also damage light aircraft and sink small boats. A quick thaw after a heavy snow can cause substantial flooding. The cost of snow removal, repairing damages, and the loss of business can have severe economic impacts.

Injuries and deaths related to heavy snow usually occur as a result of vehicle and or snow machine accidents. Casualties also occur due to overexertion while shoveling snow and hypothermia caused by overexposure to the cold weather.

Extreme cold also interferes with the proper functioning of a community's infrastructure by causing fuel to congeal in storage tanks and supply lines, stopping electric generation. Without electricity, heaters and furnaces do not work, causing water and sewer pipes to freeze or rupture. If extreme cold conditions are combined with low or no snow cover, the ground's frost depth can increase, disturbing buried pipes. The greatest danger from extreme cold is its effect on people. Prolonged exposure to the cold can cause frostbite or hypothermia and become life-threatening. Infants and elderly people are most susceptible. The risk of hypothermia due to exposure greatly increases during episodes of extreme cold, and carbon monoxide poisoning is possible as people use supplemental heating devices.

#### *5.3.5.7 Recurrence Probability*

Severe winter storms occur annually in Interior Alaska; therefore, the probability of a severe winter storm impacting the Borough and City of Anderson is highly likely.

### **5.3.6 Wildfire and Conflagration Fires**

During the five-year period spanning 2013 through 2018, over 82 fire-related fatalities were recorded in Alaska. Since 2013, the State has declared over 3,077 fire-related emergencies or disasters. Firefighter and public safety are the primary concern of each local and fire response agency. In Alaska, thousands of acres burn every year in 300 to 800 fires, primarily between the months of March and October. According to the Alaska Interagency Coordination Center (AICC), 7,815,368 acres were burned from 2013 to 2017. This figure consisted of the 2,408 wildland fires that started throughout that same time period. This is an average of 3,246 acres per wildland fire (DHS&EM, 2018a). Add a statistic here regarding the portion of human caused wildland fires and the number of associated acres.

For the purposes of profiling this hazard, fires are characterized by their primary fuel sources into two categories:

- Wildland fire, which consumes natural vegetation.
- Community fire conflagration, which propagates among structures and infrastructure.

Fires in the Borough tend to be wildland fires that consume structures. Fires in the City of Anderson are predicted to be conflagration fires due to the presence of spruce trees up to the

structures.

### 5.3.6.1 Hazard Characteristics

A wildland fire is a type of wildfire that spreads through consumption of vegetation. It often begins unnoticed, spreads quickly, and is usually signaled by dense smoke that may be visible for miles around. Wildland fires can be caused by human activities (such as arson or unattended campfires) or by natural events such as lightning. Wildland fires often occur in forests or other areas with ample vegetation. Wildfires can also be classified as tundra fires, urban fires, interface or intermix fires, and prescribed burns.

The following three factors contribute significantly to wildland fire behavior and can be used to identify wildland fire hazard areas.

- **Topography:** As slope increases, the rate of wildland fire spread increases. South-facing slopes are also subject to more solar radiation, making them drier, and thereby, intensifying wildland fire behavior. However, ridgetops may mark the end of wildland fire spread since fire spreads more slowly or may even be unable to spread downhill.
- **Fuel:** The type and condition of vegetation plays a significant role in the occurrence and spread of wildland fires. Certain types of plants are more susceptible to burning or will burn with greater intensity. Dense or overgrown vegetation increases the amount of combustible material available to fuel the fire (referred to as the “fuel load”). The ratio of living to dead plant matter is also important. Climate change is deemed to increase wildfire risk significantly during periods of prolonged drought as the moisture content of both living and dead plant matter decreases. The fuel load continuity, both horizontally and vertically, is also an important factor.
- **Weather:** The most variable factor affecting wildland fire behavior is weather. Temperature, humidity, wind, and lightning can affect chances for ignition and spread of fire. Extreme weather, such as high temperatures and low humidity, can lead to extreme wildland fire activity. By contrast, cooling and higher humidity often signal reduced wildland fire occurrence and easier containment. Climate change increases the susceptibility of vegetation to fire due to longer dry seasons.

The frequency and severity of wildland fires is also dependent on other hazards, such as lightning, drought, human causes, and infestations. If not promptly controlled, wildland fires may grow into an emergency or disaster. Even small fires can threaten lives and resources and destroy improved properties; they can also impact transportation corridors and/or infrastructure. In addition to affecting people, wildland fires may severely affect livestock and pets. Such events may require emergency water/food, evacuation, and shelter.

The indirect effects of wildland fires can be catastrophic. In addition to stripping the land of vegetation and destroying forest resources, large, intense fires can harm the soil, waterways, and the land itself. Soil exposed to intense heat may lose its capability to absorb moisture and support life. Exposed soils erode quickly and enhance rivers and stream siltation, thereby enhancing flood potential, harming aquatic life, and degrading water quality. Lands stripped of vegetation are also subject to increased debris flow hazards.

Wildland urban interface (WUI) fires are very difficult to control. Complicating factors are wind, temperature, slope, proximity of structures, and community firefighting capability, as well as building construction and contents. Additional factors facing response efforts are hazardous substance releases, structure collapses, water service interruptions, unorganized evacuations, and loss of emergency shelters. Historical national conflagration examples include the Chicago City Fire of 1871 and the San Francisco City Fire following the 1906 earthquake. In 2018, the deadliest and most destructive wildfire in California encompassed 20,000 acres, killed 85 people, and almost completely incinerated the town of Paradise. The fire was sparked by transmission lines owned by Pacific Gas & Electric. Dry vegetation and high winds caused extreme rates of spread.

When wildland firefighters encounter structure, vehicle, dump or other non-vegetative fires during the performance of their wildland fire suppression duties, firefighting efforts are often limited to wildland areas.

#### *5.3.6.2 Fire Management in Alaska*

Alaska has a Master Cooperative Wildland Fire Management and Stafford Act Response Agreement. As a result, fire management is the responsibility of three agencies: Division of Forestry (DOF), BLM (through the Alaska Fire Service), and U.S. Forest Service (USFS). See Figure 14. Each agency provides firefighting coverage for a portion of the State regardless of land ownership. These agencies have cooperated to develop a state-wide interagency wildland fire management plan. In the Borough, the DOF and the Alaska Fire Service have the responsibility to manage fire response. The DOF operates in five area forestry's: Fairbanks, Southwest, Matanuska-Susitna, Copper River, and Delta. The Alaska Fire Service operates in two BLM zones (Tanana and Military). Figure 15 shows wildfire protection organizations for the Borough.

In 2019, the City of Anderson adopted a Community Wildfire Protection Plan (CWPP) for its entire acreage (Figure 16). The CWPP was approved by the City of Anderson, Clear AFS, the Borough, and DOF. One of the hazard mitigation actions in Section 7 is to develop individual CWPPs for other communities within the Borough. The majority of wildland fire that occur in the Borough are human-caused, and most of these fires are located within the WUI. These fires have the potential to threaten life and property because of their proximity to habitation. The Alaska Interagency Fire Management Plan has mapped all areas in the Borough into one of four fire protection designations or levels: Critical, Full, Modified, or Limited. The jurisdictional agency designates a small portion of the burnable land in the Borough as Limited, and very few fires are ignited in these regions. For private and State lands, the jurisdictional agency is the State of Alaska, and for federal lands, the federal agency for the land is the jurisdictional federal agency.

Alaska's statutory wildfire season normally begins on April 1 and ends on August 31. Extension of the fire season under State law means that small- and large-scale burn permits are required for open debris burning or the use of burn barrels through September 30. With several wildfires burning in Southcentral Alaska in 2019 and high fire danger persisting due to continued warm, dry conditions, the DNR Commissioner announced that Alaska's statutory wildfire season in 2019 would be extended from August 31 to September 30. This was the first time the fire

Figure 14. Alaska Fire Management Options

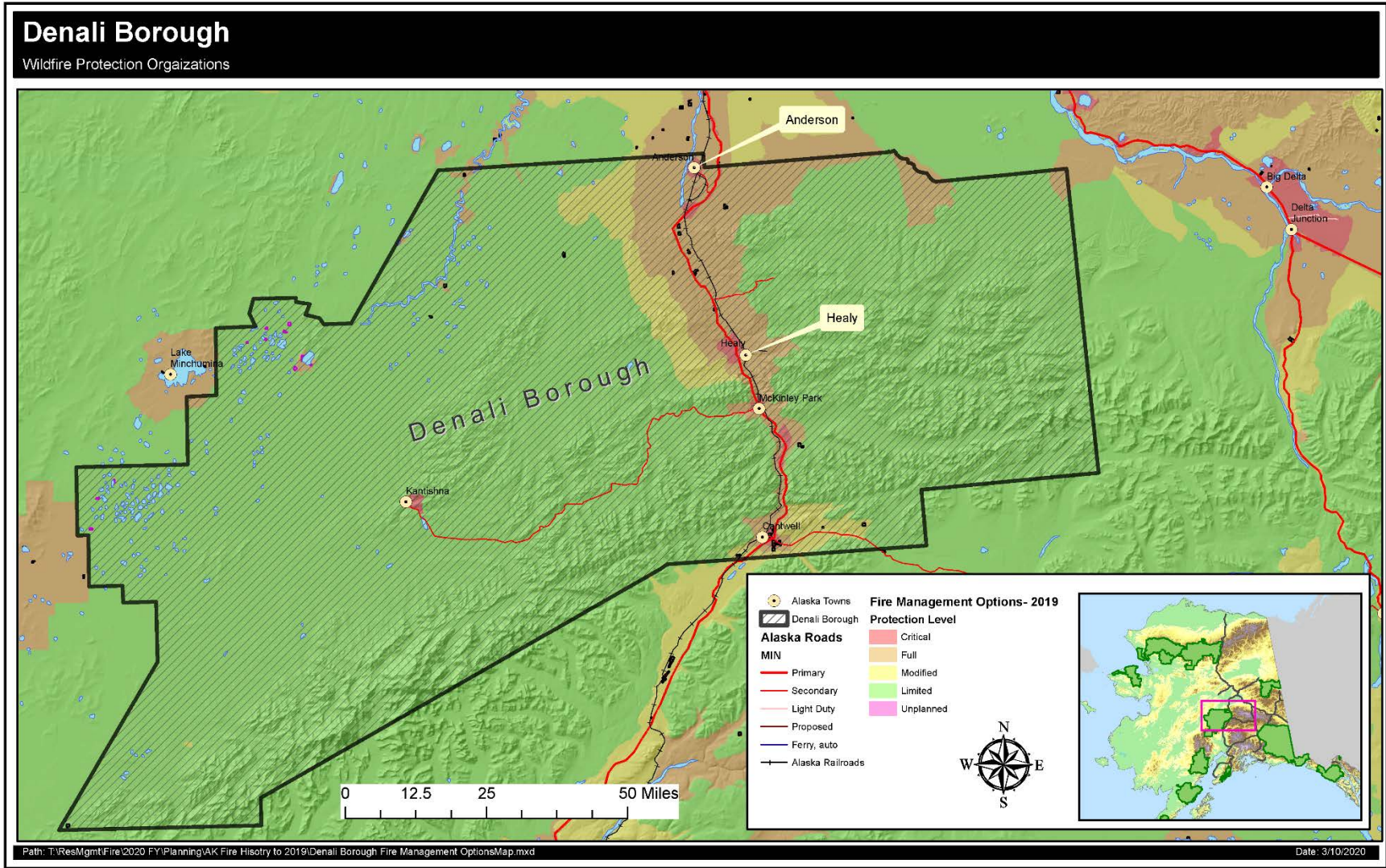


Figure 15. Borough Wild Fire Protection Organizations

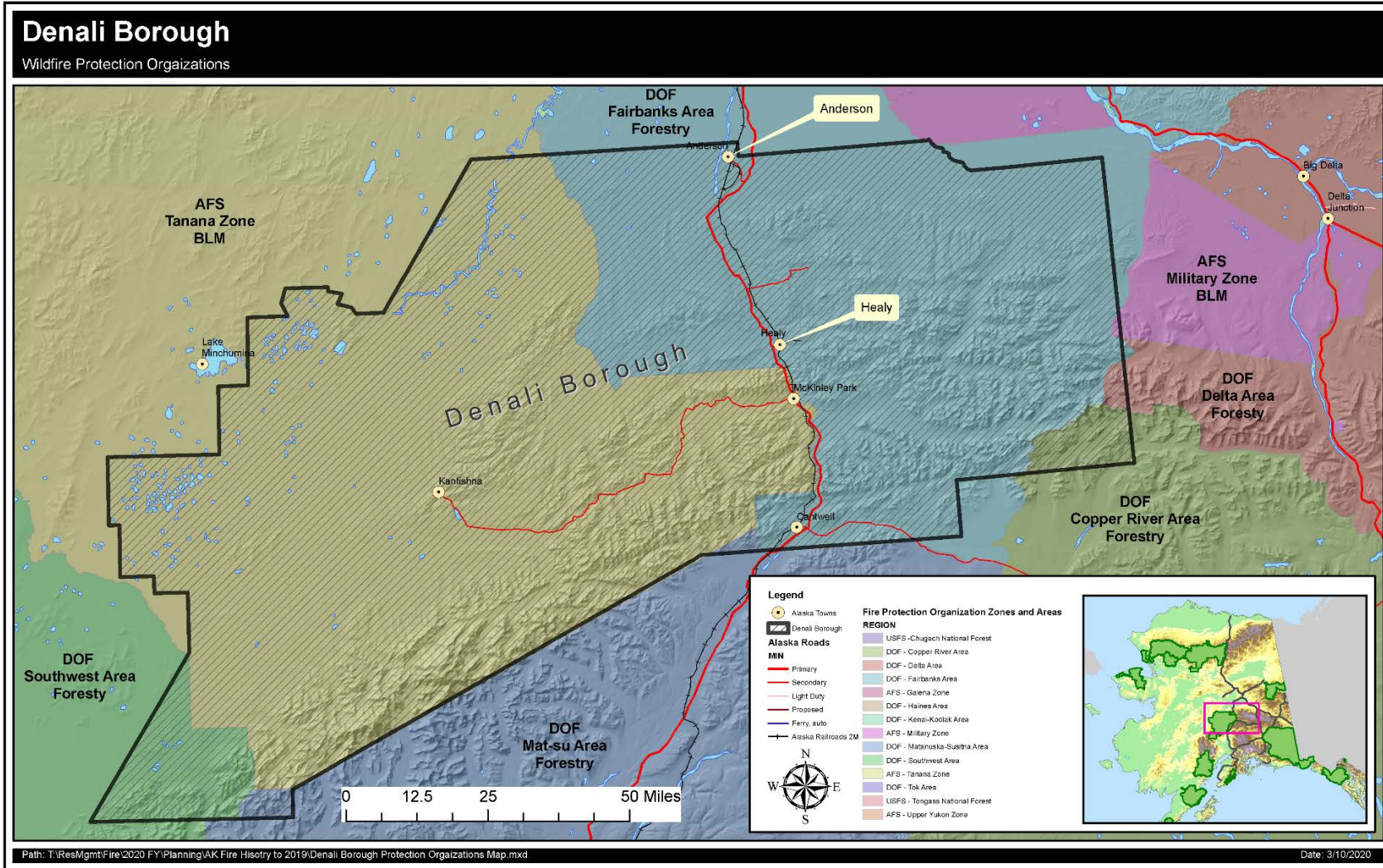
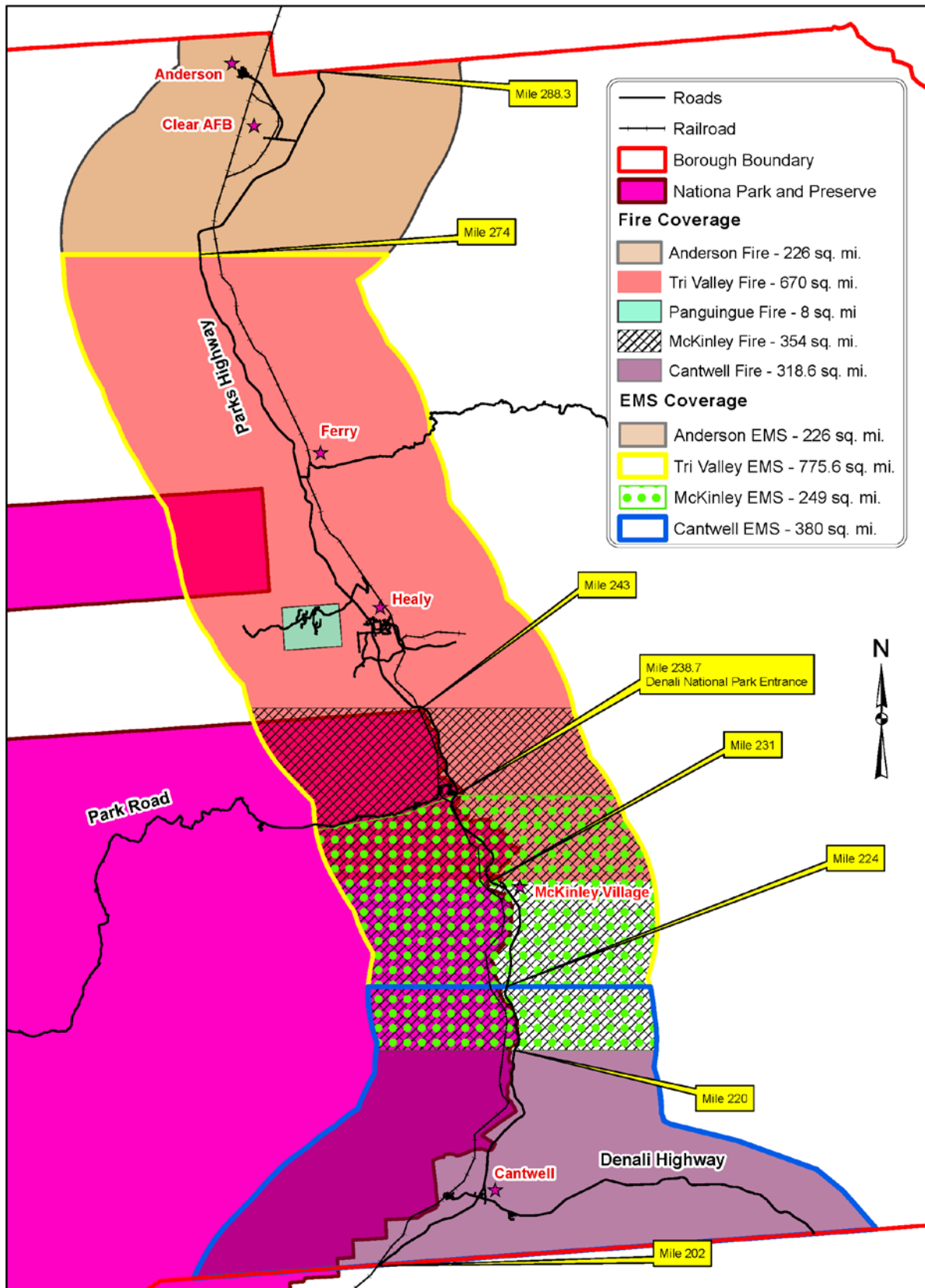


Figure 16. Fire and Emergency Medical Services Coverage Map



season was extended since 2006 legislation shifted the five-month season to start and finish one month earlier. The one-month extension was necessary to ensure public safety. While acreage burned in the 2019 fire season falls well below the record season of 2004, when approximately 6.6 million acres burned, it marked the fifteenth time in 80 years of records that Alaska saw more than two million acres burn in a single season. As of August 30, 2019, 682 fires burned more than 2.5 million acres this season.

#### *5.3.6.3 Climate Factors*

According to the Global Climate Change Impacts in the U.S., published in 2009 by the U.S. Global Change Research Program, “Under changing climate conditions, the average area burned per year in Alaska is projected to double by the middle of this century. By the end of this century, area burned by fire is projected to triple under a moderate greenhouse gas emissions scenario and to quadruple under a higher emissions scenario” (DHS&EM, 2018a).

Since 1990, Alaska has experienced nearly twice the number of wildfires per decade compared to a period from 1950 to 1980. Additionally, the sparsely-populated arctic region experienced only three wildfires over 1,000 acres from 1950 to 1970. Since 2000, there have been over 33 large wildfires in this same region.

#### *5.3.6.4 Hazard History*

Much of the area surrounding the City of Anderson is forested with continuous stands of black spruce. Mixed stands of aspen and spruce are common but have an understory that is well-stocked with black spruce and highly susceptible to wildland fire. The dry weather and black spruce forest in the past years have created a very active fire history. Under natural conditions, these forests will burn, with varying intensity, every 35 to 100 years. Fire has been excluded around the community, leading to the accumulation of hazardous fuels and expansion of forests dominated by black spruce.

The mitigation measures for the Anderson protection area is limited. These measures include water, natural features, and human features. The main water barrier for the community is the Nenana River Slough which runs on the west side of the community and Clear AFS to the south. Human features include the George Parks Highway, Alaska Railroad, and the Clear-Anderson Airstrip.

Interior Alaska fuel types are prone to frequent starts and large fire growth. Table 11 lists the largest wildland fires above 20,000 acres since 1995 that occurred within 100-miles of Healy, the largest population center in the Borough. All of these fires occurred within the last 25 years. Table 12 lists wildland fires within a 10-mile radius of the City of Anderson. Figures 17 and 18 show historical fires for the Borough and ignition sources.

Wildland fire is a Borough-wide risk. It is historically overdue, resulting in undergrowth that is thick and combustible fuel in the form of spruce trees and other highly combustible foliage that surrounds the Borough’s communities, including the City of Anderson. Historical fires, as depicted in Figure 17, have been more prevalent in the northern and western portions of the Borough. However, the road and railroad corridors are areas of concern for human-caused fires that could quickly spread. Anderson’s specific fire risk is discussed in the City of Anderson CWPP. Other areas of particular concern include:



- Cantwell area – from the Nenana River to the Jack River;
- Canyon area where wind can drive fires;
- McKinley Village;
- Kantishna; and
- Healy area – homes in the Jim Creek area and Ferry have limited access.

The 2015 Rex Complex Fire resulted in a State- and Borough-declaration. Two homes and a number of outbuildings were destroyed.

*Table 11. Largest Wildfire Locations Since 1995 within 100-Miles of the Healy*

Fire Name	Fire Year	Estimated Acres	DOF Code	Cause
Boundary	2004	538,652	411193	
Minto Flats South	2009	534,911	911320	
Geskakmina Lake	2005	258,173	231283	
Zitziana	2001	166,232	031238	
Dune Lake	2008	147,524	111025	
Zitziana	2009	141,126	931284	
Toklat	2016	133,857	031128	
George Parks Highway	2006	130,186	611163	Human
Sischu	2004	129,745	232265	
Sischu	2002	128,983	232265	Lightning
Wood River 1	2009	125,381	911425	Lightning
Survey Line	2006	116,504	131247	
Highpower Creek	2005	115,878		
Milepost 78	2007	113,830	231175	
Rex Creek	2009	101,498	911527	Lightning
Stuart Creek 2	2013	87,154	332280	
No Name	2004	84,784	111246	
100-Mile Creek	1996	79,733	632321	Blasting
Mississippi	2013	67,338	332117	Incendiary
Lloyd	2015	66,268	531580	
Spurs	2002	64,832	232069	Human
Beaver Log Lakes	2013	64,416	331360	Lightning
Sandless Lake	2013	62,318		Lightning
Oklahoma	2014	56,564	332360	Prescribed
Carla Lake	1998	54,432	832188	Lightning
Bear Creek	2009	50,897	931285	
Foraker	2019	49,258	932389	
DTAW Oklahoma Impact Area RX	2017	48,545	710G	

Dry Creek	2012	47,154	232275	
Carlson Lake	2015	46,543		
Toklat 2	2016	38,368	031899	
Oklahoma 2	2009	38,398		
Blair	2015	37,597	511440	
Bear Paw Mountain	2008	36,777	032286	
Chitanatala	2010	36,633	031222	
Oregon Lakes	2019	34,741	932077	
Lloyd Mountain	2019	34,328	931361	
Moving River	2013	34,176	332359	
Toklat River East	2013	33,279	332429	
Tors	2006	31,729	411477	
Aggie Creek	2015	31,699	511515	
Little Delta	2007	31,563	711048	
Kantishna River	2009	31,338	931155	
Little Creek	2011	26,201	131264	
John Hansen Lake	2005	26,032		
DTAW Oklahoma Impact Area RX 2018	2018	25,852		
John Hansen Creek	2005	25,666	232275	
Baker	2015	24,179	531456	
Coal Creek	2011	23,918	111171	
100-Mile Creek	2014	23,270	432100	
Hastings	2011	23,110	111271	
Shovel Creek	2019	22,488	911319	
Mooseheart	2007	21,508	731164	
Oklahoma Range RX	2004	21,303	434008	
Oklahoma Range RX	2007	20,199		
Cosna River	2007	20,720	531292	
Foraker Pond	2009	20,277	931283	
Rex Complex Fire	2015	+20,000		Lightning

Table 12. Largest Wildfire Locations within 100-Miles of Anderson

Fire Name	Fire Year	Estimated Acres	DOF Code	Cause
Boundary	2004	538,652	411193	
Minto Flats South	2009	534,911	911320	Lightning
Geskakmina Lake	2005	258,173	231283	
Hess Creek	2019	49,528	931324	
Zitziana	2001	166,232	031238	
Beaver Creek	2005	164,732	532320	
Titna River	2009	164,542		
Dune Lake	2008	147,524	111025	
Zitziana	2009	141,126	931284	
Toklat	2016	133,857	031128	
George Parks Highway	2006	130,186	611163	Human
Sischu	2004	129,745	232265	
Wood River 1	2009	125,381	911425	Lightning
Erickson Creek	2007	118,941	331299	
Survey Line	2006	116,504	131247	
Milepost 78	2007	113,830	231175	
Fish Creek	2007	108,482	531269	
Big Mud River 1	2015	103,968		
Rex Creek	2009	101,498	911527	Lightning
Spicer Creek	2015	98,247	532333	
Grand Creek	2004	96,104		
Hay Slough	2015	91,444		
Stuart Creek 2	2013	87,154	332280	
Stevens Creek 1	2009	85,909	931293	
No Name	2004	84,784	111246	
100-Mile Creek	1996	79,733	632321	Blasting
Zitziana River	2018	71,942	831133	
Mississippi	2013	67,338	332117	Incendiary
Lloyd	2015	66,268	531580	
Spurs	2002	64,832	232069	Human
Beaver Log Lakes	2013	64,416	331360	Lightning
Boney Creek	2007	64,402	532276	
Sandless Lake	2013	62,318	323360	Lightning
Chitanana River	1999	59,071	632482	
Oklahoma	2014	56,564	332360	Prescribed
Mooseheart	2018	54,931	831204	

Carla Lake	1998	54,432	832188	Lightning
Bear Creek	2009	50,897	931285	
Foraker	2019	49,258	932389	
DTAW Oklahoma Impact Area RX	2017	48,545	710G	
Grouse Creek	2019	48,465	932485	
Dry Creek	2012	47,154	232275	
Carlson Lake	2015	46,543		
Harper Bend	2015	43,378		
Chitanana River	2015	43,200		
Big Mud	2004	40,439	331331	
Chitanana River	2007	39,375		
Toklat 2	2016	38,368	031899	
Oklahoma 2	2009	38,398		
Blair	2015	37,597	511440	
Bear Paw Mountain	2008	36,777	032286	
Chitanatala	2010	36,633	031222	
Oregon Lakes	2019	34,741	932077	
Lloyd Mountain	2019	34,328	931361	
Moving River	2013	34,176	332359	
Mud Fork	2004	33,951	431494	
Toklat River East	2013	33,279	332429	
Aggie Creek	2015	31,699	511515	
Little Delta	2007	31,563	711048	
Tors	2006	31,729	411477	
Kantishna River	2009	31,338	931155	
Crash Creek	2009	29,060		
Little Creek	2011	26,201	131264	
DTAW Oklahoma Impact Area RX 2018	2018	25,852		
John Hansen Creek	2005	25,666	232275	
Wein Lake	1996	24,605	632469	
Baker	2015	24,179	531456	
Coal Creek	2011	23,918	111171	
100-Mile Creek	2014	23,270	432100	
Hastings	2011	23,110	111271	
Shovel Creek	2019	22,488	911319	
West Fork Chena	2004	22,272	211182	

McCormick	2015	21,867		
Marshall Creek	1999	21,643	931378	
TAL NE 37	1997	21,585		
Mooseheart	2007	21,508	731164	
Oklahoma Range RX	2004	21,303	434008	
Cosna River	2007	20,720	531292	
Foraker Pond	2009	20,277	931283	
Oklahoma Range RX	2007	20,199		

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Figure 17. Historical Borough Wildfires

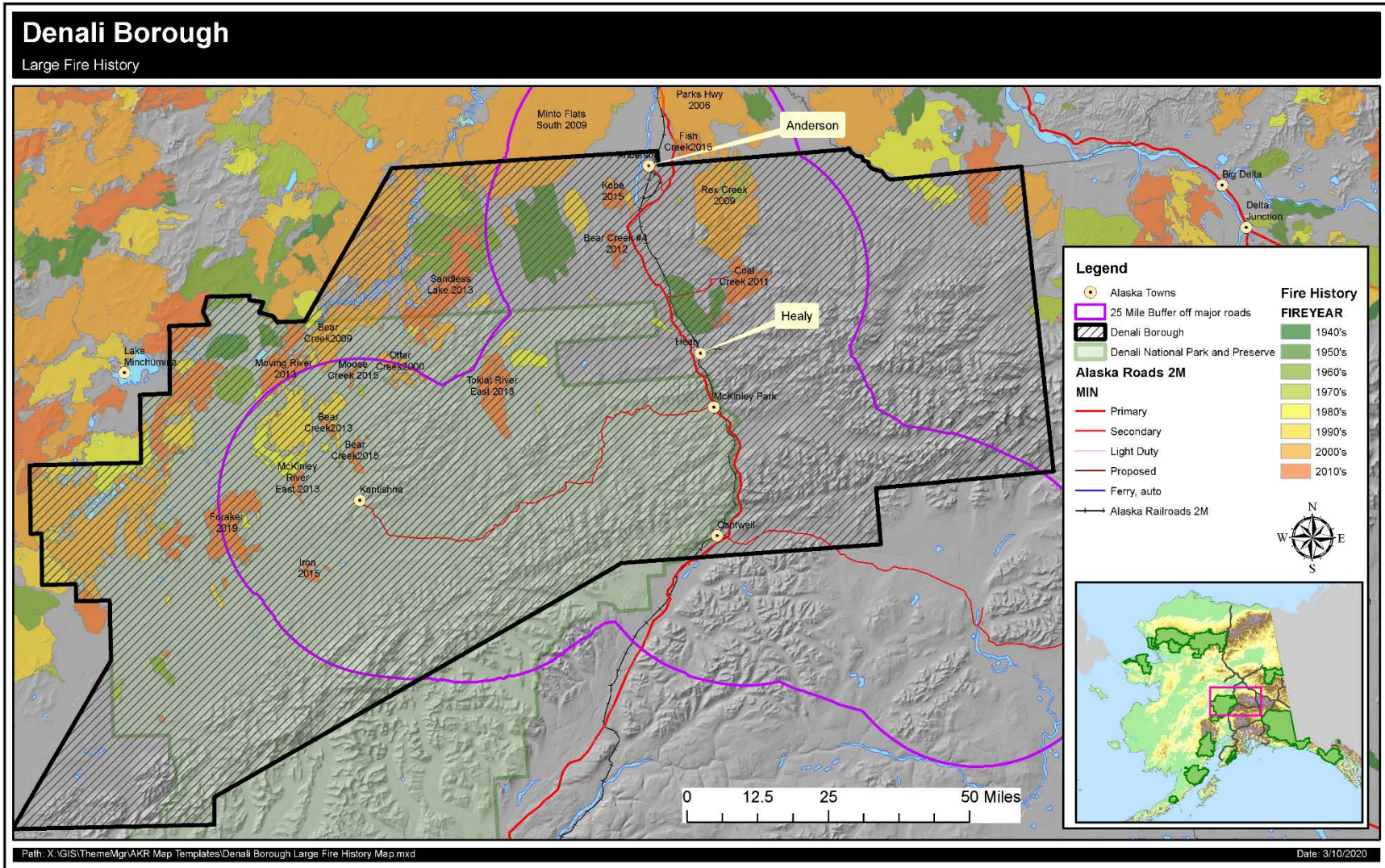
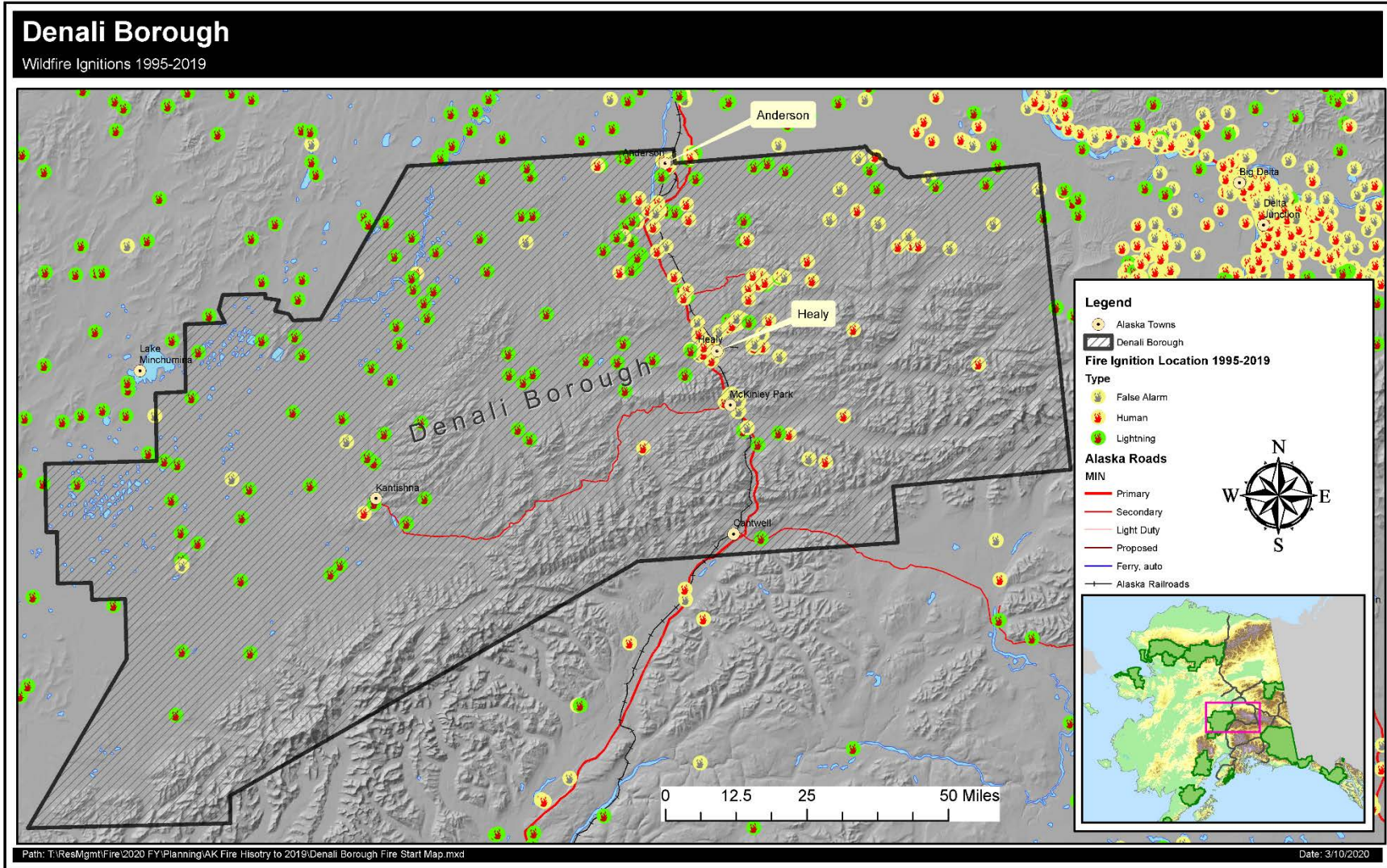


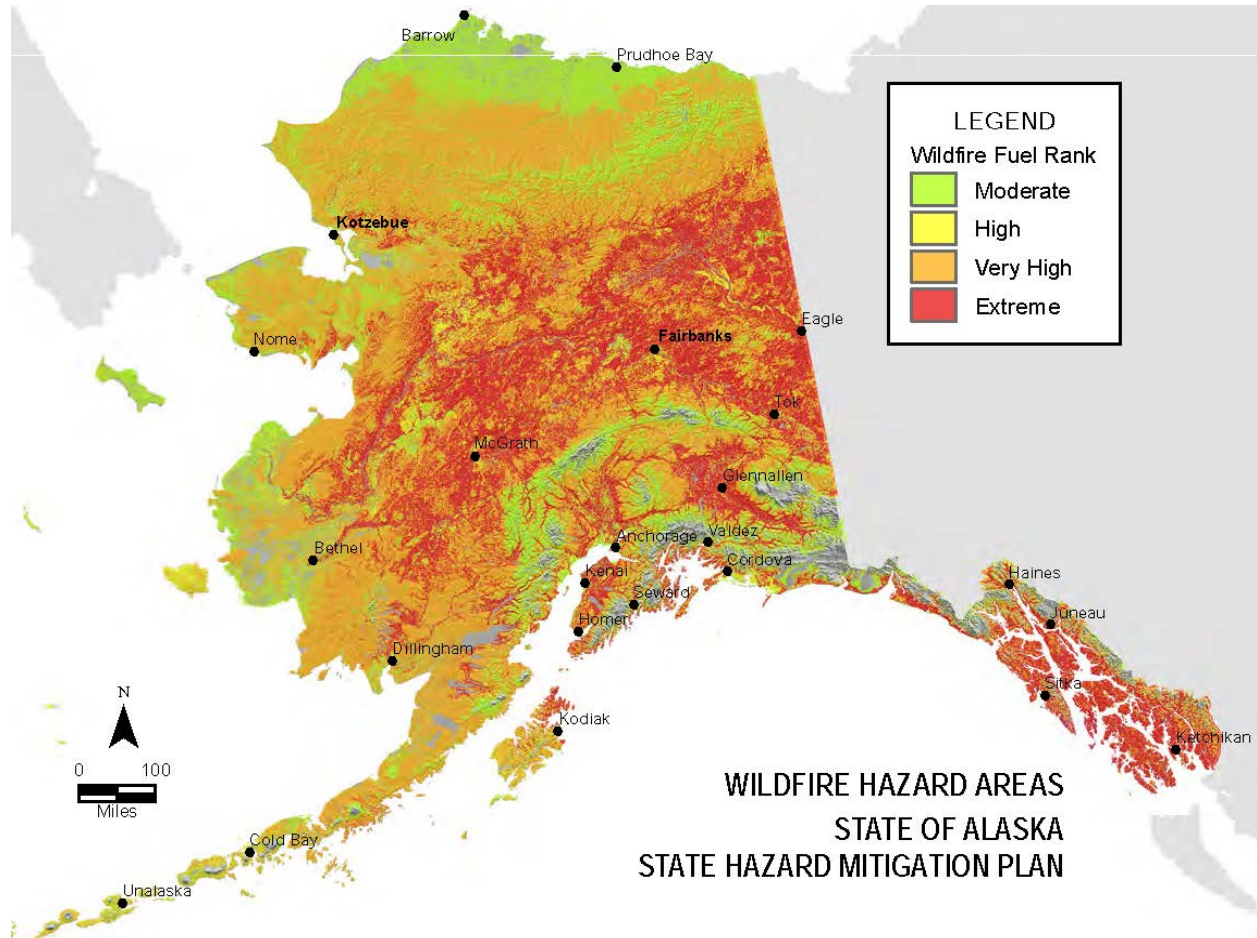
Figure 18. Fire Ignitions Sources, 1995-2019 Map



### 5.3.6.5 Location

The Borough and the City of Anderson have a very high to extreme risk for wildland fires (Figure 19). Figures 20 and 21 contain wildfires occurring within a 100-mile buffer of Anderson and Healy, respectively. Figure 22 contains a map of Alaska with areas infested by Spruce Bark Beetles highlighted in purple.

Figure 19. Wildland Fire Risk



### 5.3.6.6 Extent

Generally, the core fire season for the Borough is from June 1st to July 31st. Rain typically starts in the late summer and early fall, which reduces the chance of fire ignitions. However, various other factors, including humidity, wind speed and direction, fuel load and type, and topography can contribute to the intensity and spread of fires. The common causes of fires in Alaska include lightning strikes and human negligence.

Fuel, weather, and topography influence fire behavior. Fuel (e.g., slash, dry undergrowth, flammable vegetation) determines how much energy the fire releases, how quickly the fire spreads, and how much effort is needed to contain the fire. Weather is the most variable factor. High temperatures and low humidity encourage fire activity while low



Figure 20. Anderson 100-Mile Buffer

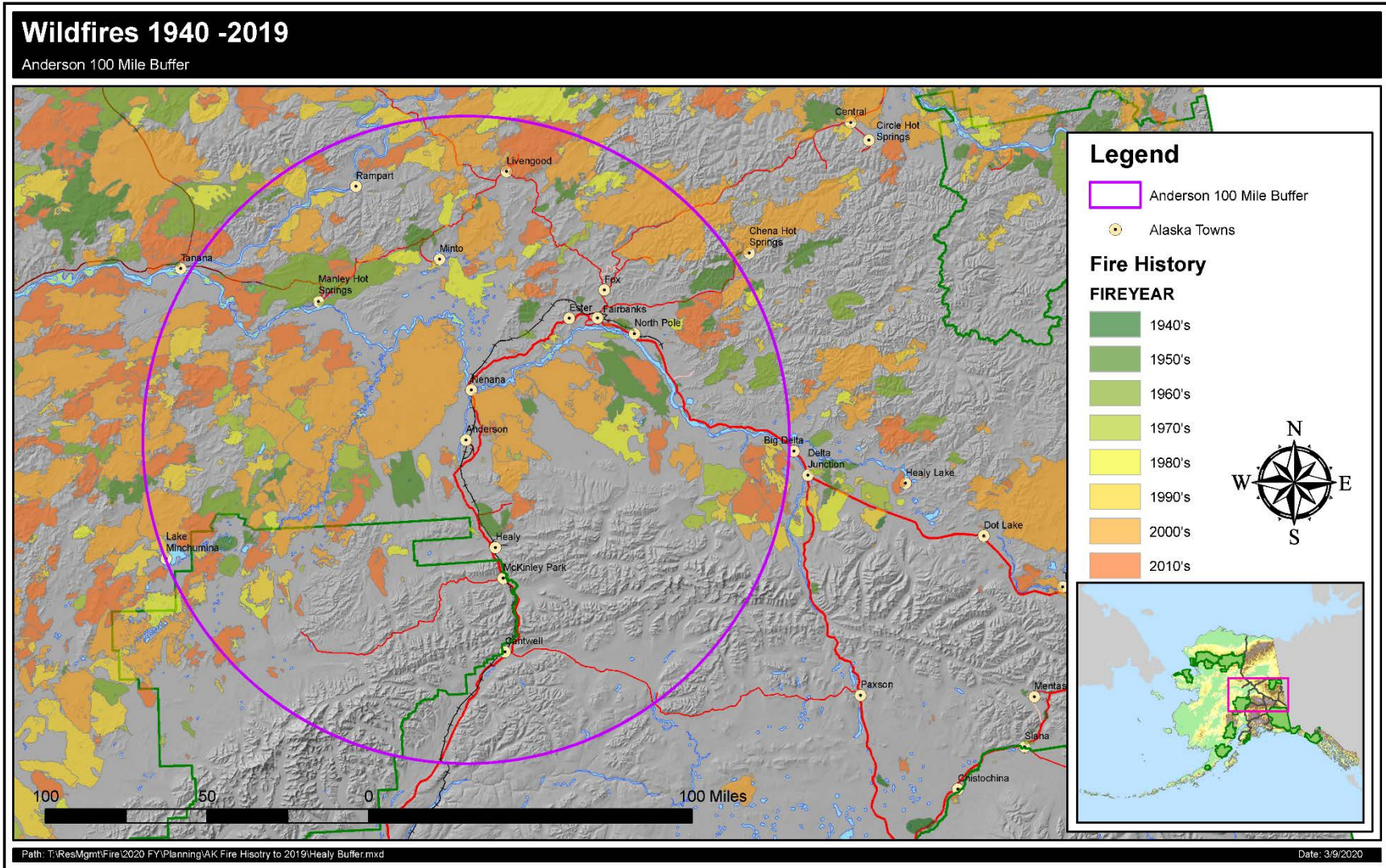


Figure 21. Healy 100-Mile Buffer

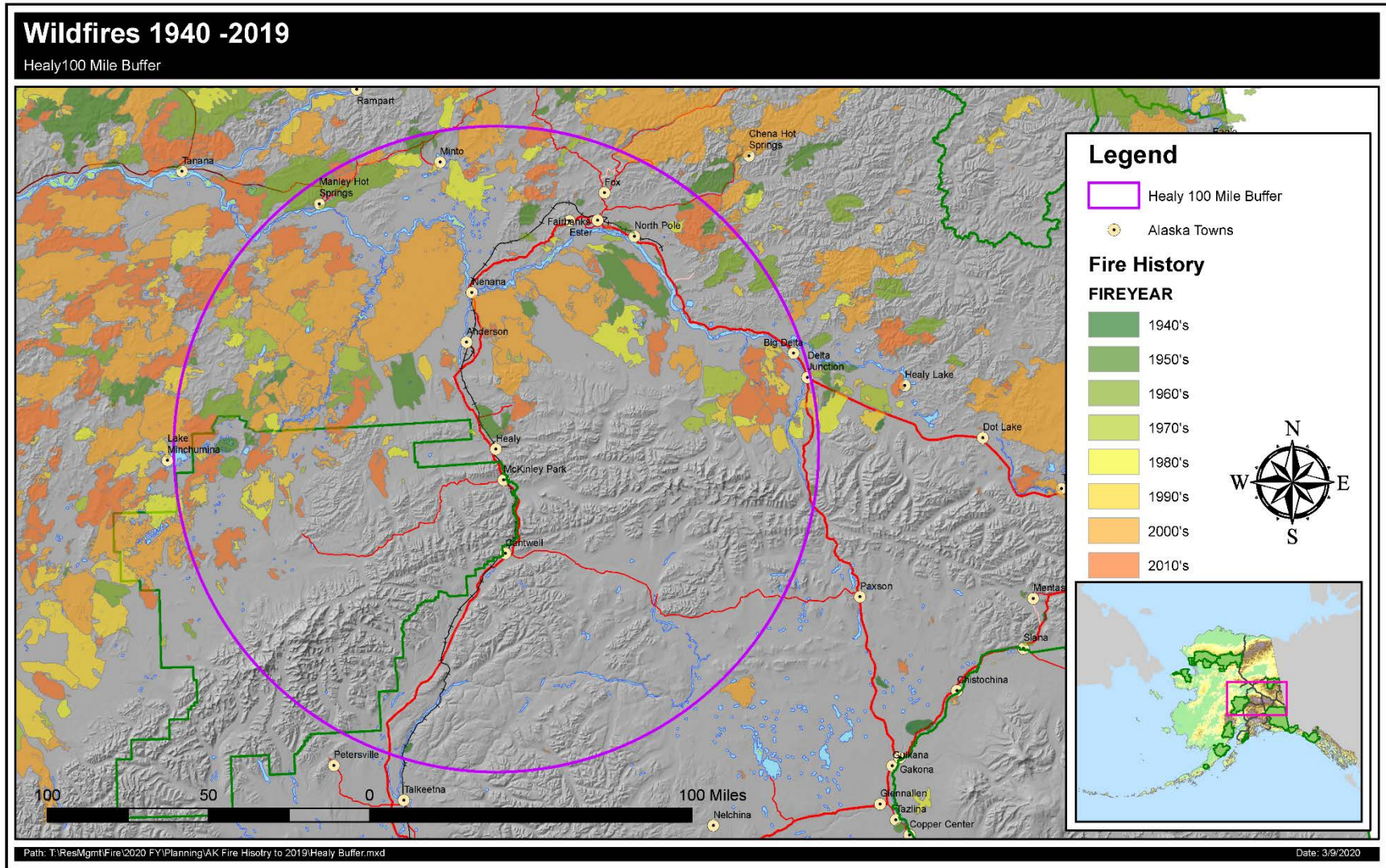
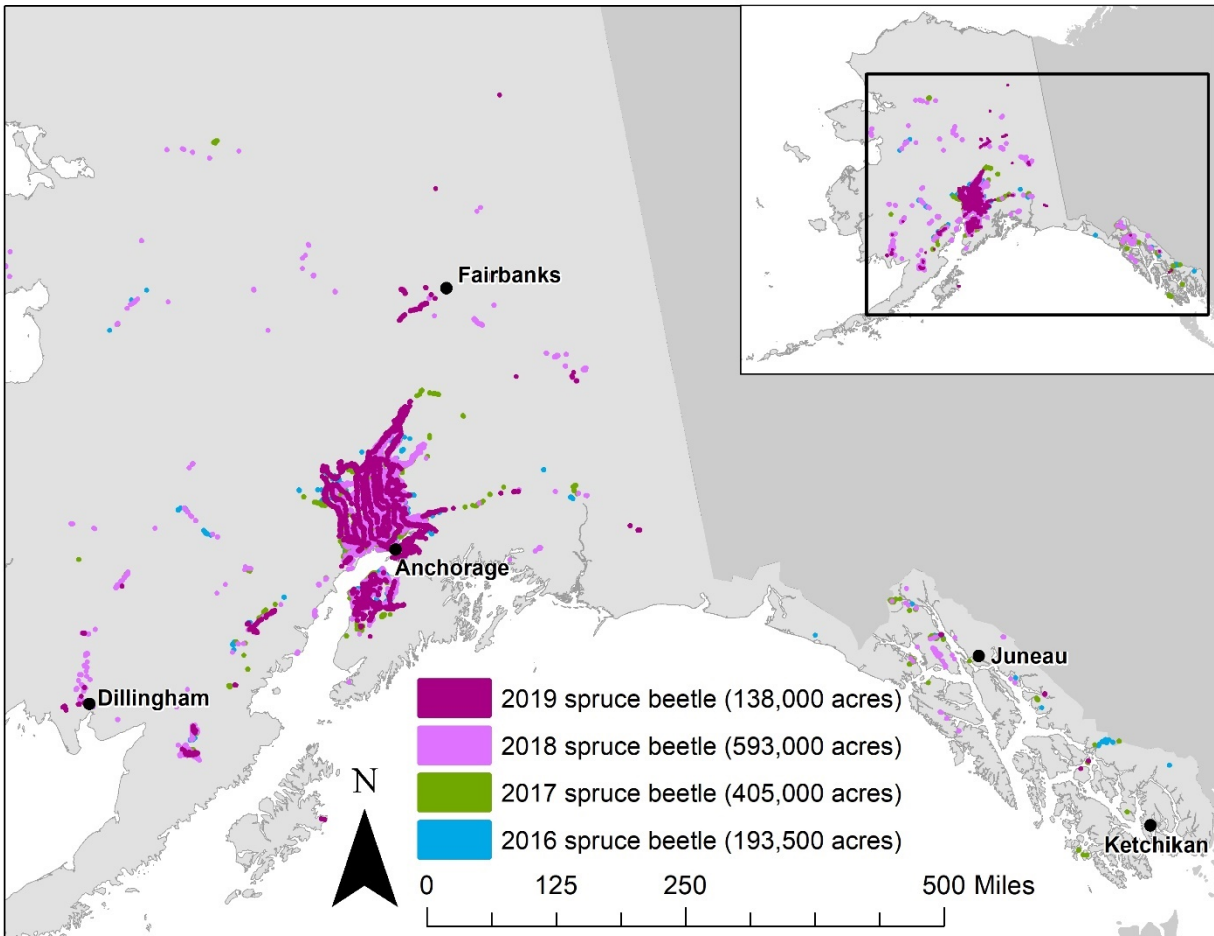


Figure 22. Spruce Bark Beetle Map



temperatures and high humidity retard fire spread. Wind affects the speed and direction of fire spread. Topography directs the movement of air, which also affects fire behavior. When the terrain funnels air, as happens in a canyon, it can lead to faster spreading. Fire also spreads up slope faster than down slope.

The fuels in the Borough and the City of Anderson are mostly thick, green forests of black and white spruce. Spruce forests, whether live or dead, are both flammable and provide radiant heat and ember spot fires that advance fire through air convection.

#### 5.3.6.7 Impact

As of November 23, 2019, wildfires burned more than 2.68 million acres during the 2019 wildfire season in Alaska. The cost of fighting 2019's Alaska wildfires topped \$300 million, and State and Local officials say the final tally may not be known for years (ADN, 2019). This total does not include the cost to Alaskans who saw their land torched and their homes burned. Through November 21, Alaska DOF recorded \$224.9 million in firefighting expenses for 2019. The U.S. Department of Interior reported \$72 million. The USFS—an agency of the U.S. Department of Agriculture—reported \$7 million in expenses through November 18, 2019.

Impacts of a wildland fire that interfaces with the population center could grow into an

emergency or disaster if not properly controlled. A small fire can threaten lives, homes, resources, and destroy property. In addition to impacting people, wildland fires may severely impact livestock and pets. Such events may require emergency watering and feeding, evacuation, and alternative shelter.

Indirect impacts of fires can be catastrophic. In addition to stripping the land of vegetation and destroying forest resources, large, intense fires can harm the soil, waterways, and the land itself. Soil exposed to intense heat may lose its capability to absorb moisture and support life. Exposed soils erode quickly and enhance siltation of rivers and streams, thus increasing flood potential, harming aquatic life, and degrading water quality.

The City of Anderson is surrounded by highly flammable spruce forest through which fire travels quickly. Fire could destroy the entire community of Anderson, especially if the fire is wind-driven. Additionally, the community could easily be cut off from egress as there is only one road connecting Anderson to the George Parks Highway. If fire causes this road to be impassible, there is no way for residents to evacuate the community.

#### *5.3.6.8 Recurrence Probability*

Increased community development, fire fuel accumulation, and weather pattern uncertainties indicate that fires will continue in the future. The probability of future events is highly likely.

## 6.0 Vulnerability Analysis

This section provides an overview of the vulnerability analysis.

<b>DMA 2000 Requirements</b>
<p><b>Assessing Risk and Vulnerability, and Analyzing Development Trends</b></p> <p><b>§201.6(2)(ii):</b> The risk assessment shall include a] description of the jurisdiction’s vulnerability to the hazards described. This description shall include an overall summary of each hazard and its impact on the community. The plan should describe vulnerability in terms of:</p> <p><b>§201.6(2)(ii)(A):</b> The types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas;</p> <p><b>§201.6(2)(ii)(B):</b> An estimate of the potential dollar losses to vulnerable structures identified in ... this section and a description of the methodology used to prepare the estimate; and</p> <p><b>§201.6(2)(ii):</b> Providing a general description of land uses and development trends within the community so that mitigation options can be considered in future land use decisions.</p>
<b>1. REGULATION CHECKLIST</b>
<b>ELEMENT B. Hazard Identification and Risk Assessment</b>
<p>B3. Is there a description of each identified hazard’s impact on the community as well as an overall summary of the community’s vulnerability for each jurisdiction? <b>[Requirement §201.6(2)(ii)]</b></p> <p>B4. Does the plan address NFIP-insured structures within each jurisdiction that have been repetitively damaged by floods? <b>[Requirement §201.6(2)(ii)]</b></p>
<b>ELEMENT D. Assessing Vulnerability, Analyzing Development Trends</b>
<p>D1. Was the plan revised to reflect changes in development? <b>[Requirement §201.6(d)(3)]</b></p> <p>D2. Was the plan revised to reflect progress in local mitigation efforts? <b>[Requirement §201.6(d)(3)]</b></p>
<b>Source: FEMA, 2015.</b>

### 6.1 Overview of a Vulnerability Analysis

A vulnerability analysis predicts the extent of exposure that may result from a hazard event of a given intensity in a planning area. The analysis provides quantitative data that may be used to identify and prioritize potential mitigation measures by allowing communities to focus attention on areas with the greatest risk of damage. A vulnerability analysis is divided into eight steps:

1. Asset Inventory;
2. Asset Exposure Analysis;
3. Repetitive Loss Properties;
4. Land Use and Development Trends;
5. Vulnerability Analysis Methodology;

6. Data Limitations;
7. Vulnerability Exposure Analysis; and
8. Future Development.

Table 13 summarizes the Borough’s and City of Anderson’s hazard vulnerabilities.

*Table 13. Hazard Identification by Area*

Natural Hazards Profiles	Borough-Wide	Anderson	Cantwell	Ferry	Healy	McKinley Village
Earthquake	Yes	Yes	Yes	Yes	Yes	Yes
Flood	No	Yes	No	Yes	Yes	Yes
Severe Weather	Yes	Yes	Yes	Yes	Yes	Yes
Changes in the Cryosphere	Yes	Yes	Yes	Yes	Yes	Yes
Ground Failure	No	No	No	No	Yes	Yes
Wildland and Conflagration Fire	Yes	Yes	Yes	Yes	Yes	Yes

## 6.2 Vulnerability Analysis: Specific Steps

### 6.2.1 Asset Inventory

Asset inventory is the first step of a vulnerability analysis. Assets that may be affected by hazard events include population (for community-wide hazards), residential buildings (where data is available), and critical facilities and infrastructure. The assets and associated values throughout the Borough are identified in the following subsections.

### 6.2.2 Population and Building Stock

The 2018 certified population for the Borough is 1,825. Individual community populations and residential buildings are provided in Table 14.

*Table 14. Estimated Population and Building Inventory*

Community	Population		Residential Buildings	
	2010 Census	DCCED 2018 Data	Total Building Count	Total Value of Buildings <sup>1</sup>
Denali Borough	1,826	1,825	1,627	\$309,455,400
Anderson	246	269	147	\$27,959,400
Cantwell	219	202	214	\$40,702,800
Ferry	33	30	33	\$6,276,600
Healy	1,021	1,057	736	\$139,987,200
McKinley Village/Denali Park Area	N/A	192	167	\$31,763,400

Sources: The Denali Borough, City of Anderson, and 2018 U.S. Census Bureau.

<sup>1</sup> The 2018 *Denali Borough Land Use and Economic Development Plan* provided a median home value of \$190,200. This value has been assumed for all communities within the Borough as an estimate.

<sup>2</sup> McKinley Village/Denali National Park Area was not a viable option for the 2018 U.S. Census Bureau. The number 167 is from the 2010 HMP.

### 6.2.3 Repetitive Loss Properties

Neither the Borough nor the City of Anderson participate in the NFIP.

### 6.2.4 Existing Critical Facilities and Infrastructure

Critical infrastructure is defined as a facility that provides essential products and services to the general public, such as preserving quality of life while fulfilling important public safety, emergency response, and disaster recovery functions. Critical facilities and infrastructure for the Borough are profiled in this HMP Update and include the following (see also Table 15):

- Government: Borough and City administrative offices;
- Emergency Response: including fire personnel services and fire-fighting equipment;
- Health Care: medical clinics; and
- Community Gathering Places.

Table 15. Alaska’s Critical Infrastructure

• Hospitals, Clinics, & Assisted Living Facilities	• Satellite Facilities	• Power Generation Facilities	• Oil & Gas Pipeline Structures & Facilities	• Schools
• Fire Stations	• Radio Transmission Facilities	• Potable Water Treatment Facilities	• Service Maintenance Facilities	• Community Washeterias
• Police Stations	• Highways and Roads	• Reservoirs & Water Supply Lines	• Community Halls & Civic Centers	• National Guard Facilities
• Emergency Operations Centers	• Critical Bridges	• Waste Water Treatment Facilities	• Community Stores	• Landfills & Incinerators
• Any Designated Emergency Shelter	• Airports	• Fuel Storage Facilities	• Community Freezer Facilities	• Community Cemeteries
• Telecommunications Structures & Facilities		• Harbors / Docks / Ports		

The Borough encompasses a large area of 12,637 square miles but is not densely populated. In its small, widely scattered communities, all existing infrastructure is important, and the loss of facilities or homes could be devastating to the community. Tables 16, 17, and 18 include a list of facilities, utilities, and businesses in the Borough and City of Anderson, and whether, based on its location, each has a low, moderate, or high vulnerability to specific natural hazards. Figures 23 to 26 show maps of infrastructure within the Borough and City of Anderson.

The Borough provides very limited services to its communities; unincorporated communities provide local services via pass-through grants or State assistance. Community interaction with the Borough government centers on the distribution of funds to local entities providing local services. The Borough does not have property tax and does not track number of occupants, physical addresses, latitudes and longitudes, appraisal values, or building types. The City of Anderson also provides limited services to its residents.

Most homes in the City of Anderson have individual wells and plumbing. A water and wastewater system have been installed since the 2010 HMP. The City operates an RV lagoon and sludge disposal site. Anderson has a preschool through 12<sup>th</sup> grade school. The City of Anderson has a health clinic that is staffed once a month by a dentist and rural nurse

practitioner. Severe medical emergencies are handled by the Clear AFS Emergency Care Center. The community is classified as an isolated village; emergency services have highway and air access.

The majority of households in Cantwell have individual wells and septic systems. Over 50% of households have complete plumbing. The community is home to Cantwell School which is a kindergarten through 12<sup>th</sup> grade school. Cantwell is classified as an isolated village; emergency services are provided by a health aide at the Cantwell Clinic.

About 75% of Ferry households haul water and use outhouses or leachfields. The rest have individual water wells and septic tanks. Nearly 30% of homes are plumbed.

The majority of Healy residents use individual wells and septic systems; over 80% of residences are fully plumbed. GVEA operates a coal power plant with diesel generator backup. School age children within the community attend the Tri-Valley Kindergarten through 12<sup>th</sup> grade school. Healy is classified as an isolated town; emergency services have highway and air access. The private clinic, Interior Community Health Center, is not a qualified emergency care center.

The majority of homes in the McKinley Village/Denali Park Area are not plumbed; residents haul water and use outhouses. McKinley Village/Denali Park Area is classified as an isolated village; emergency services have highway and air access. The nearest clinic is in Healy.

### **6.2.5 Methodology**

A conservative exposure-level analysis was conducted to assess the risks of the identified hazards. This analysis is a simplified assessment of the potential effects of the hazards on values at risk without consideration of probability or level of damage.

The analysis simply represents the number of people at risk; no estimate of the number of potential injuries or deaths was prepared.

### **6.2.6 Data Limitations**

The vulnerability estimates provided herein use the best data currently available, and the methodologies applied result in a risk approximation. These estimates may be used to understand relative risk from hazards and potential losses. However, uncertainties are inherent in any loss estimation methodology, arising in part from incomplete scientific knowledge concerning hazards and their effects on the built environment as well as the use of approximations and simplifications that are necessary for a comprehensive analysis.

It is also important to note that the quantitative vulnerability assessment results are limited to the exposure of people, residences, and critical facilities and infrastructure to the identified hazards. It was beyond the scope of this HMP to develop a more detailed or comprehensive assessment of risk (including annualized losses, people injured or killed, shelter requirements, loss of facility/system function, and economic losses). Such impacts may be addressed with future updates of the HMP.



Table 16. Hazard Vulnerabilities for Critical Facilities & Infrastructure for Government, Medical, and Emergency Services

Sector	Government		Medical		Emergency Services						
Facility	Borough Offices	City Hall	Interior Community Health Center	Cantwell Clinic	Tri-Valley Volunteer Fire Department/ EMS	Anderson Volunteer Fire Department	Cantwell Volunteer Fire Department	Panguingue Fire Brigade Hall	McKinley Fire Brigade Hall	Healy Trooper Post	Cantwell Trooper Post
Owner	Tri-Valley Fire Department	City of Anderson	Private	Village Council	Tri-Valley Fire Department	Volunteer Fire Department	Volunteer Fire Department	Panguingue Home-owners' Association	McKinley Park Community Center	Tri-Valley Fire Department	State of Alaska
Location	Healy	Anderson	Healy	Cantwell	Healy	Anderson	Cantwell	Healy	McKinley Village	Healy	Cantwell
Cost		300,000									
Changes in the Cryosphere	L	L	L	L	L	L	L	M	L	M	L
Earthquakes	H	L	H	H	H	H	H	M	H	M	H
Flood	L	L	L	L	L	L	L	L	L	L	L
Ground Failure (Landslide/Debris Flow)	L	N/A	L	L	L	L	L	L	L	L	L
Severe Weather	H	M	H	H	H	H	H	H	H	H	H
Wildfire and Conflagration Fires	M	H	M	M	M	M	M	H	M	H	M

Table 17. Hazard Vulnerabilities for Critical Facilities and Infrastructure for Education, Community, and Utilities

Sector	Education			Community			Utilities				
Facility	Anderson School	Cantwell School	Tri-Valley School	Tri-Valley Community Center	Cantwell Community Center	Denali Park Community Center	City Sewer	Electrical Grid	Landfill	Transfer Station	Transfer Station
Owner	Denali Borough School District	Denali Borough School District	Denali Borough School District		Ahtna	McKinley Park Community Club	City of Anderson	Golden Valley Electric Association	Borough	Borough	Borough
Location	Anderson	Cantwell	Healy	Healy	Cantwell	McKinley Village/Park Area	Anderson	Borough-wide	South of Anderson	Healy	Cantwell
Changes in the Cryosphere	L	L	L	L	L	L	M	M	L	L	L
Earthquakes	L	L	L	H	H	H	M	M	M	H	H
Flood	L	H	H	L	L	L	H	H	L	L	L
Ground Failure (Landslide/Debris Flow)	L	L	L	L	L	L	L	L	L	L	L
Severe Weather	N/A	L	L	H	H	H	L	L	M	H	H
Wildfire and Conflagration Fires	M	H	H	M	M	M	M	M	M	M	M

Table 18. Hazard Vulnerabilities for Critical Facilities and Infrastructure for Transportation and Essential Businesses

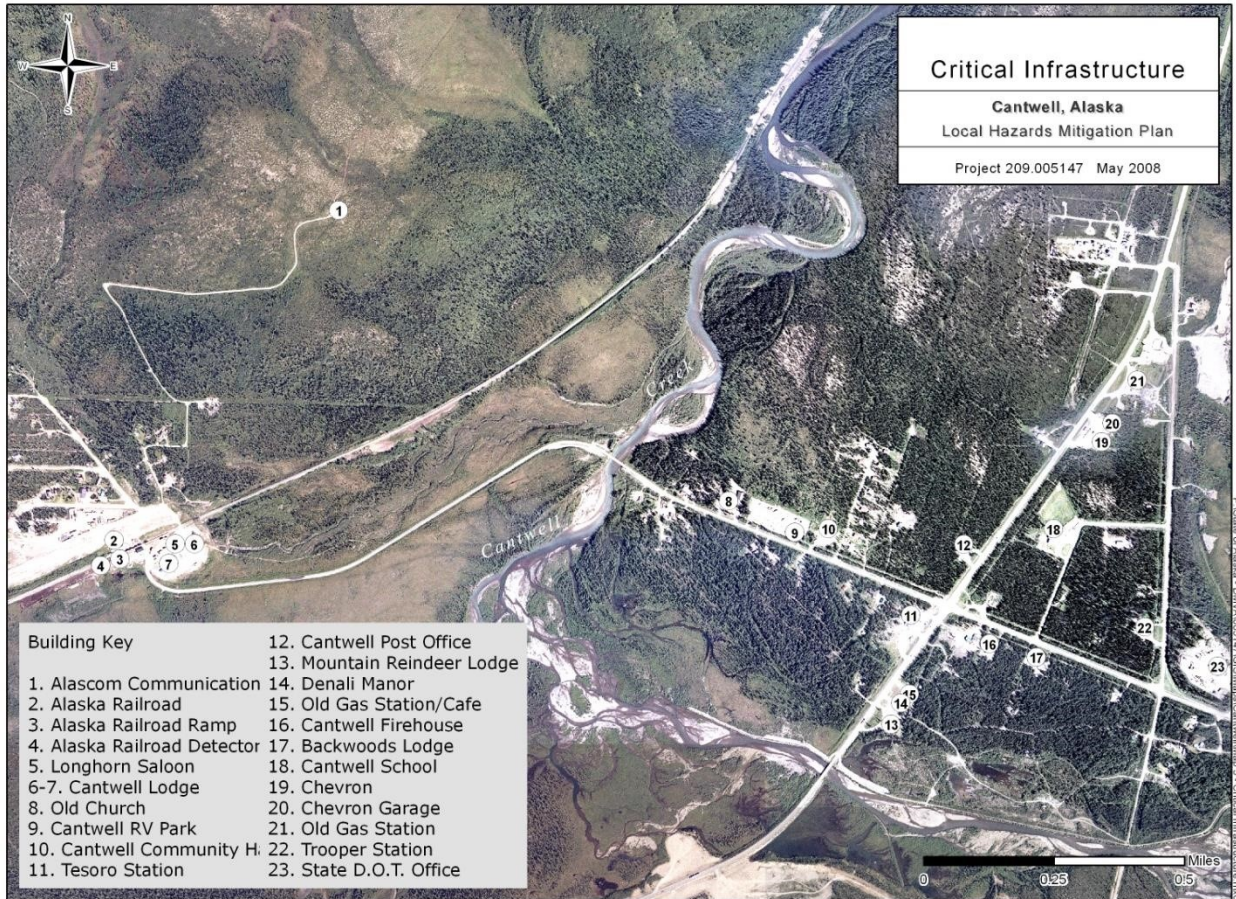
Sector	Transportation			Essential Businesses		
Facility	Airstrip	George Parks Highway	Airport	Usibelli Coal Mine	Clear AFS	Three Bears Grocery Store
Owner	ADOT&PF	ADOT&PF	Unknown	Usibelli	U.S. Air Force	Private
Location	Healy	Connects most Communities	Anderson/Clear	Healy	Anderson	Healy
Changes in the Cryosphere	L	L	L	L	L	L
Earthquakes	H	H	L	H	H	H
Flood/Erosion	M	L	L	M	M	M
Ground Failure (Landslide/Debris Flow)	L	L	N/A	L	L	L
Severe Weather	H	H	M	H	H	H
Wildfire and Conflagration Fires	M	M	H	M	M	M

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Figure 23. Anderson Map



Figure 24. Cantwell Map



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Figure 25. Healy Map



Figure 26. McKinley Park Map



## **6.2.7 Vulnerabilities**

### **Changes in the Cryosphere**

Changes in the cryosphere cause melting glaciers, thawing of the active layer of permafrost, and unstable slopes which create avalanches. These hazards periodically cause buildings and water/sewer systems to shift due to ground shifting, sinking, and upheaval. According to mapping completed by the DGGs, the Borough and City of Anderson are underlain by and exposed to sporadic and discontinuous permafrost impacts (see Section 5.3.1). For this vulnerability analysis, it is assumed that 5% of the population and residential structures from Table 14 will be affected.

Impacts associated with changes in the cryosphere include surface subsidence, infrastructure, structure, and/or road damage and railroad track. Buildings that are built on slab foundations and/or not constructed with materials designed to accommodate the ground movement associated with building on permafrost and other land subsidence and impacts are more vulnerable to damage.

Impacts to future populations, residences, critical facilities, and infrastructure are anticipated at the same impact level. To lessen future impacts, the Borough and City of Anderson could institute and enforce land use controls, building codes, and prohibit new construction in permafrost thawing prone areas and avalanche zones.

### **Earthquakes**

Alaska should expect the full spectrum of potential earthquake ground motion scenarios. Severe shaking may result in infrastructure damage that is equally as extreme. Although all structures are at some risk due to earthquakes, short wooden buildings are less vulnerable than multi-story and complex masonry/steel structures. The majority of Alaska's schools, State, and Federal buildings are built and sited based on stringent seismic construction standards and are expected to survive major earthquake events.

The 2018 State of Alaska HMP categorized the Borough and City of Anderson area at risk of experiencing moderate earthquake impacts (see Section 5.3.2). Impacts to the communities such as significant ground movement that may result in infrastructure damage may occur. Impacts to future populations, residences, critical facilities, and infrastructure are anticipated to remain the same.

For this vulnerability analysis, it is assumed that 10% of the population and residential structures from Table 14 will be affected.

Impacts to the community such as significant ground movement that may result in infrastructure damage could occur. Damages may be seen or based on past events. Although all structures are exposed to earthquakes, buildings constructed with wood have slightly less vulnerability to the effects of earthquakes than those with masonry.

Due to Alaska's highly active geologic setting at a tectonic plate boundary, future populations, residential structures, critical facilities, and infrastructure will be exposed to continued earthquakes of various magnitudes—from those that are barely felt to those that detrimentally affect large regions of the state.

## **Ground Failure**

The Borough designated this as a hazard in conjunction with river activity, road development in canyon areas and seismic hazards. The 2018 State of Alaska HMP designated this hazard with a medium probability. The City of Anderson does not have the potential to be impacted by ground failure. Impacts associated with a ground failure event include landslides blocking access roads, railroad tracks, and bluffs eroding on which houses are built. Section 5.3.4 contains additional information.

For this vulnerability analysis, it is assumed that 5% of the population and residential/commercial structures from Table 14 will be affected. These conditions will negatively impact future populations, residential structures, critical facilities, and infrastructure.

## **Flood**

No detailed 100-year flood analysis has been prepared.

Impacts associated with flooding in the community is water damage to structures and contents, roadbed and railroad track damage, areas of standing water in roadways, and damage or displacement of fuel tanks, power lines, or other infrastructure. Buildings on slab foundations, not located on raised foundations, and/or not constructed with materials designed to withstand flooding events (e.g., cross vents to allow water to pass through an open area under the main floor of a building) are more vulnerable to the impacts of flooding (see Section 5.3.3). For this vulnerability analysis, it is assumed that 10% of the population and residential structures from Table 14 will be affected.

Impacts to future populations, residences, critical facilities, and infrastructure are anticipated at the same historical impact level.

## **Severe Weather**

Using information provided by the NWS, the entire existing and future Borough and City of Anderson population, residences, and critical facilities are equally exposed to the effects of a severe weather event. For this vulnerability analysis, it is assumed that 10% of the population and residential structures from Table 14 will be affected.

Impacts associated with severe weather events include roof collapse, trees and power lines falling, damage to light aircraft and sinking small boats, injury and death resulting from snow machine or vehicle accidents, overexertion while shoveling all due to heavy snow. A quick thaw after a heavy snow can also cause substantial flooding. Impacts from extreme cold include hypothermia, halting transportation from fog and ice, congealed fuel, frozen pipes, utility disruptions, frozen pipes, and carbon monoxide poisoning. Section 5.3.5 provides additional detail regarding the impacts of severe weather. Buildings that are older and/or not constructed with materials designed to withstand heavy snow and wind (e.g., hurricane ties on crossbeams) are more vulnerable to the impacts of severe weather.

Impacts to future populations, residences, critical facilities, and infrastructure are anticipated at the same impact level. To lessen future impacts, the Borough and City of Anderson could institute and enforce building codes to accommodate the effects of severe weather on structures.



## Fire

Impacts associated with a fire event include the potential for loss of life and property. Buildings constructed with wood are more vulnerable to the impacts of fire.

For this vulnerability analysis, it is assumed that 25% of the population and residential structures from Table 14 will be affected. The Borough and the City of Anderson have critical facilities and infrastructure located within areas of high risk.

Impacts to future populations, residences, critical facilities, and infrastructure are anticipated at the same impact level. Community education, building materials, and prepared response personnel are some things that could lessen future impacts.

### 6.3 Land Use and Development Trends

The Denali Borough is a spectacular, diverse landscape with distinct communities. Most of the Borough is remote, wild, and held in public ownership, including the 70% of the Borough located within Denali National Park and Preserve. The human footprint in the Denali Borough concentrates in a corridor along the George Parks Highway, the home of 1,825 year-round residents in a handful of small settlements. A recently approved land use plan sets out goals and policies for the use of these lands, including identifying areas for future disposal and for retention in Borough ownership for a range of public uses (DB, 2018). Additionally, in the Denali Borough's Land-Use Plan, the impacts of natural hazards were considered in the siting of new facilities and infrastructure.

As of the 2015 *Borough Comprehensive Plan*, the Borough zoned all land in the Borough as unrestricted unless otherwise zoned by ordinance. Land surrounding the Denali Borough Landfill has been zoned industrial/commercial by ordinance. The Borough acquired a Geospatial Information System and incorporated a Borough-wide, multi-layered base map. The Borough is presently working on updating the land use chapter of its code; and a new system of classification, land use planning, and land management may be forthcoming (DB, 2015).

As of February 2020, the Borough received approximately 49,841 acres through the municipal entitlement land program and holds patent (title) to 5,094 acres. The Borough has management authority of approximately 44,629 acres while it works through the process to get patents from the State.

Most of the Borough's land is under federal ownership (Table 19 and Figure 27). To date the Borough has received title to three parcels of land and has Municipal entitlement to 10% of State land in certain classifications within its boundaries. The NPS is responsible for overall planning and management of NPS land and natural resources. This includes Denali National Park and Preserve which makes up 70% of Borough land. The USFW is responsible for overall management authority of fish and wildlife on federal lands, except for NPS land. A modest amount of land is under the management of the BLM, and less than 100 acres, home to Clear AFS, is owned and managed by the Department of Defense.

Future Borough projects include:

- Installation of new electronic locks at all three school sites to increase security and reduce operational costs associated with re-keying doors.

Table 19. Borough Land Ownership

Owner	Acre	Percent of Total Area
Federal Government (Denali National Park and Clear AFS)	6,028,253	74%
State Government & Other	352,213	4.3%
Borough Government	5,094	0.06%
Alaska Native Land and Private	1,717,640	21.6%
Total	8,103,200	100%

- Replacement of back-up generators at all three schools. All three are over 30 years old, and parts are difficult to find. The project will include electrical upgrades to bring electrical systems up to code, and ensure necessary circuits are covered by backup power to allow the schools to operate as a shelter in the event of an emergency.
- Replacement of the Anderson school roof to correct structural deficiencies, and increase energy efficiency.
- Development of a new trail head/rest stop/parking area at Mt. Healy in the Bison Gulch area. This project will be a partnership with NPS, DNR, and DOT.
- A project on the Borough’s capital improvement program list is a Municipal Building. This project is still in the planning phase of where to locate it and design. The Municipal Building will include the School District and Borough offices.
- The Borough is currently working on creating a Borough-wide addressing system for emergency response purposes to implement a uniform system to assign addresses to homes and businesses. The first component will be rolled out in Summer 2020 with the Borough installing street signs. The Borough will also roll out an application where homeowners and businesses can “apply,” and receive their office street address. At the same time, the Borough will be working with its 911 dispatch center to share this data.
- The Borough has partnered with the DCCED-DCRA to complete a community mapping project within its boundaries.

Future State projects include:

- DOT is still working on their Mile 231 Enhance Project which will include a pedestrian bridge across the Nenana River with access to the parking area/rest stop/trail head access being built on NPS land.

Future private sector projects include:

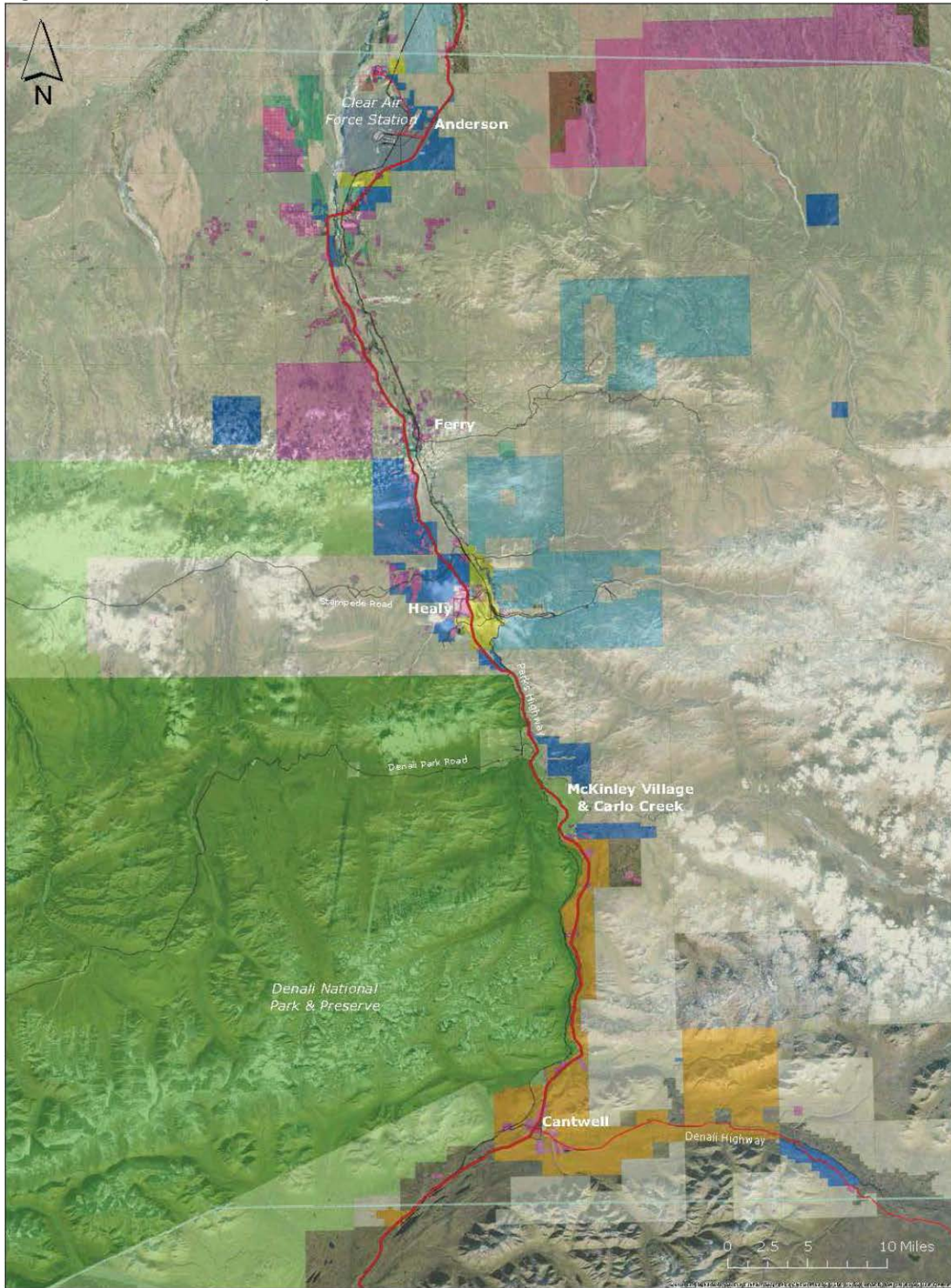
- A new hotel/bus barn (approximately 150 rooms) being built by Premier Alaska by Otto Lake.

Clear AFS has been adding infrastructure. The Clear Airstrip is owned and maintained by the State of Alaska. Clear AFS is currently drafting up a “no fly zone” for the airstrip, and community members expressed concerned at the March 10, 2020 City Council meeting. The City of Anderson does not want to lose access to the airport if the Clear AFS finalizes a “no fly zone” for the airstrip as this airstrip is used by the City and neighboring communities for medical evacuations and fire-fighting. If the airstrip were moved, the access road to the new airstrip could double as another access road to the City of Anderson and Clear AFS. Clear AFS is looking to meet clearance requirements due to the installation of a new radar.

The City of Anderson is considering whether to trade City land for the land that the earthen berm dike is located on. The City of Anderson has added a sewer system with dosing stations to its infrastructure since the 2010 HMP, and its capital improvements project list focuses on adding equipment to mitigate against fire hazards such as a bobcat forestry cutter.

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Figure 27. Land Ownership



## Denali Borough: Land Ownership

Produced for the Denali Borough by Agnew & Beck, August 2017  
 Data Sources: State of Alaska Department of  
 Natural Resources, Denali Borough, ESRI (basemap)

### Legend

- George Parks Highway
- State Highway
- Other Major Road
- Alaska Railroad
- Borough Boundary
- Clear Air Force Station
- Denali National Park
- Denali Wilderness
- Private Land
- Ahtna, Incorporated
- Alaska Mental Health Trust Authority
- Denali Borough
- Alaska Railroad Corporation
- City of Anderson
- University of Alaska
- Other State Land

## 7.0 Mitigation Strategy

This section outlines the four-step process for preparing a mitigation strategy including:

- Developing Mitigation Goals;
- Identifying Mitigation Actions;
- Evaluating Mitigation Actions; and
- Implementing MAP Strategies.

The goal of all mitigation is the reduction of risk. Accordingly, the primary purpose of this HMP Update is to identify strategies for increasing the level of protection from vulnerability to natural hazards experienced by residents and visitors within the Borough and City of Anderson. All other goals and objectives are in support of this purpose.

It is challenging to address a comprehensive HMP for the entire Borough considering that it encompasses a land mass half the size of West Virginia with scattered population groupings and lacking some of the infrastructure normally expected in a jurisdiction of that size. A “do-it-yourself” frontier attitude, typical of most Alaskan communities prevails. Residents tend to consider the Borough to be made up of small rural communities without much need for government intervention.

The requirements for Local hazard mitigation goals, as stipulated in DMA 2000 and its implementing regulations, are described below.

DMA 2000 Requirements
<p><b>Identification and Analysis of Mitigation Actions</b></p> <p><b>§201.6(c)(3):</b> [The plan shall include the following:] A mitigation strategy that provides the jurisdiction’s blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs, and resources, and its ability to expand on and improve these existing tools.</p> <p><b>§201.6(c)(3)(ii):</b> [The mitigation strategy shall include a] section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure.</p> <p><b>§201.6(c)(3)(iii and iv):</b> [The hazard mitigation strategy shall include an] action plan, describing how the action identified will be prioritized, implemented, and administered by the local jurisdiction.</p> <p><b>§201.6(c)(4)(ii):</b> [The plan shall include a] process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvements, when appropriate.</p> <p><b>§201.6(c)(4)(ii):</b> [The plan shall include a] process by which local governments will incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvements, when appropriate.</p>
1. REGULATION CHECKLIST
ELEMENT C. Mitigation Strategy
C1. Does the plan document each jurisdiction’s existing authorities, policies, programs, and resources, and its

ability to expand on and improve these existing policies and programs? <b>[Requirement §201.6(c)(3)]</b>
C2. Does the plan address each jurisdiction’s participation in the NFIP and continued compliance with NFIP requirements, as appropriate? <b>[Requirement §201.6(c)(3)(ii)]</b>
C3. Does the Mitigation Strategy include goals to reduce or avoid long-term vulnerabilities to the identified hazards? <b>[Requirement §201.6(c)(3)(ii)]</b>
C4. Does the Plan identify and analyze a comprehensive range of specific mitigation actions and projects for each jurisdiction being considered to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure? <b>[Requirement §201.6(c)(3)(ii)]</b>
C5. Does the Plan contain an action plan that describes how the actions identified will be prioritized (including cost benefit review), implemented, and administered by each jurisdiction? <b>[Requirement §201.6(c)(3)(iii and iv)]</b>
<b>ELEMENT D. HMP Updates</b>
D3. Was the plan revised to reflect changes in priorities? <b>[Requirements §201.6(d)(3)]</b>
<b>Source: FEMA, 2015.</b>

## 7.1 Developing Mitigation Goals

Section 6 was used as a basis for developing mitigation goals and actions. Mitigation goals are defined as general guidelines that describe what a community wants to achieve in terms of hazard and loss prevention. Goal statements are typically long-range, policy-oriented statements representing community-wide visions. As such, goals were developed to reduce or avoid long-term vulnerabilities to the identified hazards in 2010. In March 2020, the Planning Team modified the goals from the 2010 HMP (Table 20). Additionally, a new goal was added of reducing the risk of damage from changes in the cryosphere. The Borough and City of Anderson already have an established working relationship and will work together on these mitigation goals as appropriate. Goals have been reprioritized since the 2010 HMP was developed with fire as the number one priority. Goals in Table 20 are listed in the order of importance.

*Table 20. Mitigation Goals*

No.	Goal Description
1	Reduce potential fire (F) vulnerability, damage, and loss.
2	Reduce potential earthquake (EQ) vulnerability, damage, and loss.
3	Reduce potential severe weather (SW) vulnerability, damage, and loss.
4	Reduce potential flood (FL) vulnerability, damage, and loss.
5	Reduce potential ground failure (GF) vulnerability, damage, and loss.
6	Reduce potential changes to the cryosphere (CC) vulnerability, damage, and loss.

## 7.2 Identifying Mitigation Actions

After mitigation goals were developed, the Planning Team assessed potential mitigation actions to carry forward into the mitigation strategy. Mitigation actions are activities, measures, or projects that help achieve the goals of an HMP. Mitigation actions are usually grouped into

three broad categories: property protection, public education and awareness, and structural projects. The Planning Team placed particular emphasis on projects and programs that reduce the effects of hazards on both new and existing buildings and infrastructure. These potential projects are listed in Table 21.

### 7.3 Evaluating and Prioritizing Mitigation Actions

The Planning Team evaluated and prioritized each of the potential mitigation actions in March 2020 to determine which actions would be included in the MAP. The MAP represents mitigation projects and programs to be implemented through the cooperation of the community. Neither the Borough nor the City of Anderson has laws, regulations, policies, and programs that pertain to hazard mitigation. The City of Anderson has added some zoning in its new subdivision, but there are no designated elevation levels to prevent damage from flooding.

The Planning Team reviewed the simplified social, technical, administrative, political, legal, economic, and environmental (STAPLEE) evaluation criteria (shown in Table 22) and the Benefit-Cost Analysis Fact Sheet (Appendix D) to consider the opportunities and constraints of

*Table 21. Potential Mitigation Actions*

Goals		Potential Actions	
No.	Description	ID	Description
1	Reduce potential F vulnerability, damage, and loss.	A	Reduce fire danger to the communities.
		B	Encourage the creation of firebreaks.
		C	Reduce the probability of loss of life from fire.
		D	Conduct outreach activities to encourage the use of FireWise techniques.
		E	Public education on fire safety.
2	Reduce potential EQ vulnerability, damage, and loss.	A	Protect existing infrastructure against earthquake damage.
		B	Educate the public about earthquake preparedness and precautions.
3	Reduce potential SW vulnerability, damage, and loss.	A	Encourage weather-resistant building construction materials and practices.
		B	Educate people about the dangers of extreme weather and how to prepare.
		C	Develop practical measures to warn in the event of a severe weather event.
4	Reduce potential FL vulnerability, damage, and loss.	A	Reduce or prevent future flood damage.
		B	Increase public awareness.
5	Reduce potential GF vulnerability, damage, and loss.	A	Prohibit removal of vegetation in areas prone to ground failure. Plant ground cover where appropriate.
		B	Map areas with the potential to be affected by landslides.
6	Reduce CC vulnerability, damage, and loss.	A	Reduce Denali Borough's vulnerability to avalanche in terms of threat to life and property.
		B	Develop comprehensive information regarding avalanche hazards throughout Denali Borough's developed area, including areas that will be developed in the future.
		C	Increase public awareness of avalanche dangers and hazard zones.

implementing each mitigation action. For each action considered for implementation, a qualitative statement is provided regarding the benefits and costs and, where available, the technical feasibility. A detailed cost-benefit analysis is anticipated as part of the application process for those projects the Borough or City of Anderson choose to implement.

Table 22. Evaluation Criteria for Mitigation Actions

<b>Evaluation Category</b>	<b>Discussion “It is important to consider...”</b>	<b>Considerations</b>
Social	The public support for the overall mitigation strategy and specific mitigation actions.	Community acceptance Adversely affects population
Technical	If the mitigation action is technically feasible and if it is the whole or partial solution.	Technical feasibility Long-term solutions Secondary impacts
Administrative	If the community has the personnel and administrative capabilities necessary to implement the action or whether outside help will be necessary.	Staffing Funding allocation Maintenance/operations
Political	What the community and its members feel about issues related to the environment, economic development, safety, and emergency management.	Political support Local champion Public support
Legal	Whether the community has the legal authority to implement the action, or whether the community must pass new regulations.	Local, State, and Federal authority Potential legal challenge
Economic	If the action can be funded with current or future internal and external sources, if the costs seem reasonable for the size of the project, and if enough information is available to complete FEMA Benefit-Cost Analysis.	Benefit/cost of action Contributes to other economic goals Outside funding required FEMA Benefit-Cost Analysis
Environmental	The impact on the environment because of public desire for a sustainable and environmentally healthy community.	Effect on local flora and fauna Consistent with community environmental goals Consistent with Local, State, and Federal laws

The 2009 Planning Team prioritized mitigation actions that were chosen to carry forward into the MAP for the 2010 HMP. The 2020 Planning Team considered each mitigation action from the 2010 HMP. Progress statements were added to each mitigation action. A rating system based on high, medium, or low was used. High priorities are associated with actions for hazards that impact the community on an annual or near annual basis and generate impacts to critical facilities and/or people. Medium priorities are associated with actions for hazards that impact the community less frequently, and do not typically generate impacts to critical facilities and/or people. Low priorities are associated with actions for hazards that rarely impact the community and have rarely generated documented impacts to critical facilities and/or people. The 2020 Planning Team reprioritized the planning actions with fire being the first priority, earthquake being the second priority, and severe weather being the third priority.

#### 7.4 Implementing a Mitigation Action Plan

Table 23 shows the Borough’s and City of Anderson’s MAP Matrix that shows how the



mitigation actions were prioritized, how the overall benefit/costs were taken into consideration, and how each mitigation action will be implemented and administered by the Planning Team.

If no mitigation actions from Table 23 are implemented, the Borough and City of Anderson will continue to be vulnerable to all hazards identified in Section 5 and the risks associated with those hazards in Section 6. If mitigation actions from Table 23 are implemented, the Borough and City of Anderson will become a resilient community that is prepared for potential hazards identified and profiled in Section 5 and the risks associated with those hazards in Section 6.

Many mitigation projects within the Borough will depend on cooperative efforts between the Borough, City of Anderson, and State and Federal agencies. Additionally, in the Denali Borough's Land-Use Plan, the impacts of natural hazards were considered in the siting of new facilities and infrastructure.

Table 23 contains statuses, priorities, responsible agencies, potential funding sources, and timelines for mitigation actions selected to be implemented.

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Table 23. Community's Mitigation Action Plan Matrix

Action ID	Description	Priority	Responsible Entity	Potential Funding	Time-frame	Benefit-Cost/Technical Feasibility
F 1A	<p>Implement fuel reduction projects, and create defensible space around structures. Create safer corridors for access/egress by reducing fuel (trees) around homes and driveways and widening access roads. Remove fuel within the community around essential infrastructure such as communications towers, power lines, evacuation routes and shelters, and emergency response facilities.</p> <p><b>2020 Progress:</b> 1. The Borough has brought a brush clipper from Fairbanks the last four years and coordinated/advertised the dates available for use with the Homeowners' Association and both solid waste transfer stations. This program has been successful.</p> <p>2. An FY 2019 State Fire Assistance WUI Grant application was submitted in 2019 to create an 80-acre fuel break between the City of Anderson and Clear AFS. Funding has been awarded, and work will begin in April 2020. This is the first phase of a multi-phase project.</p>	High	<p>1. Denali Borough Emergency Planning and Projects Coordinator</p> <p>2. DOF</p>	<p>1. Hazard Mitigation Line Item in Borough Mayor's Budget</p> <p>2. WUI Grant</p>	<p>1. On-going</p> <p>2. 2020</p>	<p>B/C: Life/Safety project as well as property damage reduction. Benefit to entire community because it reduces the likelihood of a catastrophic fire from human causes or lightning strike sweeping through the community. TF: This action can be accomplished by existing workers and resources.</p>
F 1B	<p>Promote FireWise building design, siting, and material for construction. Join Alaska FireWise program.</p> <p><b>2020 Progress:</b> The City of Anderson and Clear FD implementing this. The DOF and the Borough will work to increase the number of Firewise compliant homes in the Borough. With grant money, the Borough bought a brush trailer. The City is educating homeowners to remove flammable within City limits.</p>	High	<p>Fire Chiefs in Anderson, Cantwell, Healy, Kantishna, McKinley Village, and Panguingue</p>	<p>Volunteer Fire Assistance and WUI Grants (DNR AK-DOF)</p>	2020	<p>B/C: Life/Safety issue/Risk reduction/Benefit to entire community/Annual project. TF: This action can be accomplished by</p>

Action ID	Description	Priority	Responsible Entity	Potential Funding	Time-frame	Benefit-Cost/Technical Feasibility
						existing workers and resources.
F 1C	<p>Explore alternatives for emergency vehicle access to Ferry/Jim Creek area residences. The existing bridge is a trestle bridge for Alaska Railroad use and is not designed for people. Approximately 30 people could be potentially affected.</p> <p><b>2020 Progress:</b> The Borough has limited resources, and Ferry/Jim Creek area residents have not asked for an access bridge. The Alaska Railroad strengthened the bridge piers with regards to river scouring. A decision will be made in 2025 on whether to retain this mitigation action.</p>	Low	Denali Borough Emergency Planning and Projects Coordinator	Interest in a bridge has not been gauged. The Railroad has no need to alter the existing bridge for its purposes.	2025	<p>B/C: Life/Safety issue/Risk reduction/ Benefit to specific residents. TF: This action can be accomplished by existing workers and resources. Environmental impacts are likely. Residents may not desire an access bridge.</p>
F 1D	<p>Develop an alert system to notify residents of urgent need to evacuate or of other emergencies.</p> <p><b>2020 Progress:</b> Addressing will occur in 2020 and 2021. An Integrated Public Alert and Warning System (IPAWS) is part of the addressing program.</p>	High	Denali Borough Emergency Planning and Projects Coordinator	Funding is already in hand.	2020/ 2021	<p>B/C: Life/Safety issue/Risk reduction/ benefit to entire community. TF: This action is in progress.</p>
F 1E	<p>Improve fire mitigation along the access route between Anderson/Clear AFS and the George Parks Highway.</p> <p><b>2020 Progress:</b> An FY 2019 State Fire Assistance WUI Grant application was submitted to create an 80-acre fuel break between the City of Anderson and Clear AFS. The City is concerned that there is only one entrance to/from the City, and there is no community shelter.</p>	High	Anderson Fire Chief	WUI (DNR AK-DOF)	2020	<p>B/C: Life/Safety issue/Risk reduction/ benefit to entire community. TF: This action is in progress.</p>

Action ID	Description	Priority	Responsible Entity	Potential Funding	Time-frame	Benefit-Cost/Technical Feasibility
	Implement a memorandum of understanding with the Denali Borough School District, and identify another shelter option as the entire community cannot fit in the school.					
F 1F New in 2020	Develop Healy Community Wildfire Protection Plan.	High	Tri-Valley Fire Chief	Borough	2020	B/C: Life/Safety issue/Risk reduction/benefit to entire community. TF: This action can be accomplished by existing workers and resources.
F 1G New in 2020	Develop Cantwell Community Wildfire Protection Plan.	High	Cantwell Fire Chief	Borough	2021	
F 1H New in 2020	Develop Ferry Community Wildfire Protection Plan.	High	Planning and Projects Coordinator to work with DOF.	Borough	2022	
F 1I New in 2020	Develop McKinley Village Community Wildfire Protection Plan.	High			2020	
F 1J New in 2020	Develop Panguingue Community Wildfire Protection Plan.	High			2022	
F 1K New in 2020	Develop Kantishna Community Wildfire Protection Plan.	High	Planning and Projects Coordinator to work with NPS.	NPS	2021	
F 1L New in 2020	Develop an Emergency Operations Plan for the City of Anderson.	High	Anderson Public Safety Director	HMGP	2020	

Action ID	Description	Priority	Responsible Entity	Potential Funding	Time-frame	Benefit-Cost/Technical Feasibility
F 1 M New in 2020	Develop a Small Community Emergency Response Plan for the City of Anderson.	High	Anderson Public Safety Director	HMGP	2020	B/C: Life/Safety issue/Risk reduction/benefit to entire community. TF: The Denali Commission is funding State DHS&EM personnel to prepare these plans.
F 1N New in 2020	Increase local/municipal capabilities to respond to fire incidents, and improve interagency coordination. Regularly update cooperative agreements/Annual Operating Plan.	High	DOF	Volunteer Fire Assistance and WUI Grants (DNR AK-DOF)	2020	B/C: Life/Safety issue/Risk reduction/benefit to entire community. TF: This action can be accomplished by existing workers and resources.
F 1O New in 2020	Develop an Evacuation Plan within the Protection Area for the Borough. Implement Ready Set Go Program.	High	Denali Borough Emergency Planning and Projects Coordinator to work with City of Anderson FD, Clear FD, Tri-Valley FD, Cantwell FD, McKinley Village FD, Kantishna FD, Panguingue FD, DOF	Borough	2020	B/C: Life/Safety issue/Risk reduction/benefit to entire community. TF: This action can be accomplished by existing workers and resources.

Action ID	Description	Priority	Responsible Entity	Potential Funding	Time-frame	Benefit-Cost/Technical Feasibility
F 1P New in 2020	Participate in fire and emergency management planning and training.	High	City of Anderson FD, Clear FD, Tri-Valley FD, Cantwell FD, McKinley Village FD, Kantishna FD, Panguingue FD, DOF	Borough	2020	B/C: Life/Safety issue/Risk reduction/benefit to entire community. TF: This action can be accomplished by existing fire departments.
F 1Q New in 2020	Educate Borough residents on using the Fire Adapted Community Self-Assessment Tool and Facilitators Guide. This tool can be obtained from: <a href="https://fireadaptednetwork.org/resources/fac-assessment-tool/">https://fireadaptednetwork.org/resources/fac-assessment-tool/</a> .	High	Denali Borough Emergency Planning and Projects Coordinator to work with City of Anderson FD, Clear FD, Tri-Valley FD, Cantwell FD, Panguingue FD, McKinley Village FD, and Kantishna FD	Borough	2020	B/C: Life/Safety issue/Risk reduction/benefit to entire community. TF: This action can be accomplished by existing fire departments.
EQ 2A	Identify buildings and facilities that must be able to remain operable during and following an EQ event. This will likely include infrastructure such as bridges and railways and will require coordination with the DOT&PF and the Alaska Railroad.  <b>2020 Progress:</b> Completed. Evacuation shelter language has also been added to the plans for schools.	High	Denali Borough Emergency Planning and Projects Coordinator	Complete.	Complete.	Complete.

Action ID	Description	Priority	Responsible Entity	Potential Funding	Time-frame	Benefit-Cost/Technical Feasibility
EQ 2B	<p>Contract a structural engineering firm to assess the identified buildings and facilities, and determine a strategy to improve them.</p> <p><b>2020 Progress:</b> Completed. Livingston Slone, Inc. completed a facilities assessment report in 2016.</p>	High	Denali Borough Emergency Planning and Projects Coordinator	Complete.	Complete.	Complete.
EQ 2C	<p>Implement recommendations from 2016 Livingston Slone, Inc. report.</p> <p><b>2020 Progress:</b> Partially complete.</p>	High	Denali Borough Emergency Planning and Projects Coordinator and Denali Borough School District Facilities Maintenance Director	Borough and School District	2021	B/C: Benefit to entire community/Risk reduction. TF: This action needs to be completed.
EQ 2D	<p>Work with DOT&amp;PF to ensure that area bridges meet current standards.</p> <p><b>2020 Progress:</b> The Borough is unsure what DOT&amp;PF has accomplished. This action will be deleted in the next HMP Update as it is out of the Borough and City of Anderson's control.</p>	Medium	DOT&PF	DOT&PF	As funding allows	B/C: Benefit to entire community/Risk reduction. TF: This action would require outside resources and funding.
EQ 2E	<p>Conduct drills and educate for earthquake preparedness. Disseminate information on earthquake preparedness to residents, businesses, and in the schools.</p> <p>Encourage emergency preparedness for all-natural hazards. Educate the public about the benefits of having a bug-out bucket (i.e., emergency kit) for each person</p>	High	Denali Borough Emergency Planning and Projects Coordinator	Borough	Ongoing	B/C: Benefit to entire community/Risk reduction. TF: This action would require Denali Borough residents to be educated and

Action ID	Description	Priority	Responsible Entity	Potential Funding	Time-frame	Benefit-Cost/Technical Feasibility
	<p>that contains birth certificates, irreplaceable documents and keepsakes, thermal blankets, food, etc.</p> <p>Also, educate residents on seismic shutoffs and how to secure homeowner tanks to prepare for natural disasters.</p> <p><b>2020 Progress:</b> The community regularly trains in the Great Alaska Shakeout Earthquake exercises as well as regular Fire Department and Emergency Management programming.</p>					self-sufficient in planning for their own needs to be resilient after an EQ.
EQ 2F New in 2020	Replace back-up generators at all three schools. The project will include electrical upgrades to bring electrical systems up to code, and ensure necessary circuits are covered by backup power to allow the schools to operate as a shelter in the event of an emergency.	High	Denali Borough Emergency Planning and Projects Coordinator	HMGP, PDM	2020-2021	B/C: All three are over 30 years old and parts are difficult to find. TF: This mitigation action is easily implemented.
EQ 2G New in 2020	Install back-up generator at the Borough Office.	High	Denali Borough Emergency Planning and Projects Coordinator	HMGP, PDM	2020-2021	B/C: A generator is needed to ensure ongoing Borough operations in case of a disaster event. TF: This mitigation action is easily implemented.
SW 3A	Research and consider implementation of "Storm Ready", a National Weather Service program.	High	Denali Borough Emergency Planning and Projects	Denali Borough	2025	B/C: Life/Safety issue/Risk reduction/



Action ID	Description	Priority	Responsible Entity	Potential Funding	Time-frame	Benefit-Cost/Technical Feasibility
	<b>2020 Progress:</b> Research has been completed. A decision will be made during the next five-year cycle.		Coordinator			benefit to entire community. TF: This action can be accomplished by existing workers and resources.
SW 3B	Conduct special awareness activities, such as Winter Weather Awareness Week, Flood Awareness Week, etc.  <b>2020 Progress:</b> The Borough uses Monday with the Mayor (three-minute videos posted each week on You Tube), its website, and public service announcements on the radio to educate its residents.	High	Denali Borough Emergency Planning and Projects Coordinator	Denali Borough	Ongoing	B/C: Benefit to entire community/Risk reduction. TF: This action is important because of geographic distance; Denali Borough residents need to be self-sufficient in planning for their own needs to be resilient after a disaster event.
SW 3C	Expand public awareness about NOAA Weather Radio for continuous weather broadcasts and warning tone alert capability.  <b>2020 Progress:</b> An Integrated Public Alert and Warning System (IPAWS) will be activated as part of the addressing program.	High	Denali Borough Emergency Planning and Projects Coordinator	Funding is already in hand.	2020/ 2021	B/C: Life/Safety issue/Risk reduction/benefit to entire community. TF: This action is in progress.
SW 3D	Encourage weather resistant building construction materials and practices.	Medium	Denali Borough Emergency Planning and Projects	Will be deleted in 2025.	Will be deleted in 2025.	B/C: Risk and damage reduction/

Action ID	Description	Priority	Responsible Entity	Potential Funding	Time-frame	Benefit-Cost/Technical Feasibility
	<b>2020 Progress:</b> This action will be deleted in the next HMP Update as it is out of the Borough and City of Anderson's control.		Coordinator			benefit to entire community. TF: This action could require an ordinance change. Political and public support not determined.
SW 3E New in 2020	Develop personal use and educational outreach training for a "safe tree harvesting" program. Implement along utility and road corridors, preventing potential winter storm damage.	High	Denali Borough Emergency Planning and Projects Coordinator	Golden Valley Electrical Association	2020	B/C: This project is essential as winter storms are becoming more severe (particularly winds). TF: This project could be easily implemented by residents and GVEA.
FL 4A	A list of homes, commercial structures, and critical facilities that are in danger of flooding should be identified, and mitigation projects for elevating and/or relocating the structures determined.  <b>2020 Progress:</b> Healy has a few residents whose homes are in danger of flooding from Dry Creek. There are five parcels of land in the Otto Lake neighborhood whose structures could be potentially impacted. Also, there is land in Healy where Dry Creek loops back that was flooded in 2019.	Medium	Denali Borough Emergency Planning and Projects Coordinator	HMGP, and PDM	2025	B/C: Life/Safety issue/Risk reduction/ benefit to entire community. TF: This action could be accomplished by existing workers and resources.

Action ID	Description	Priority	Responsible Entity	Potential Funding	Time-frame	Benefit-Cost/Technical Feasibility
FL 4B	<p>Investigate the benefits of joining the NFIP for the Borough.</p> <p><b>2020 Progress:</b> The Borough would like FEMA to do some preliminary flood mapping of the Borough.</p>	High	Denali Borough Emergency Planning and Projects Coordinator	FEMA	2025	B/C: Life/Safety issue/Risk reduction/ benefit to entire community. TF: This action requires floodplain mapping which would need to be accomplished by FEMA.
FL 4C	<p>Increase public knowledge about mitigation opportunities, floodplain functions, emergency service procedures, and potential hazards. This would include advising property owners, potential property owners, and visitors about the hazards. In addition, dissemination of a brochure or flyer on flood hazards in affected areas could be developed and distributed to all households.</p> <p><b>2020 Progress:</b> The communities of Anderson and Healy would like information.</p>	High	Denali Borough Emergency Planning and Projects Coordinator	Borough	2025	B/C: Life/Safety issue/Risk reduction/ benefit to entire community. TF: This action could be accomplished by existing workers and resources.
FL 4D	<p>Ensure the continued maintenance of the Riverside Park Dike in the City of Anderson.</p> <p><b>2020 Progress:</b> The earthen berm dike elevation has dropped a foot. More fill needs to be added and sloped like the original berm was.</p>	High	City of Anderson Public Works Director	State of Alaska Advanced Assistance Application Development	2025	B/C: Life/Safety issue/Risk reduction/ Benefit to entire community. TF: This action could be accomplished by existing workers and resources.

Action ID	Description	Priority	Responsible Entity	Potential Funding	Time-frame	Benefit-Cost/Technical Feasibility
FL 4E New in 2020	Improve culverts in Healy to prevent flooding near Dry Creek. In Fall 2019, driveway materials flooded away.	High	Denali Borough Emergency Planning and Projects Coordinator	HMGP, PDM	2020	B/C: Life/Safety issue/Risk reduction/benefit to entire community. TF: This action could be accomplished by existing workers and resources.
GF 5A	Prohibit removal of vegetation in areas prone to landslides.  <b>2020 Progress:</b> This action will be deleted in the next HMP Update as it is out of the Borough's and City of Anderson's control.	High	DOT&PF	Will be deleted in 2025.	Will be deleted in 2025.	TF: DOT&PF would be responsible.
GF 5B	Research and implement mitigation measures to keep rock from blocking the Nenana River.  <b>2020 Progress:</b> This action will be deleted in the next HMP Update as it is out of the Borough and City of Anderson's control.	Medium	DOT&PF	Will be deleted in 2025.	Will be deleted in 2025.	TF: DOT&PF would be responsible.
GF 5C New in 2020	Map areas with the potential to be affected by landslides. Also, provide training for the Borough Land Planner to work with the map.	High	Denali Borough Land Planner.	DGGS	2020	B/C: It would be helpful to have a record of where ground failure has occurred in the past and where not to build in the future. TF: DGGS prepares these maps for Alaskan communities.
CC	Map areas with the potential to be affected by	Medium	Denali Borough Land	DGGS	2020	B/C: It would be

Action ID	Description	Priority	Responsible Entity	Potential Funding	Time-frame	Benefit-Cost/Technical Feasibility
6A New in 2020	avalanches. Also, provide training for the Borough Land Planner to work with the map.		Planner.			helpful to have a record of where avalanches have the potential to occur. TF: DGGS prepares these maps for Alaskan communities.
CC 6B	Install warning signage in known avalanche zones.  <b>2020 Progress:</b> Signs have been installed.	High	Denali Borough Emergency Planning and Projects Coordinator	Completed.	Completed	Completed.
CC 6C New in 2020	Multiple communities lack power distribution redundancy. Encourage GVEA to construct a substation to back feed each location with a secondary service line to each.	Medium	Denali Borough Emergency Planning and Projects Coordinator	GVEA	2025	B/C: It would be helpful to have a backup power source. TF: GVEA is the power company.
CC 6D	Continue to educate the public about avalanche hazards. Information can be disseminated to the public through the Borough web site, press releases, media ads, schools, and other methods.  <b>2020 Progress:</b> Ongoing.	High	Denali Borough Emergency Planning and Projects Coordinator	Borough	Ongoing	B/C: Life/Safety issue/Risk reduction/ Benefit entire community. TF: This action could be easily accomplished by existing workers and resources.

## 8.0 Plan Maintenance

This section describes a formal plan maintenance process to ensure that the HMP remains an active and applicable document. It includes an explanation of how the Planning Team intends to organize their efforts to ensure that improvements and revisions to the HMP occur in a well-managed, efficient, and coordinated manner.

The following three process steps are addressed in detail here:

1. Monitoring, evaluating, and updating the HMP;
2. Implementation through existing planning mechanisms; and
3. Continued public involvement.

### 8.1 Monitoring, Evaluating, and Updating the Plan

The requirements for monitoring, evaluating, and updating the HMP, as stipulated in the DMA 2000 and its implementing regulations, are described below.

<b>DMA 2000 Requirements</b>
<p><b>Monitoring, Evaluating, and Updating the Plan</b></p> <p><b>Requirement §201.6(c)(4)(i, ii, and iii):</b> [The plan maintenance process shall include a] section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle; b] a process by which local government incorporates the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans, when appropriate; and c] discussion on how the community will continue public participation in the plan maintenance process.</p>
<b>1. REGULATION CHECKLIST</b>
<b>ELEMENT A. Planning Process</b>
<p>A5. Is there discussion of how the jurisdiction will continue public participation in the plan maintenance process? <b>[Requirement §201.6(c)(4)(iii)]</b></p> <p>A6. Is there a description of the method and schedule for keeping the plan current (monitoring, evaluating, and updating the mitigation plan within a 5-year cycle?) <b>[Requirement §201.6(c)(4)(i)]</b></p>
<b>ELEMENT C. Mitigation Strategy</b>
<p>C6. Does the Plan describe a process by which local governments will integrate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate? <b>[Requirement §201.6(c)(4)(ii)]</b></p>
<b>Source: FEMA, 2015.</b>

The HMP was prepared as a collaborative effort. The Borough Emergency Planning and Projects Coordinator and City of Anderson Public Safety Director will serve as the primary point(s) of contact and will coordinate local efforts to monitor, evaluate, and revise the HMP. Each authority identified in Table 23 will be responsible for implementing the MAP. The Borough Emergency Planning and Projects Coordinator and City of Anderson Public Safety Director will

conduct an annual review during the anniversary week of the HMP's official FEMA approval date to monitor the progress in implementing the HMP, particularly the MAP. As shown in Appendix E, the Annual Review Worksheet will provide the basis for possible changes in the HMP MAP by refocusing on new or more threatening hazards, adjusting to changes to or increases in resource allocations, and engaging additional support for the HMP implementation. Each review, as shown on the Annual Review Worksheet, will include an evaluation of the following:

- Participation of authorities and others in the HMP implementation;
- Notable changes in the risk of natural hazards;
- Impacts of land development activities and related programs on hazard mitigation;
- Progress made with the MAP (identify problems and suggest improvements as necessary);
- The adequacy of local resources for implementation of the HMP;
- A system of reviewing the progress on achieving the mitigation goals and implementing the MAP activities and projects will also be accomplished during the annual review process. During each annual review, each authority administering a mitigation project will submit a Progress Report to the Borough Emergency Planning and Projects Coordinator. As shown in Appendix E, the report will include the current status of the mitigation project, including any changes made to the project, the identification of implementation problems and appropriate strategies to overcome them, and whether or not the project has helped achieve the appropriate goals identified in the HMP; and
- In addition to the annual review, the Borough Emergency Planning and Projects Coordinator and Planning Team will update the HMP every five years. To ensure that this update occurs, in the fourth year following adoption of the HMP, the Borough Emergency Planning and Projects Coordinator will undertake the following activities:
  - Request grant assistance for DHS&EM to update the HMP (this can take up to one year to obtain and one year to update the HMP);
  - Thoroughly analyze and update the risk of natural hazards;
  - Provide a new annual review (as noted above), plus a review of the three previous annual reviews;
  - Provide a detailed review and revision of the mitigation strategy;
  - Prepare a new Mitigation Action Plan for the Borough and City of Anderson;
  - Prepare a new Draft HMP Update;
  - Submit an updated HMP to the DHS&EM and FEMA for approval;
  - Submit the FEMA-approved plan for adoption by the Borough and City of Anderson; and
  - Return adoption resolutions to DHS&EM and FEMA to receive formal approval.

The schedule for the HMP Update is to start the following tasks before the end of the five-year cycle as discussed above.

## 8.2 Implementation Through Existing Planning Mechanisms

After the adoption of the HMP, the Borough Emergency Planning and Projects Coordinator and City of Anderson Public Safety Director will ensure that the HMP, in particular each mitigation action project, is incorporated into existing Borough and City of Anderson planning mechanisms. He or she will achieve this incorporation by undertaking the following activities.

- Conduct a review of the community-specific regulatory tools to assess the integration of the mitigation strategy. These regulatory tools are identified in the capability assessment section (Tables 24, 25, and 26).
- Work with pertinent community departments to increase awareness of the HMP and provide assistance in integrating the mitigation strategy (including the MAP) into relevant planning mechanisms. Implementation of these requirements may require updating or amending specific planning mechanisms.
- The Borough Emergency Planning and Projects Coordinator and City of Anderson Public Safety Director will be responsible for providing a copy of this HMP to contractors focused on developing new or updating existing Borough and City of Anderson plans and ensuring that this HMP is incorporated into plans as applicable.

## 8.3 Capability Assessment

The Borough and the City of Anderson have a number of planning and land management tools that will allow them to implement hazard mitigation activities. This section outlines the regulatory tools, personnel resources/technical specialists, and financial resources available to the community for mitigation and mitigation-related funding and training.

*Table 24. Community's Regulatory Tools*

<b>Regulatory Tools (ordinances, codes, plans)</b>	<b>Existing?</b>	<b>Comments (Year of most recent update; problems administering it, etc.)</b>
Denali Borough Comprehensive Plan	Yes	2015.
Denali Borough Land Use and Economic Development Plan	Yes	2018.
All-Hazards Emergency Response Plan	Yes	2007. Parts of the Plan have been updated since 2007, but a comprehensive update has not occurred.
City of Anderson, Comprehensive Economic Development Strategy	Yes	2003.
City of Anderson, Strategic Plan	Yes	2003.
Wildland Fire Protection Plan	Yes	2019. City of Anderson only.
Building code	No	
Zoning ordinances	No for Borough, Yes for City of Anderson	
Subdivision ordinances or regulations	No for Borough, Yes for City	



	of Anderson	
Special purpose ordinances	No for Borough, Yes for City of Anderson	

*Table 25. Community's Technical Resources for Hazard Mitigation*

<b>Staff/Personnel Resources</b>	<b>Y/N</b>	<b>Department/Agency and Position</b>
Borough Administrator	Yes	Clay Walker, Mayor
City Administrator	Yes	Samantha Thompson, Mayor
Borough Clerk	Yes	Amber Renshaw
City Clerk	Yes	Trista Jennings
Fire Chief	Yes	Individual Station Chiefs
Director of Public Safety	Yes	Scott Thompson
Librarian	Yes	Individual community libraries at Anderson, Cantwell, Tri-Valley
Fire Department	Yes	Anderson, Cantwell, Tri-Valley, McKinley Village/Denali Park Area, Panguingue, Kantishna
Planner or engineer with knowledge of land development and land management practices	Yes	Marsha Lambert, Borough Planner
Engineer or professional trained in construction practices related to buildings and/or infrastructure	No	The Borough and City hire engineering consulting services.
Planner or engineer with an understanding of natural and/or human-caused hazards	Yes	Chris Noel, Borough Emergency Planning and Projects Coordinator
Floodplain Manager	No	Jimmie C. Smith, State Floodplain Manager
Surveyors	No	The Borough and City hire surveying consulting services.
Staff with education or expertise to assess the jurisdiction's vulnerability to hazards	Yes	Chris Noel, Borough Emergency Planning and Projects Coordinator
Personnel skilled in Geospatial Information System (GIS) and/or HAZUS-MH	Yes	Marsha Lambert, Borough Planner
Scientists familiar with the hazards of the jurisdiction	No	DNR, DGGS; DOT&PF; NPS; USFW; BLM
Emergency Manager	Yes	Chris Noel, Borough Emergency Planning and Projects Coordinator
Finance (Grant writers)	Yes	Borough and City staff
Public Information Officer	Yes	Borough or City Mayor (Situation dependent)

*Table 26. Financial Resources Available for Hazard Mitigation*

<b>Financial Resource</b>	<b>Accessible or Eligible to Use for Mitigation Activities</b>
General funds	Limited funding, can exercise this authority with voter approval.
Community Development Block Grants	Limited funding, the Borough and City of Anderson can exercise this authority with voter approval.
Capital Improvement Projects Funding	Limited funding, the Borough and City of Anderson can exercise this authority with voter approval.

Authority to levy taxes for specific purposes	Limited funding, the Borough can exercise this authority with voter approval.
Incur debt through general obligation bonds	The Borough cannot exercise this authority with voter approval.
Incur debt through special tax and revenue bonds	The Borough cannot exercise this authority with voter approval.
Incur debt through private activity bonds	The Borough cannot exercise this authority with voter approval.
Hazard Mitigation Grant Program (HMGP)	FEMA funding which is available to local communities after a Presidentially-declared disaster. It can be used to fund both pre- and post-disaster mitigation plans and projects.
Pre-Disaster Mitigation (PDM) grant program	FEMA funding which is available on an annual basis. This grant can only be used to fund pre-disaster mitigation plans and projects.
Flood Mitigation Assistance (FMA) grant program	FEMA funding which is available on an annual basis. This grant can be used to mitigate repetitively flooded structures and infrastructure to protect repetitive flood structures. Neither the Borough nor City are eligible for this grant program because they do not participate in the NFIP.
United State Fire Administration (USFA) Grants	The purpose of these grants is to assist state, regional, national, or local organizations to address fire prevention and safety. The primary goal is to reach high-risk target groups including children, seniors, and firefighters.
Fire Mitigation Fees	Finance future fire protection facilities and fire capital expenditures.

#### 8.4 Continued Public Involvement

The Borough and City of Anderson are dedicated to involving the public directly in the continual reshaping and updating of this HMP. The Borough Emergency Planning and Projects Coordinator and City of Anderson Public Safety Director will serve as the primary point of contact and will involve the public to continually reshape and update this HMP. A paper copy of this HMP Update will be available at the Borough Office and at the Anderson City Hall. An electronic copy of this HMP Update will also be available online at [www.denaliborough.org](http://www.denaliborough.org). This HMP Update will also be stored on the State DCCED/DCRA's plans website for public reference. Planners are encouraged to integrate components of this HMP Update into their own plans.

The Borough Emergency Planning and Projects Coordinator and City of Anderson Chief of Public Safety will continue to identify opportunities to raise community awareness about the HMP and the hazards that affect the area. The Borough Emergency Planning and Projects Coordinator will solicit community involvement through the distribution of community surveys. The annual surveys (Appendix E) document the Borough's insights into potential changes to hazards, actions, and resource allocations. Any survey results and public comments received will be collected by the Borough Emergency Planning and Projects Coordinator, included in the annual

report, and considered during future HMP updates.

## 8.5 Federal Resources

The Federal government requires Local Governments (Borough and City of Anderson) to have an HMP in place to be eligible for mitigation funding opportunities through FEMA such as the UHMA Programs and the HMGP. The Mitigation Technical Assistance Programs available to Local governments are also a valuable resource. FEMA may also provide temporary housing assistance through rental assistance, mobile homes, furniture rental, mortgage assistance, and emergency home repairs. The Disaster Preparedness Improvement Grant also promotes educational opportunities with respect to hazard awareness and mitigation.

- FEMA, through its Emergency Management Institute, offers training in many aspects of emergency management, including hazard mitigation. FEMA has also developed a large number of documents that address implementing hazard mitigation at the local level. Key resource documents are available from the FEMA Publication Warehouse (1-800-480-2520) and are briefly described here:
  - How-to Guides. FEMA has developed a series of how-to guides to assist States, communities, and Tribes in enhancing their hazard mitigation planning capabilities. The first four guides describe the four major phases of hazard mitigation planning. The last five how-to guides address special topics that arise in hazard mitigation planning such as conducting cost-benefit analysis and preparing multi-jurisdictional plans. The use of worksheets, checklists, and tables make these guides a practical source of guidance to address all stages of the hazard mitigation planning process. They also include special tips on meeting DMA 2000 requirements.
  - Post-Disaster Hazard Mitigation Planning Guidance for State and Local Governments. FEMA DAP-12, September 1990. This handbook explains the basic concepts of hazard mitigation and shows State, Tribal, and Local governments how they can develop and achieve mitigation goals within the context of FEMA's post-disaster hazard mitigation planning requirements. The handbook focuses on approaches to mitigation, with an emphasis on multi-objective planning.
  - Mitigation Resources for Success compact disc (CD). FEMA 372, September 2001. This CD contains a wealth of information about mitigation and is useful for State, Tribal, and Local government planners and other stakeholders in the mitigation process. It provides mitigation case studies, success stories, information about Federal mitigation programs, suggestions for mitigation measures to homes and businesses, appropriate relevant mitigation publications, and contact information.
  - A Guide to Federal Aid in Disasters. FEMA 262, April 1995. When disasters exceed the capabilities of State, Tribal, and Local governments, the President's disaster assistance programs (administered by FEMA) is the primary source of Federal assistance. This handbook discusses the procedures and process for obtaining this assistance, and provides a brief overview of each program.
  - The Emergency Management Guide for Business and Industry. FEMA 141, October 1993. This guide provides a step-by-step approach to emergency management

- planning, response, and recovery. It also details a planning process that businesses can follow to better prepare for a wide range of hazards and emergency events. This effort can enhance a business's ability to recover from financial losses, loss of market share, damages to equipment, and product or business interruptions. This guide could be of great assistance to a community's industries and businesses located in hazard prone areas.
- The FEMA Hazard Mitigation Assistance Guidance and Addendum, February 5, 2015. The guidance introduces the five HMA grant programs, funding opportunities, award information, eligibility, application and submission information, application review process, administering the grant, contracts, additional program guidance, additional project guidance, and contains information and resource appendices (FEMA, 2015).
  - Department of Agriculture (USDA). Assistance provided includes: Emergency Conservation Program, Non-Insured Assistance, Emergency Watershed Protection, Rural Housing Service, Rural Utilities Service, and Rural Business and Cooperative Service.
  - Department of Energy (DOE), Office of Energy Efficiency and Renewable Energy, Weatherization Assistance Program. This program minimizes the adverse effects of high energy costs on low-income, elderly, and handicapped citizens through client education activities and weatherization services such as an all-around safety check of major energy systems, including heating system modifications and insulation checks.
  - Department of Health and Human Services, Administration of Children & Families, Administration for Native Americans (ANA). The ANA awards funds through grants to American Indians, Native Americans, Native Alaskans, Native Hawaiians, and Pacific Islanders. These grants are awarded to individual organizations that successfully apply for discretionary funds. ANA publishes in the Federal Register an announcement of funds available, the primary areas of focus, review criteria, and the method of application.
  - Department of Housing and Urban Development (HUD), Office of Homes and Communities, Section 108 Loan Guarantee Programs. This program provides loan guarantees as security for Federal loans for acquisition, rehabilitation, relocation, clearance, site preparation, special economic development activities, and construction of certain public facilities and housing.
  - Department of Housing and Urban Development, Community Development Block Grants (HUD/CDBG). Provides grant assistance and technical assistance to aid communities in planning activities that address issues detrimental to the health and safety of local residents, such as housing rehabilitation, public services, community facilities, and infrastructure improvements that would primarily benefit low-and moderate-income persons.
  - Department of Labor (DOL), Employment and Training Administration, Disaster Unemployment Assistance. Provides weekly unemployment subsistence grants for those who become unemployed because of a major disaster or emergency. Applicants must have exhausted all benefits for which they would normally be eligible.

- Federal Financial Institutions. Member banks of Federal Deposit Insurance Corporation, Financial Reporting Standards or Federal Home Loan Bank Board may be permitted to waive early withdrawal penalties for Certificates of Deposit and Individual Retirement Accounts.
- Internal Revenue Service (IRS), Tax Relief. Provides extensions to current year's tax return, allows deductions for disaster losses, and allows amendment of previous tax returns to reflect loss back to three years.
- U.S. Small Business Administration (SBA). May provide low-interest disaster loans to individuals and businesses that have suffered a loss due to a disaster. Requests for SBA loan assistance should be submitted to DHS&EM.
- USACE Alaska District's Civil Works Branch studies potential water resource projects in Alaska. These studies analyze and solve water resource issues of concern to the local communities. These issues may involve navigational improvements, flood control or ecosystem restoration. The agency also tracks flood hazard data for over 300 Alaskan communities on floodplains or the sea coast. These data help local communities assess the risk of floods to their communities and prepare for potential future floods.

#### **State Resources**

- DHS&EM is responsible for improving hazard mitigation technical assistance for Local and Tribal governments for the State of Alaska. Providing hazard mitigation training, current hazard information, and communication facilitation with other agencies will enhance local hazard mitigation efforts. DHS&EM administers FEMA mitigation grants to mitigate future disaster damages such as those that may affect infrastructure including the elevation, relocation, or acquisition of hazard-prone properties. DHS&EM also provides mitigation funding resources for mitigation planning.
- Division of Senior Services (DSS): Provides special outreach services for seniors, including food, shelter, and clothing.
- Division of Insurance (DOI): Provides assistance in obtaining copies of policies and provides information regarding filing claims.
- Department of Military and Veterans Affairs (DMVA): Provides damage appraisals and settlements for VA-insured homes, and assists with filing of survivor benefits.
- The Community Health and Emergency Medical Services (CHEMS) is a section within the Division of Public Health within the Department of Health and Social Services (DHSS). DHSS is charged with promoting and protecting the public health and one of CHEMS' responsibilities is developing, implementing, and maintaining a statewide comprehensive emergency medical services system. The department's statutory mandate (Alaska Statute 18.08.010) requires it to:
  - Coordinate public and private agencies engaged in the planning and delivery of emergency medical services, including trauma care, to plan an emergency medical services system;

- Assist public and private agencies to deliver emergency medical services, including trauma care, through the award of grants in aid;
  - Conduct, encourage, and approve programs of education and training designed to upgrade the knowledge and skills of health personnel involved in emergency medical services, including trauma care; and
  - Establish and maintain a process under which hospitals and clinics can represent themselves to be trauma centers because they voluntarily meet criteria adopted by the department which are based on an applicable national evaluation system.
- DCRA within the DCCED. DCRA administers the HUD/CDBG, FMA Program, and the Alaska Climate Change Impact Mitigation Program ([www.commerce.alaska.gov/web/dcra/CommunityResilienceandClimateAdaptationPrograms](http://www.commerce.alaska.gov/web/dcra/CommunityResilienceandClimateAdaptationPrograms)) funds and administers various flood and erosion mitigation projects, including the elevation, relocation, or acquisition of flood-prone homes and businesses throughout the State. This department also administers programs for State "distressed" and "targeted" communities.
  - Division of Environmental Conservation (DEC). The DEC's primary roles and responsibilities concerning hazards mitigation are ensuring safe food and safe water, and pollution prevention and pollution response. DEC ensures water treatment plants, landfills, and bulk fuel storage tank farms are safely constructed and operated in communities. Agency and facility response plans include hazards identification and pollution prevention and response strategies.
  - Department of Transportation and Public Facilities (DOT/PF) personnel provide technical assistance to the various emergency management programs, to include mitigation. This assistance is addressed in the DHS&EM-DOT/PF Memorandum of Agreement and includes, but, is not limited to: environmental reviews, archaeological surveys, and historic preservation reviews.
  - In addition, DOT/PF and DHS&EM coordinate buy-out projects to ensure that there are no potential right-of-way conflicts with future use of land for bridge and highway projects, and collaborate on earthquake mitigation.
  - Additionally, DOT/PF provides safe, efficient, economical, and effective operation of the State's highways, harbors, and airports. DOT/PF uses its Planning, Design and Engineering, Maintenance and Operations, and Intelligent Transportation Systems resources to identify the hazard, plan and initiate mitigation activities to meet the transportation needs of Alaskans and make Alaska a better place to live and work. DOT/PF budgets for the temporary replacement bridges and materials necessary to make the multi-modal transportation system operational following a natural disaster.
  - The Department of Natural Resources (DNR) administers various projects designed to reduce stream bank erosion, reduce localized flooding, improve drainage, and improve discharge water quality through the stormwater grant program funds. Within DNR, the Division of Geological and Geophysical Survey (DGGS) is responsible for the use and development of Alaska's mineral, land, and water resources, and collaboration on

earthquake mitigation.

- DNR's DGGGS collects and distributes information about the State's geologic resources and hazards. Their geologists and support staff are leaders in researching Alaska's geology and implementing technological tools to most efficiently collect, interpret, publish, archive, and disseminate that information to the public
- The DNR's Division of Forestry (DOF) participates in a statewide wildfire control program in cooperation with the forest industry, rural fire departments, and other agencies. Prescribed burning may increase the risks of fire hazards; however, prescribed burning reduces the availability of fire fuels, and therefore, the potential for future, more serious fires.
- DOF also manages various wildland fire programs, activities, and grant programs such as the FireWise Program, the Community Forestry Program (CFP) and the Volunteer Fire Assistance and Rural Fire Assistance Grant (VFA-RFAG) programs.

### **Other Funding Sources and Resources**

The following provide focused access to valuable planning resources for communities interested in sustainable development activities.

- FEMA, <http://www.fema.gov> - includes links to information, resources, and grants that communities can use in planning and implementation of sustainable measures.
- American Planning Association (APA), <http://www.planning.org> - a non-profit professional association that serves as a resource for planners, elected officials, and citizens concerned with planning and growth initiatives.
- Institute for Business and Home Safety (IBHS), <http://ibhs.org> - an initiative of the insurance industry to reduce deaths, injuries, property damage, economic losses, and human suffering caused by natural disasters.
- American Red Cross (ARC). Provides for the critical needs of individuals such as food, clothing, shelter, and supplemental medical needs. Provides recovery needs such as furniture, home repair, home purchasing, essential tools, and some bill payment may be provided.
- Crisis Counseling Program. Provides grants to State and Borough Mental Health Departments, which in turn provide training for screening, diagnosing, and counseling techniques. Also provides funds for counseling, outreach, and consultation for those affected by disaster.

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## **Appendix A: Public Outreach**

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# DENALI BOROUGH

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P.O. Box 480 • Healy, Alaska 99743  
Phone: (907) 683-1330 • Fax: (907) 683-1340  
Email: [dbgovt@mtaonline.net](mailto:dbgovt@mtaonline.net)  
Website: [www.denaliborough.org](http://www.denaliborough.org)



*Clay Walker, Mayor*


February 3, 2020

Brent Nichols, CFM  
State of Alaska Hazard Mitigation Officer  
State of Alaska DMVA DHS&EM  
P.O. Box 5750  
Joint Base Elmendorf-Richardson, Alaska 99505-5750

Mr. Nichols:

This letter serves as the Denali Borough's and City of Anderson's Letter of Commitment to support LeMay Engineering & Consulting, Inc. in their Federal Emergency Management Agency (FEMA) Pre-Disaster Mitigation (PDM) planning grant to update the hazard mitigation plan developed in 2010 for the Denali Borough and City of Anderson. The end goal of this grant is a State- and FEMA-approved multi-jurisdictional hazard mitigation plan that the Denali Borough and the City of Anderson will adopt.

Sincerely,



Chris Noel  
Emergency Planning and Projects Coordinator  
Denali Borough



# Denali Borough

## ALASKA

### Local Emergency Planning Committee

The Denali Borough's Local Emergency Planning Committee (LEPC), is a voluntary organization which was established in an Emergency Planning District designated by the Alaska State Emergency Response Commission (SERC).

Both SERC and LEPCs were created to meet the requirements of the Federal Emergency Planning and Community Right-to-Know Act, also known as the Superfund Amendments and Reauthorization Act (SARA) Title III for emergency response planning.

As a very important aspect of its mandate, the Denali LEPC is required to receive the annual Tier II (Chemical Inventory) Reports from local industries and businesses. The LEPC uses this information to perform hazard assessments and planning for Borough communities. The information from these reports is available to the public upon request.

Due to the prevalence of natural and weather related disasters in Alaska, the Denali LEPC has enhanced its emergency planning to include an "all hazards" focus.

#### LEPC Staffing

Membership is comprised of a cross section of business representatives, planners, emergency responders, health care providers, elected officials, media representatives, and concerned citizens... all volunteers, to serve on behalf of their communities. Most LEPC staff functions are performed by borough Emergency Planning personnel.

#### Meetings

LEPC meetings are held Quarterly, at 6:00p.m. on the first Wednesday of the month at the Denali Borough office in Healy.

## Resources

[Alaska 511 Road Information](#)  
[Burn Permits](#)  
[Firewise Communities](#)  
[Earthquake Information Center](#)

## Agencies


[Alaska Department of Homeland Security and Emergency Management](#)  
[Federal Emergency Management Agency](#)

## Contact Us

**Phone:** (907) 683-1330  
**Fax:** (907) 683-1340

**Staff**

Please check with the Borough Office for specific meeting information.

 [Denali Borough Hazard Mitigation Plan](#)

 [Denali Borough Hazard Mitigation Plan - Anderson Annex](#)

*Chris Noel*, Emergency  
Planning and Projects  
Coordinator  
cnoel@denaliborough.com

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# Denali Borough ALASKA

## Meetings Calendar

January 2020

S	M	T	W	Th	F	S
29	30	31	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	1

## How Do I...?

- [Register to vote](#)
- [Start a Business](#)
- [Apply for a Passport](#)
- [Find the Landfill Hours](#)
- [Pay my OA or Severance Tax](#)
- [Find the Borough fee schedule](#)
- [Contact a Borough Staff Member](#)

## Local Weather

-31 °F	-24 °F	-22 °F
Cold		
Denali Borough Weather		

## News & Announcements

[HEALY TRANSFER STATION IS CLOSED TUESDAY, JAN. 21 FOR MLK DAY](#)

[HAZARD AWARENESS AND MITIGATION SURVEY](#)  
PUBLIC FEEDBACK REQUESTED BY FEBRUARY 15th

[LIVE STREAM January 15, 2020 Planning Commission Meeting](#)

[The FY2021 Online Grant Application period is Open as of January 6, 2020](#)

The FY2021 Grant Applications Have a New Look This Year!

Go to [denaliborough.org/grants](https://denaliborough.org/grants)

Along with submitting your grant application online, you will be able to upload your required documents that will be sent directly to [grants@denaliborough.com](mailto:grants@denaliborough.com).

Just as a reminder the deadline this year is **Monday, March 2, 2020 at 4:00 pm.**

[Overnight Accommodations and Severance Operators](#)

Don't forget to register your business to collect overnight accommodations tax or severance tax for 2020.

Registration, Tax Return Forms, and the Online Payment Option are now available online.

Go to [Online Forms!](#)

[Passport Information](#)



# Denali Borough ALASKA

## HAZARD AWARENESS AND MITIGATION SURVEY

### **Hazard Mitigation Plan Update**

This is the Denali Borough and City of Anderson adopted Hazard Mitigation Plan from 2010. Click here [2010 Hazard Mitigation Plan](#) to see the Plan. We are in the process of updating the Hazard Mitigation Plan per 2015 FEMA Guidance and the 2018 State of Alaska Hazard Mitigation Plan. Your input is vital to the update of this Plan. Please take a moment and complete the survey in the link below or that you will receive in the mail. You can also review the Plan and provide comments to Chris Noel at [cnoel@denaliborough.com](mailto:cnoel@denaliborough.com).

### **Plan Overview**

Hazard mitigation planning helps communities reduce their risk from hazards by identifying vulnerabilities and developing strategies to lessen and sometimes even eliminate the effects of the hazard. Some of the benefits of mitigation planning are as follows: Leads to identification, selection, and prioritization of risk reduction actions. The Denali Borough and City of Anderson Hazard Mitigation Plan was developed to meet requirements of the Hazard Mitigation Act of 2000 Section 322 which requires documented hazard mitigation planning on the local level for jurisdictions to retain eligibility to receive federal disaster mitigation funds. This Plan is intended as a guide for reducing losses due to natural disasters. This document follows the required processes of identification of hazards, mapping the potentially impacted areas, tallying risks and vulnerabilities, and presenting mitigation strategies.

The primary goals of hazard mitigation are to:

- Minimize injuries and loss of life;
- Minimize damages;
- Facilitate post-disaster restoration of public services; and
- Promote economic development.

The 2020 Denali Borough and City of Anderson Hazard Mitigation Plan Update includes working with the Borough contractor on the update.



**Project Status**

Staff and the contractor are reviewing existing data, and the community survey is available. A Draft Hazard Mitigation Plan Update is anticipated to be posted on this website on March 2, and a 30-day public comment period will then begin.

[2020 Hazard Awareness and Mitigation Survey Questionnaire](#)

## 2019 Hazard Awareness and Mitigation Survey Questions

This survey is an opportunity for you to share your opinions and participate in the hazard mitigation planning process. The information that you provide will help us better understand your concerns for hazards and risks, which could lead to mitigation projects that will help reduce those risks and the impacts of future hazard events. **The hazard mitigation process is not complete without your feedback.** All individual responses are strictly confidential and will be used for mitigation planning purposes only.

***Please help us by taking a few minutes to complete this survey and return it to:***

Chris Noel, Emergency Planning and Projects Coordinator  
Denali Borough  
PO Box 480  
Healy, AK 99743

1. In which community do you live?
  - a. Anderson
  - b. Cantwell
  - c. Ferry
  - d. Healy
  - e. McKinley Park
  - f. Another area in Denali Borough \_\_\_\_\_ (Please write in)
  
2. How long have you lived in your community?
  - a. Less than 5 years
  - b. 5-10 years
  - c. 11-20 years
  - d. 21 or more years
  
3. Do you own or rent your home?
  - a. Own
  - b. Rent
  
4. What is the most efficient way for you to receive information on emergencies and other Denali Borough topics (please rank in order of best to worst with 1 being the best way to receive information)?
  - a. Newspaper advertisement
  - b. Television/radio
  - c. Email
  - d. Social media
  - e. Borough website
  - f. Mail
  - g. Public workshops/meetings

5. Which hazards present the greatest risk to you (please rank in order of highest to lowest with 1 being the hazard of most concern to you, followed by the second most hazard of concern, etc.)?
  - a. Earthquakes
  - b. Severe weather
  - c. Floods
  - d. Fire
  - e. Ground failure (landslides)
  - f. Changes to the cryosphere (climate change, changes in the permafrost active layer, avalanches)
  
6. How informed do you feel about natural hazards with the potential to affect the Denali Borough?
  - a. Very informed
  - b. Somewhat informed
  - c. Not informed
  
7. What information do you expect to receive from the Denali Borough during a natural disaster?
  - a. Current information of present situation
  - b. Responses and projections on response timing
  - c. School, road, and bridge closures; emergency shelter locations and openings
  - d. Warnings
  - e. Evacuations
  - f. What is expected of residents (safety measures to be taken)
  - g. Available resources
  - h. Priorities of first responders
  - i. Is water safe to consume?
  - j. All of the above.
  
8. What is the frequency that the Denali Borough should provide updates during a natural disaster?
  - a. Daily
  - b. As Needed
  - c. Every four hours even if there is no new information
  - d. Hourly
  
9. How important are hazard mitigation prevention measures such as planning and zoning, building codes, open space preservation, and floodplain regulations to influence the way land is developed and buildings are built?
  - a. Extremely important
  - b. Very important
  - c. Somewhat important
  - d. Not important

10. How important are property protection actions such as removing homes from the floodplain, elevating homes to stay above water levels in flooding, etc. to lessen the risk of property damage to homes?
  - a. Extremely important
  - b. Very important
  - c. Somewhat important
  - d. Not important
  
11. How important are public education and awareness such as outreach programs, public service announcements, and notices to residents and property owners to inform the public about natural hazards and the actions necessary to avoid potential injury or damage?
  - a. Extremely important
  - b. Very important
  - c. Somewhat important
  - d. Not important
  
12. How important are natural resource protection actions such as floodplain protection, habitat preservation, slope stabilizations, riparian buffers, and forest management to preserve or restore the functions of natural systems?
  - a. Extremely important
  - b. Very important
  - c. Somewhat important
  - d. Not important
  
13. How important is critical facility protection such as placing generators at community centers to ensure electrical power during a widespread power failure?
  - a. Extremely important
  - b. Very important
  - c. Somewhat important
  - d. Not important
  
14. How important are emergency service actions such as warning systems, evacuation planning, emergency response training, and protection of critical emergency facilities or systems to protect people and property during and immediately after a hazard event?
  - a. Extremely important
  - b. Very important
  - c. Somewhat important
  - d. Not important
  
15. How vulnerable are critical facilities (schools, community centers, government buildings, places of worship, communications towers, water and wastewater treatment buildings, fire stations, landfills) in your community to hazards?
  - a. Very vulnerable
  - b. Average vulnerability
  - c. Minimal vulnerability
  - d. None

16. How vulnerable to displacement, evacuation, or life safety is your community?
- Very vulnerable
  - Average vulnerability
  - My community isn't vulnerable.
17. Does your property (rented or owned) have a history of recorded damages?
- Yes
  - No
  - Write in answer: Estimated amount for each hazard event and year it occurred.
- 
18. Are you willing to spend money to make your home more resilient to damage from natural hazards?
- Yes
  - No
19. Would you be willing to make your property more resistant to natural hazards?
- Yes
  - No

**Preparedness**

Preparedness activities are often the first line of defense for protection of your family and the community. In the following list, please check those activities that you have done, plan to do in the near future, have not done, or are unable to do. Please check one answer for each preparedness activity.

Have you or someone in your household:	Have Done	Plan to do	Not Done	Unable to do
Attended meetings or received written information on natural disasters or emergency preparedness?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Talked with family members about what to do in case of a disaster or emergency?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Made a "Household/Family Emergency Plan" in order to decide what everyone would do in the event of a disaster?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Prepared an "Emergency Supply Kit" extra food, water, medications, batteries, first aid items, and other emergency supplies)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
In the last year, has anyone in your household been trained in First Aid or CPR?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

How much are you willing to spend to better protect your home from natural disasters? (*Check only one*)

<input type="checkbox"/>	Less than \$100	<input type="checkbox"/>	Desire to relocate for protection
<input type="checkbox"/>	\$100-\$499	<input type="checkbox"/>	Other, please explain
<input type="checkbox"/>	\$500 and above		
<input type="checkbox"/>	Nothing / Don't know		
<input type="checkbox"/>	Whatever it takes		

**Mitigation Activities**

A component of the Local Hazard Mitigation Plan activities is developing and documenting additional mitigation strategies that will help the community in protecting life and property from the impacts of future natural disasters.

Mitigation activities are those types of actions you can take to protect your home and property from natural hazard events such as wildfires, severe weather, and floods. Please check the box for the following statements to best describe their importance to you. Your responses will help us determine your community's priorities for planning for these mitigation activities.

<b>Statement</b>	<b>Very Important</b>	<b>Somewhat Important</b>	<b>Neutral</b>	<b>Not Very Important</b>	<b>Not Important</b>
Protecting private property	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Protecting critical facilities (clinic, school, community center, police/fire department, water/sewer, landfill)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Preventing development in hazard areas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Protecting natural environment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Protecting historical and cultural landmarks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Promoting cooperation within the community	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Protecting and reducing damage to utilities, roads, or water sources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Strengthening emergency services (clinic workers, police/fire)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Do you have other suggestions for possible mitigation actions/strategies?

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**Thank You for Your Participation!**

This survey may be submitted anonymously; however, if you provide us with your name and contact information, we will have the ability to follow up with you to learn more about your ideas or concerns (optional):

Name: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

Phone: \_\_\_\_\_

Denali Borough  
LOCAL EMERGENCY PLANNING COMMITTEE  
REGULAR MEETING  
AGENDA

March 4, 2020  
6:00 PM

Tri-Valley Community Center  
Healy, Alaska

**Chair**

Chris Noel  
Emergency Manager/Civil  
Defense

**Vice Chair**

Steve Love  
Public at Large

**Coordinator of Information**

Rob Graham  
Fire Department

**Community Emergency  
Coordinator**

Clay Walker  
Mayor

Joe Chatfield  
Elected Official

AK State Troopers  
Law Enforcement

Sam Kimmel  
First Aid, Health, EMS

Bill Morrow  
Community Groups

1. **Welcome, Introductions, Roll Call**
2. **Approval of Agenda**
3. **Approval of Minutes**  
December 5, 2019 Regular Meeting minutes
4. **Public Comment**
5. **Financial Report**
6. **Reports of Subcommittees**
7. **Old Business**
8. **New Business**
  - A. Hazard Mitigation Plan – update
  - B. Supportive Communities Initiative – American Red Cross
  - C. Satellite phone funding discussion
  - D. Bylaws amendments
9. **Committee Member Comment**
10. **Next Meeting**  
Set Emergency Alert System subcommittee meeting date.  
  
Next regularly scheduled LEPC meeting, June 3, 2020 at  
6:00pm in the Denali Borough office.
11. **Adjournment**



**Denali Borough and City of Anderson Public Meeting  
for 2020 Hazard Mitigation Plan Update**

**March 4, 2020**

**6 pm at the TV Community Center in Healy**

Name	Organization Represented or Borough Resident	Contact Information (phone and email)
Therese (Tess) Morin	WORK: National Park Home: McKinley Village	907 351 2879 tess-morin@ps.gov
Temple Wingfield	Clear AFS	907-585-6491 temple.wingfield@ctr @@us.af.mil
Brad Rowell	TUFD DESA	907-683-2222 trivella@schuel@gmail.com
Steve Love	Denali LEPC	selover@rma@mtaonline.net
Patrick Lemay	Lemay Engineering & Consulting, Inc.	907.250.9038
Connie MacMaster	Denali Borough	cmacmaster@denaliborough.com 907-683-1380
Chris Noel	Denali Borough	cnoel@denaliborough.com 907-232-4933
JOEL MINER	Alaska State Trooper	joel.miner@alaska.gov
JENNIFER LEMAY	LEMAY ENGINEERING + CONSULTING, INC.	jlemay@lemayengineering.com



# Denali Borough and City of Anderson 2020 Hazard Mitigation Planning Process

Public Meeting #1: March 4, 2020

The Denali Borough and City of Anderson developed a Hazard Mitigation Plan in 2010. The Plan has since expired. LeMay Engineering & Consulting, Inc. was hired by the Denali Borough to update the Hazard Mitigation Plan in accordance with the 2018 State of Alaska Hazard Mitigation Plan and FEMA guidance. The effort to develop this Plan is a public process, and you are invited to participate.

Tonight's meeting is a forum to present a summary of the planning process and mitigation actions for the community. I welcome your input. Comments can be provided during or after this meeting or by email or phone. Send Jennifer LeMay, PE, PMP an email at [jlemay@lemayengineering.com](mailto:jlemay@lemayengineering.com) or call her at (907) 350-6061.

The Borough and City of Anderson will post the Draft 2020 Hazard Mitigation Plan on their websites for review by the community (~March 16 or 17) after input from Public Meetings #1, 2, and 3 are incorporated into the Draft Plan and begin a 30-day public comment period.

The Borough has a Hazard Awareness and Mitigation Survey on its website: [www.denaliborough.org/](http://www.denaliborough.org/).  
Please take the survey if you haven't already!

For the Hazard Mitigation Plan, we're interested in information related to:

- Hazard Identification,
- Profiles (characteristics),
- Previous occurrences,
- Locations,
- Extents (breadth, magnitude, and severity),
- Impacts, and
- Recurrence probability statements.

Which hazards are applicable for the Denali Borough and the City of Anderson?

Natural Hazards Profiles	Borough-Wide	Anderson	Cantwell	Ferry	Healy	McKinley Village
Earthquake	Yes	Yes	Yes	Yes	Yes	Yes
Flood	No	Yes	Yes	Yes	Yes	Yes
Severe Weather	Yes	Yes	Yes	Yes	Yes	Yes
Changes in the Cryosphere	Yes	Yes	Yes	Yes	Yes	Yes
Ground Failure	No	No	No	No	Yes	Yes
Wildland and Conflagration Fire	Yes	Yes	Yes	Yes	Yes	Yes

### Plan Process:

- Public Meeting #1 as part of LEPC Meeting on March 4, 2020, in Healy.
- Public Meeting #2 as part of City Council Meeting on March 10, 2020, in Anderson.
- Public Meeting #3 as part of Borough Assembly Meeting on March 11, 2020, in McKinley Village.
- Draft Plan available on Borough's website for public comment (Third Week of March).
- Public hearing for Draft Plan (Last Two Weeks of March and First Three Weeks of April).
- Public Comments incorporated into Revised Draft Plan (late-April).
- State DHS&EM/FEMA review and pre-approval of Draft Plan (May and June).
- Denali Borough adoption (July).
- City Council adoption (July).
- Final Approval from FEMA (July).

After the 2020 Hazard Mitigation Plan is completed, approved, and adopted, the Denali Borough and the City of Anderson will be eligible to apply for mitigation project funds from DHS&EM and FEMA for five years until the plan requires an update in 2025.

### Contacts:

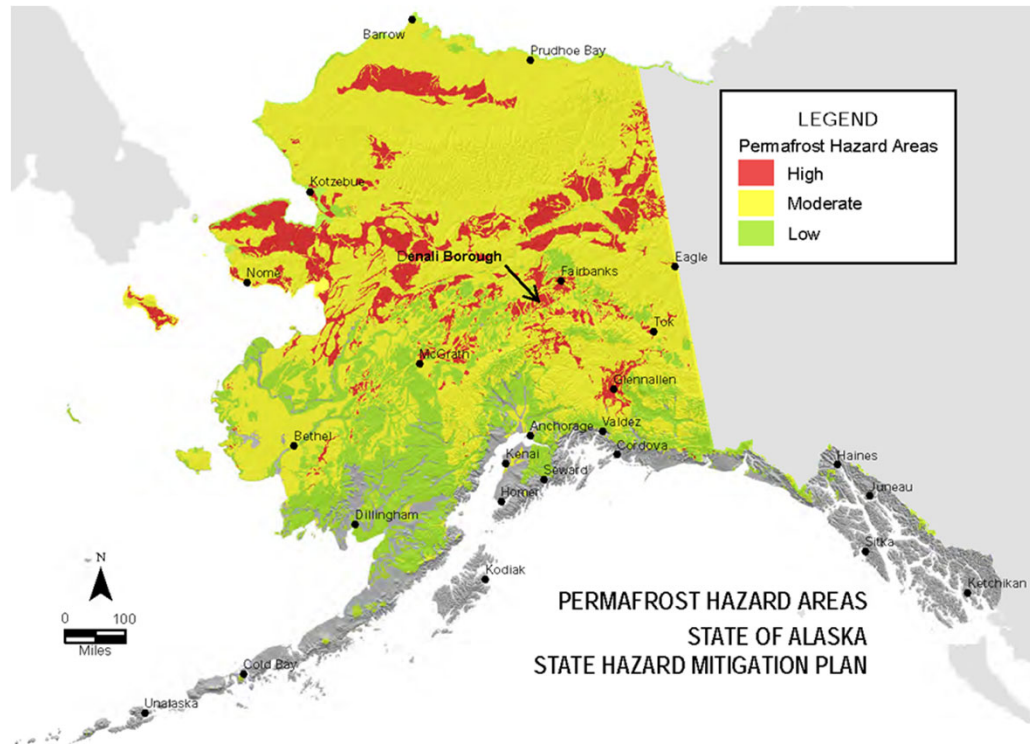
Jennifer LeMay, PE, PMP, LeMay Engineering & Consulting, Inc. Planner (907) 350-6061

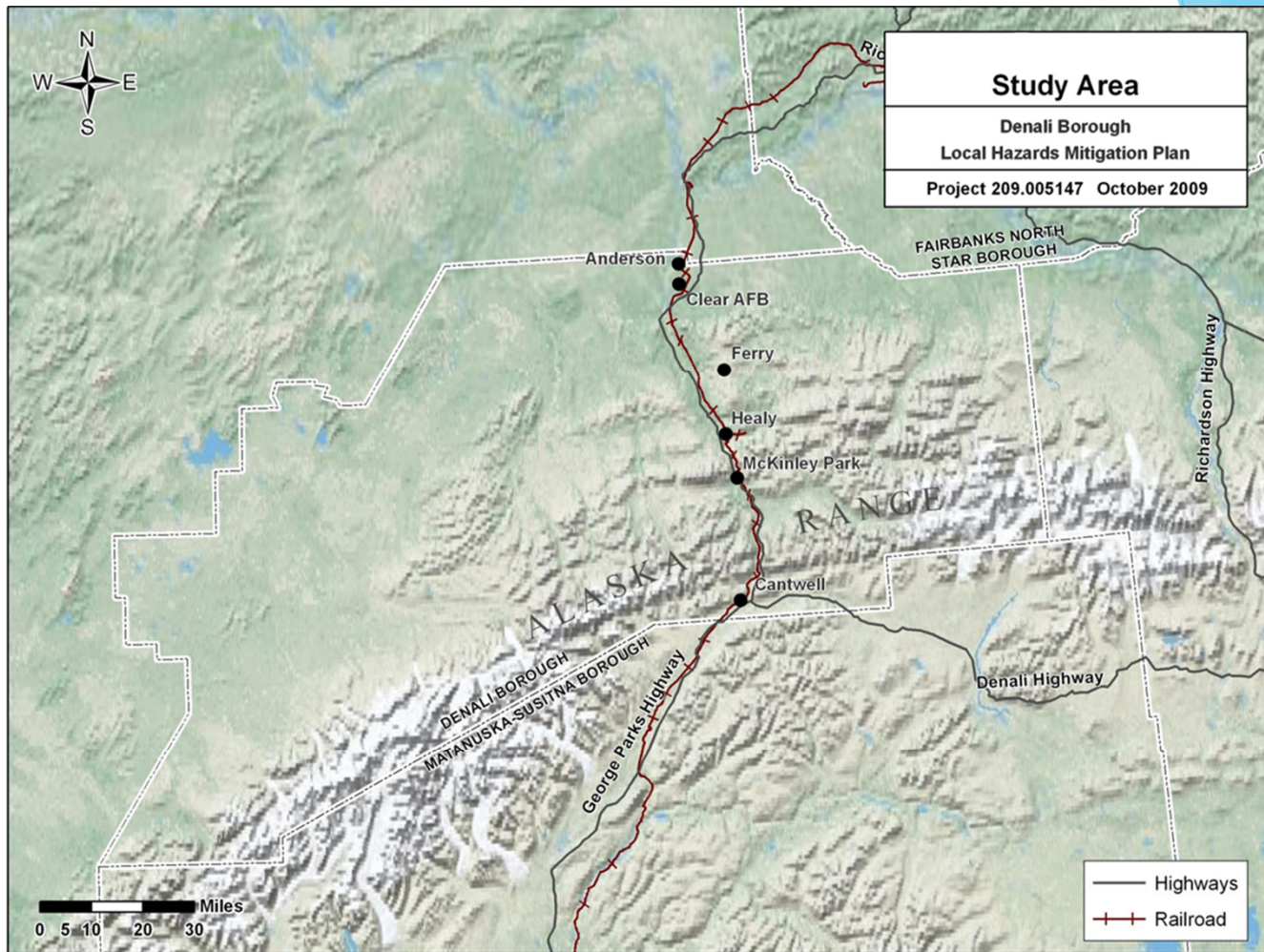
Brent Nichols, CFM, State of Alaska DHS&EM Hazard Mitigation Officer (907) 428-7085

Rick Dembroski, State of Alaska DHS&EM Project Manager (907) 428-7015

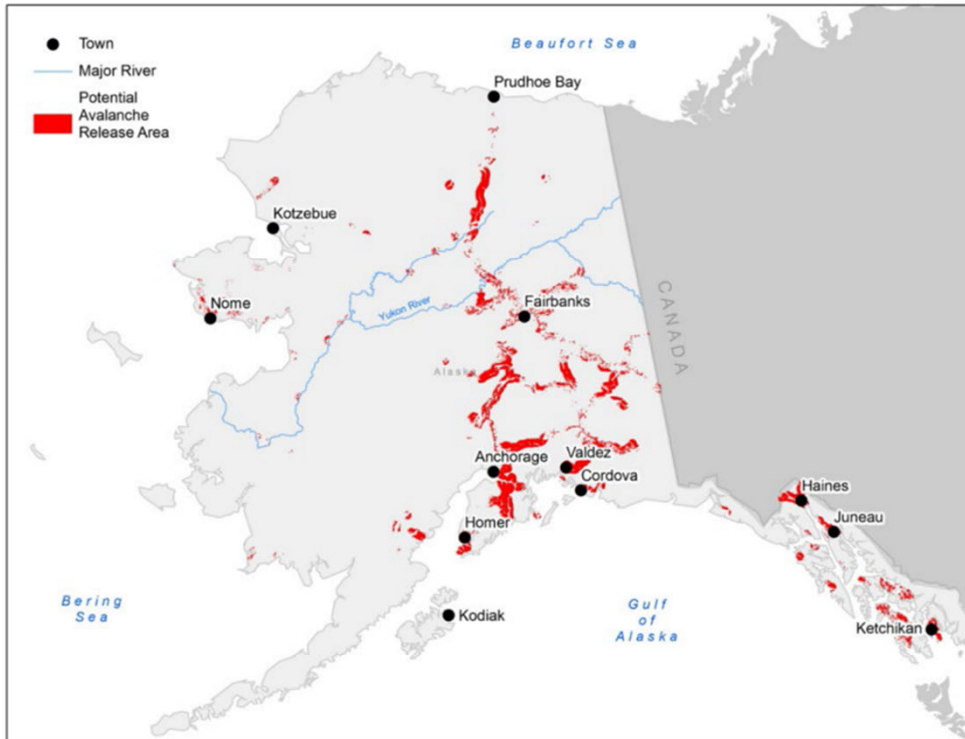
# Changes in the Cryosphere

- The Denali Borough is susceptible to changes in the cryosphere as its geographical area includes glaciers, permafrost, and mountains where snow avalanches occur. While one incident of avalanche was documented in the Borough in 2004, it was not within a community.





The Borough has one main road (George Parks Highway) connecting to the rest of the State's road systems. The Borough has road choke points such as bridges and steep terrain that are susceptible to multiple natural hazard impacts from earthquakes; floods; ground failure events such as falling rocks, landslides, and mudslides; and changes to the cryosphere events such as thawing permafrost and avalanches.



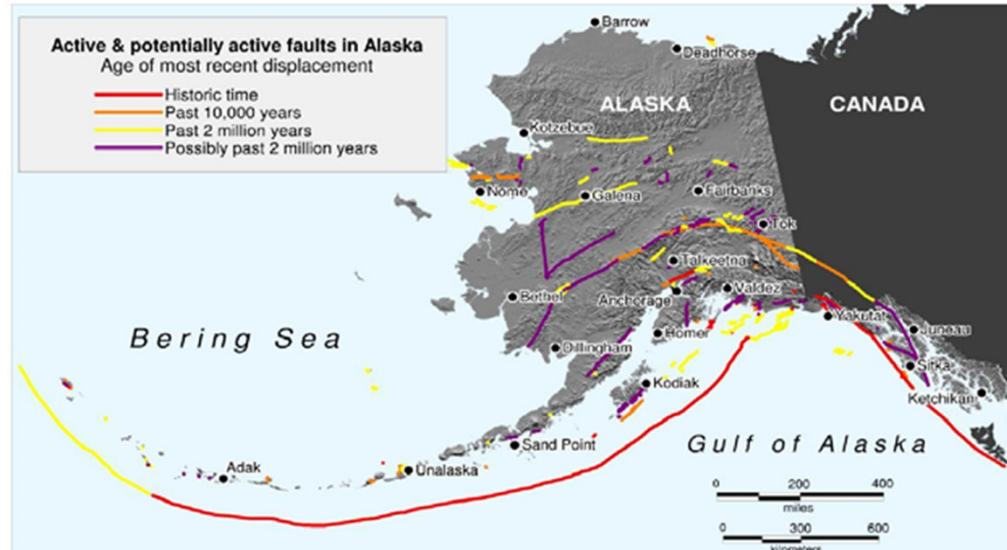
The steep slopes within the Borough are subject to large and small-scale avalanches. Slopes near Denali National Park and Cantwell are of particular concern.

Power was knocked out in 2004 to McKinley Village from an avalanche that occurred between the Village and Cantwell at MP 218. The avalanche covered the highway for up to a quarter of a mile to a depth of 16 feet. The highway was closed two days.



# Earthquakes

- The entire geographic area of Alaska is prone to earthquake effects. The most recent large earthquake on the Denali Fault occurred November 3, 2002 with a magnitude of 7.9. The area experienced severe damage to numerous personal residences requiring evacuation and sheltering of residences and extensive damage to the Parks Highway. Damage in the Denali Borough was very limited.
- The November 30, 2018 earthquake with a with its epicenter at Point MacKenzie in the Matanuska-Susitna Borough had a magnitude of 7.1 and minimally affected the Anderson School, Anderson sewer, and the Cantwell Fire Hall.



## Flood/Erosion

- 1979: Nenana River floodwaters reached a depth of six- to eight-feet on the west side of the **Anderson** community near Lost Slough. Near the northwest section of Anderson, the floodwaters reached a depth of twelve inches. Floodwater marks were four inches above the doorsill of a house located on C Street. Notches were cut into trees at the six- and eight-foot levels by overflow ice on West First Street and the trail to the river. Watermarks were several inches above the floor in a house on D Street. The cause of the flood was glaciation.
- **2003 Riverine Flooding**: The **Denali Borough** declared a local disaster and requested assistance from the State. Heavy flooding during July 14 to August 3, 2003 caused damages to DOT roads and bridges, local businesses, and some residential homes. The Division of Emergency Services procured and provided 2,000 sandbags and 24 potable water containers to the Borough for emergency response. DOT damages included areas on the Chena Hot Springs Road, the Elliot Highway, and the Parks Highway at Honolulu Creek and Carlo Creek. Several businesses in the affected area were damaged.

## Flood/Erosion, continued.

- **2006 Flooding:** From August 18 to August 24, 2006, a strong weather system caused severe flooding, resulting in severe damage and threats to life and property, in the **Denali Highway** area and the Alaska Railroad and **Parks Highway** areas of the **Denali Borough**.
- **2008 Tanana Basin Flooding:** From July 27 to August 6, 2008, a strong large area of low-pressure developed in the Beaufort Sea near the northern border of the State, bringing a series of storms that moved from the northwest coast into the interior. These severe storms caused losses of property and threats to life and property in the **Denali Borough**. The **Denali Borough** experienced damages to local roads and bridges, preventing access to homes, requiring transient accommodations until access could be re-established. The Alaska Railroad Corporation suffered damages to their facilities as a direct result of this event. Damages were more extensive, requiring total shutdown of all northbound freight and passenger service due to track failures in Nenana and in the Healy Canyon in the **Denali Borough**.
- **2012 Nenana River Flooding at Healy:** After a few days of heavy rainfall along the south slopes of the Alaska Range that amounted to several inches of rain, the Nenana River flooded at Healy. The boat launch was flooded, and water was over the bank and rising up the shoulder of the coal hauling road. The Nenana River rose to the highest stage on record when the river crested at 14.9 feet at Healy, and a surge of water continued downstream. The crest was protracted as the water levels remained at the crest for nearly 24 hours. This resulted in the flooding of several structures at Denali National Park, and erosion of the southbound lane at MP240 of the Parks Highway.

## Flood/Erosion, continued.

- Concerns:
  - Nenana River flooding is caused by ice jams, snowmelt, and rainfall.
  - Flooding in Anderson has not topped the dike since it was built.
  - Yanert River glacial outburst flood in Winter 2014/2015

# Ground Failure

- Concerns:
  - Rockfall in the canyon area along the George Parks Highway. DOT mitigates for rock fall along the Highway.
  - Mass wasting events west of Healy on DNR lands.
  - Landslide near Cantwell that impacted Alaska Railroad tracks.

Location	Date	Event Type	Magnitude
225	7/28/2003	Heavy Rainfall	Record rainfall occurred over Interior Alaska bringing rivers and streams above their banks. Rainfall amounts of one to three inches fell in the Denali area. Some rock slides along the Parks Highway; Carlo Creek south of Denali Park overflowed its banks on early on the 28th and flooded cabins, roadways, and businesses, as well as eroding sections of the Parks Highway. Minor flooding occurred at Nenana.
225	6/1/2012	Heavy Rain	Heavy rain fell from the early evening of the 1st into the morning hours on the 2nd. The heavy rain caused a rock slide in the Nenana River Canyon at MP 239.5 along the Parks Highway that sent debris onto the Parks Highway just north of Denali National Park. Rainfall amounts ranged from 1.53 inches at Denali Park Headquarters to 1.66 inches at the Healy River Airport.
225	6/13/2012	Heavy Rain	Heavy rainfall of approximately 1.25 inches on the 12th caused a rock slide and debris to fall on the Parks Highway in the Nenana River Canyon at MP 239.5 late on the evening of the 12th into the early morning hours of the 13th. Additional rock slides were reported during the day on the 14th. Delays were experienced in the area, but the Highway remained open as crews removed the rocks and debris from the road. This followed on the heels of a rock slide in the same area due to heavy rainfall the previous week.
225	9/16/2012	Falling Rocks	There were four reports of rocks falling on vehicles on the Denali Park Road.

# Severe Weather

- Concerns:
  - High Winds: 85 mph (December 21, 2009)
  - Heavy Snow: 30 inches in Cantwell (January 3, 2005)
  - Freezing Rain
  - Extreme Cold: -66°F Antler Creek (Parks Highway MP 244 on January 8, 2009)

# Wildland/Conflagration Fires

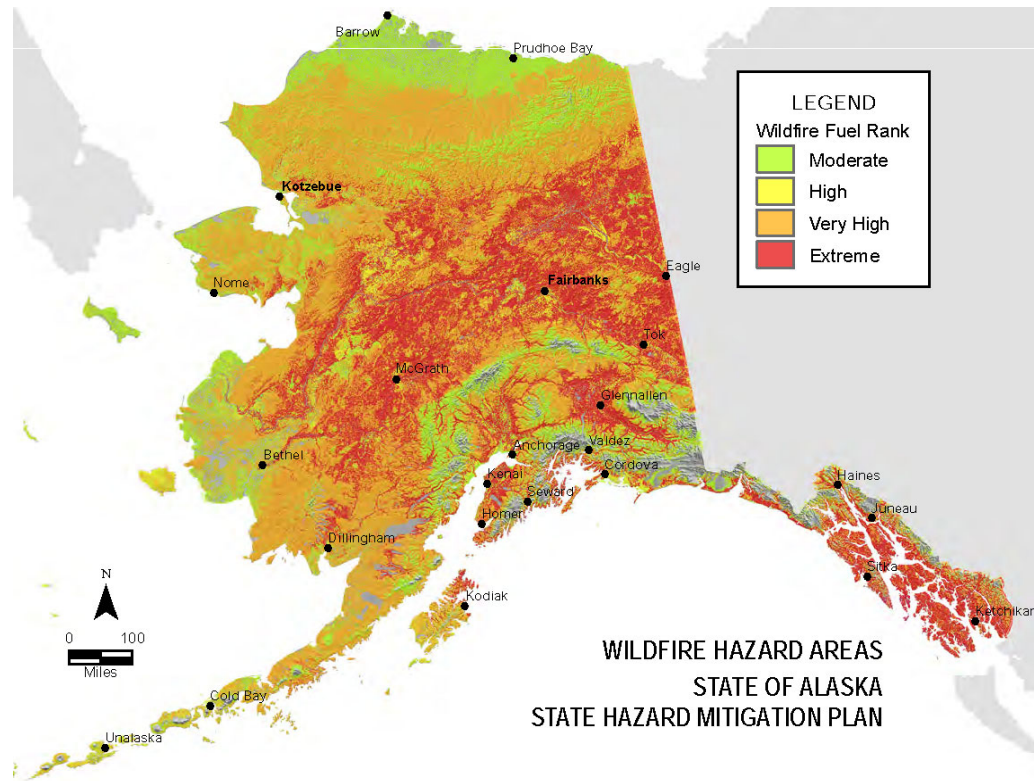
Largest Wildfire Locations Since 1995 within 100-Miles of the Healy

Fire Name	Fire Year	Estimated Acres	DOF Code	Cause
George Parks Highway	2006	130,186		Human
Sischu	2002	128,983	232265	Lightning
Wood River 1	2009	125,381	911425	Lightning
Rex Creek	2009	101,150	911527	Lightning
Mississippi	2013	67,338	332117	Incendiary
100-Mile Creek	1996	66,560	632321	Blasting
Spurs	2002	64,832	232069	Human
Beaver Log Lakes	2013	64,416	323360	Lightning
Sandless Lake	2013	62,318	332360	Lightning
Oklahoma	2014	56,564	332360	Prescribed
Carla Lake	1998	52,497	832188	Lightning
Rex Complex Fire	2015	+20,000		Lightning

## *Largest Wildfire Locations within 10-Miles of Anderson*

Fire Name	Fire Year	Estimated Acres	DOF Code	Cause
Minto Flats South	2009	517,078		Lightning
Rex Creek	2009	101,150	911527	Lightning
George Parks Highway	2006	130,186		Human

# Wildland/Conflagration Fires, continued.





# Ranking of Natural Hazards


Natural Hazards Profiles	Borough-Wide	Anderson
Earthquake		
Flood		
Severe Weather		
Changes in the Cryosphere		
Ground Failure		
Wildland and Conflagration Fire		

# Mitigation Goals for Denali Borough and the City of Anderson

Goal ID	Description
1	Reduce potential earthquake vulnerability, damage, and loss.
2	Reduce potential severe weather vulnerability, damage, and loss.
3	Reduce potential flood vulnerability, damage, and loss.
4	Reduce potential wildland fire and conflagration fire vulnerability, damage, and loss.
5	Reduce potential ground failure vulnerability, damage, and loss.
6	Reduce potential changes to the cryosphere vulnerability, damage, and loss.

# Vulnerability of the Denali Borough

Community	Population		Residential Buildings	
	2010 Census	DCCED 2018 Data	Total Building Count	Total Value of Buildings <sup>1</sup>
Denali Borough	1,826	1,825	1,627	\$309,455,400
Anderson	246	269	147	\$27,959,400
Cantwell	219	202	214	\$40,702,800
Ferry	33	30	33	\$6,276,600
Healy	1,021	1,057	736	\$139,987,200
McKinley Village/Denali Park Area	N/A	192	167	\$31,763,400

Natural Hazards	Borough-Wide	Anderson	Cantwell	Ferry	Healy	McKinley Village
Earthquake	<ul style="list-style-type: none"> <li>• % of population that could potentially be affected</li> <li>• % of structures that could potentially be affected</li> </ul> 					
Flood						
Severe Weather						
Changes in the Cryosphere						
Ground Failure						
Wildland and Conflagration						
Fire						



**LeMay Engineering  
& Consulting, Inc.**

**Jennifer L. LeMay, PE, PMP**  
**Vice President**  
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March 5, 2020

Brent A. Nichols, EMSII, CFM  
State Hazard Mitigation Officer  
Department of Military and Veterans Affairs  
Division of Homeland Security and Emergency Management  
P.O. Box 5750  
JBER, AK 99505-5750

**Subject: Hazard Mitigation Planning Process Trip Report**

LeMay Engineering & Consulting, Inc. was hired by the Denali Borough on December 13, 2019 through a State DHS&EM grant to update the Denali Borough and City of Anderson Hazard Mitigation Plan that was adopted in 2010.

On March 4, 2020, I traveled to Healy, Alaska to attend the 6:00 pm LEPC meeting. The purpose of this trip was to conduct an introductory meeting, gather data, and give a Powerpoint® presentation of the hazard mitigation planning process summarizing the Draft Hazard Mitigation Plan Update. The LEPC made the following comments:


1. Table 14, page 81. Ground failure is now applicable for Healy. In 2016, mass wasting occurred on State lands west of Healy. No people or structures were affected.
2. Regarding the November 30, 2018 earthquake, three areas within the Borough experienced damage from the event. The Cantwell Fire Hall had had a wall that had been slowly separating from the concrete slab prior to the event. The event exasperated the separation. This wall has since been fixed. I will ask the Anderson City Council next week about the damage that their school and sewer system experienced.
3. Nenana River potential flooding areas of concern include the City of Anderson, Dry Creek at Healy, and Carlo Creek at McKinley Village.
4. A landslide around 2007 or 2008 occurred 2.5 miles north of Cantwell in a known Alaska Railroad slide zone.
5. Add the 2019 Kobe Fire to the hazard profile. It was around 20,000 acres. There was also a smaller fire in Nenana Canyon near McKinley Village in 2019.
6. Denali Borough ranks fire as their #1 hazard followed by earthquakes and then severe weather.

I met with Chris Noel, Borough Emergency Planning and Projects Coordinator from 3 – 5:30 pm to discuss hazards for the area and evaluate the progress of mitigation strategies from the 2010 plan.

If you have any questions, please do not hesitate to call me at (907) 350-6061.

3/5/20

Jennifer L. LeMay, PE, PMP/Date  
LeMay Engineering & Consulting, Inc.



**CITY OF ANDERSON**

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coaclerk@mtaonline.net

**AGENDA**

**CITY OF ANDERSON, ALASKA  
REGULAR CITY COUNCIL MEETING  
ANDERSON CITY HALL, COUNCIL CHAMBERS  
March 10, 2020  
6:00p.m.**

1. Call to Order
2. Pledge of Allegiance
3. Roll Call/Establishment of Quorum
4. Approval of Agenda
5. Approval/Adoption of Minutes
  - (a) Regular Meeting, February 11, 2020
6. Bills to Be Paid
  - (a) February 2020
7. Receive Financial Reports
  - (a) February 2020
8. Correspondence- None
9. Reports
  - (a) Denali Borough Mayor Clay Walker

- (b) Clear AFB
- (c) Anderson School
- (d) Department Reports

10. Old Business

- (a) Denali Borough and City of Anderson Hazard Mitigation Plan update  
(Jennifer LeMay)

11. New Business

- (a) Piped Sewer thawing Policy

12. Public Access: At this time any citizen may bring to the Council any matter **which does not appear** on the agenda.

(During this section of the agenda the Council listens to oral communications from audience members. When speaking during this section of the agenda, please state your name, and limit your testimony to approximately three minutes per person.)

13. Council Comments

14. Adjournment

The City of Anderson Council reserves the right to enter into Executive Session to discuss matters as indicated under Alaska State Statute 44.63.310

**City of Anderson Public Meeting  
for 2020 Hazard Mitigation Plan Update**

**March 10, 2020**

**6 pm at Council Chambers in Anderson**

Name	Organization Represented or Resident of Which Community in the Denali Borough	Contact Information (phone and email)
Samantha Thompson	City of Anderson	neil@mtaonline.net
William MORRIS	City of Anderson	
Robert Smith	City of Anderson	bobdooglas62345@yahoo.com
George Haskins	" "	haskins - george@hotmail.com
Sandy Trumbower	" "	strumbower@hotmail.com
John S. Collura Jr	City of Anderson	907-388-5762 jjcollura@hotmail.com
Trista Jennings	City of Anderson	Coaclerh@mtaonline.net
Patrick LeMay	LeMay Engineering	250-9038
DANIEL LIGON	NORTH NEMANA	570-4422
Beth Johnson	Beth Johnson	(218) 360-4160
CLAY WALKER	Denali Borough	Cwalker@denaliborough.com
JENNIFER LEMAY	LEMAY ENGINEERING & CONSULTING, INC.	jlemay@lemayengineering.com

SCOTT THOMPSON  
(via phone)

CITY OF ANDERSON  
FIRE CHIEF + DIRECTOR OF  
PUBLIC SAFETY

Table 24. Community's Mitigation Action Plan Matrix

Action ID	Description	Priority	Responsible Entity	Potential Funding	Time-frame	Benefit-Cost/Technical Feasibility
F 1A	<p>Implement fuel reduction projects, and create defensible space around structures. Create safer corridors for access/egress by reducing fuel (trees) around homes and driveways and widening access roads. Remove fuel within the community around essential infrastructure such as communications towers, power lines, evacuation routes and shelters, and emergency response facilities.</p> <p><b>2020 Progress:</b> 1. The Borough has brought a brush clipper down from Fairbanks the last four years and coordinated/advertised the dates available for use with the Homeowners Association and both solid waste transfer stations. This program has been successful.</p> <p>2. An FY 2019 State Fire Assistance WUI Grant application was submitted in 2019 to create an 80-acre fuel break between the City of Anderson and Clear AFS.</p>	High	<p>1. Denali Borough Emergency Planning and Projects Coordinator</p> <p>2. Department of Forestry, Fairbanks</p>	<p>1. Hazard Mitigation Line Item in Borough Mayor's Budget</p> <p>2. Wildland Urban Interface Grant (WUI) (DNR AK-DOF)</p>	<p>1. On-going</p> <p>2. 2020</p>	<p>B/C: Life/Safety project as well as property damage reduction. Benefit to entire community because it reduces the likelihood of a catastrophic fire from human causes or lightning strike sweeping through the community. TF: This action can be accomplished by existing workers and resources.</p>
F 1B	<p>Promote FireWise building design, siting, and material for construction. Join Alaska FireWise program.</p> <p><b>2020 Progress:</b> The City of Anderson and Clear FD have been implementing this. DOF and the Borough will work to increase the number of Firewise compliant homes in the Borough. With grant money, the Borough bought a brush trailer.</p>	High	<p>Fire Chiefs in Anderson, Cantwell, Healy, and Panguingue</p>	<p>Volunteer Fire Assistance and WUI Grants (DNR AK-DOF)</p>	<p>2020</p>	<p>B/C: Life/Safety issue/Risk reduction/Benefit to entire community/Annual project. TF: This action can be accomplished by existing workers and resources.</p>



Action ID	Description	Priority	Responsible Entity	Potential Funding	Time-frame	Benefit-Cost/Technical Feasibility
F 1C	<p>Explore alternatives for emergency vehicle access to Ferry/Jim Creek area residences. The existing bridge is a trestle bridge for Alaska Railroad use and is not designed for people. Approximately 30 people could be potentially affected.</p> <p><b>2020 Progress:</b> The Borough has limited resources, and Ferry/Jim Creek area residents have not asked for an access bridge. The Alaska Railroad strengthened the bridge piers with regards to river scouring.</p>	Low	Denali Borough Emergency Planning and Projects Coordinator	Interest in a bridge has not been gauged. The Railroad has no need to alter the existing bridge for its purposes.	2025	<p>B/C: Life/Safety issue/Risk reduction/ Benefit to specific residents. TF: This action can be accomplished by existing workers and resources. Environmental impacts are likely. Residents may not desire an access bridge.</p>
F 1D	<p>Develop an alert system to notify residents of urgent need to evacuate or of other emergencies.</p> <p><b>2020 Progress:</b> Addressing will occur in 2020 and 2021. Integrated Public Alert and Warning System (IPAWS) is part of the addressing program.</p>	High	Denali Borough Emergency Planning and Projects Coordinator	Funding is already in hand.	2020/ 2021	<p>B/C: Life/Safety issue/Risk reduction/ benefit to entire community. TF: This action is in progress.</p>
F 1E	<p>Improve fire mitigation along the access route between Anderson/Clear AFS and the George Parks Highway.</p> <p><b>2020 Progress:</b> An FY 2019 State Fire Assistance WUI Grant application was submitted in 2019 to create an 80-acre fuel break between the City of Anderson and Clear AFS.</p>	High	Anderson Fire Chief	WUI (DNR AK-DOF)	2020	<p>B/C: Life/Safety issue/Risk reduction/ benefit to entire community. TF: This action is in progress.</p>
F 1F New in 2020	Develop Healy Community Wildfire Protection Plan.	High	Tri-Valley Fire Chief	Borough	2020	B/C: Life/Safety issue/Risk reduction/

Action ID	Description	Priority	Responsible Entity	Potential Funding	Time-frame	Benefit-Cost/Technical Feasibility
F 1G New in 2020	Develop Cantwell Community Wildfire Protection Plan.	High	Cantwell Fire Chief	Borough	2021	benefit to entire community. TF: This action can be accomplished by existing workers and resources.
F 1H New in 2020	Develop Ferry Community Wildfire Protection Plan.	High	Planning and Projects Coordinator to work with DOF.	Borough	2022	
F 1I New in 2020	Develop McKinley Village Community Wildfire Protection Plan.	High			2020	
F 1J New in 2020	Develop Panguingue Community Wildfire Protection Plan.	High			2022	
F 4K New in 2020	Increase local/municipal capabilities to respond to wildland fire incidents, and improve interagency coordination. Regularly update cooperative agreements/Annual Operating Plan.	High	DOF	Volunteer Fire Assistance and WUI Grants (DNR AK-DOF)	2020	B/C: Life/Safety issue/Risk reduction/ benefit to entire community. TF: This action can be accomplished by existing workers and resources.
F 1L New in 2020	Develop an Evacuation Plan within the Protection Area from the Borough. Implement Ready Set Go Program.	High	Denali Borough Emergency Planning and Projects Coordinator to work with City of Anderson, Clear FD, Tri-Valley FD, Cantwell FD, DOF	Borough	2020	B/C: Life/Safety issue/Risk reduction/ benefit to entire community. TF: This action can be accomplished by existing workers and resources.

Action ID	Description	Priority	Responsible Entity	Potential Funding	Time-frame	Benefit-Cost/Technical Feasibility
F 1M New in 2020	Participate in fire and emergency management planning and training.	High	DOF, Anderson FD, Clear FD, Cantwell FD, Panguingue FD	Borough	2020	B/C: Life/Safety issue/Risk reduction/benefit to entire community. TF: This action can be accomplished by existing fire departments.
EQ 2A	Identify buildings and facilities that must be able to remain operable during and following an EQ event. This will likely include infrastructure such as bridges and will require coordination with the Department of Transportation and Public Facilities (DOT&PF) and the Alaska Railroad.  <b>2020 Progress:</b> Completed. Evacuation shelter language has also been added to the plans for schools.	High	Denali Borough Emergency Planning and Projects Coordinator	Complete.	Complete.	Complete.
EQ 2B	Contract a structural engineering firm to assess the identified buildings and facilities, and determine a strategy to improve them.  <b>2020 Progress:</b> Completed. Livingston Slone, Inc. completed a facilities assessment report in 2016.	High	Denali Borough Emergency Planning and Projects Coordinator	Complete.	Complete.	Complete.
EQ 2C	Implement recommendations from 2016 Livingston Slone, Inc. report.  <b>2020 Progress:</b> Partially complete.	High	Denali Borough Emergency Planning and Projects Coordinator and Denali Borough School District	Borough and School District	2021	B/C: Benefit to entire community/Risk reduction.

Action ID	Description	Priority	Responsible Entity	Potential Funding	Time-frame	Benefit-Cost/Technical Feasibility
			Facilities Maintenance			TF: This action needs to be completed.
EQ 2D	<p>Work with DOT&amp;PF to ensure that area bridges meet current standards.</p> <p><b>2020 Progress:</b> The Borough is unsure what DOT&amp;PF has accomplished. This action will be deleted in the next HMP Update as it is out of the Borough and City of Anderson's control.</p>	Medium	DOT&PF	DOT&PF	As funding allows	<p>B/C: Benefit to entire community/Risk reduction.</p> <p>TF: This action would require outside resources and funding.</p>
EQ 2E	<p>Conduct drills and educate for earthquake preparedness. Disseminate information on earthquake preparedness to residents, businesses, and in the schools.</p> <p>Encourage emergency preparedness for all-natural hazards. Educate the public about the benefits of having a bug-out bucket (i.e., emergency kits) for each person that contain birth certificates, irreplaceable documents and keepsakes, thermal blankets, food, etc.</p> <p>Also, educate residents on seismic shutoffs and how to secure homeowner tanks to prepare for natural disasters.</p> <p><b>2020 Progress:</b> The community regularly trains in the Great Alaska Shakeout Earthquake exercises as well as regular Fire Department and Emergency Management programming.</p>	High	Denali Borough Emergency Planning and Projects Coordinator	Borough	Ongoing	<p>B/C: Benefit to entire community/Risk reduction.</p> <p>TF: This action would require Denali Borough residents to be educated and self-sufficient in planning for their own needs to be resilient after an EQ.</p>
EQ 2F New in 2020	<p>Replace back-up generators at all three schools. The project will include electrical upgrades to bring electrical systems up to code, and ensure necessary circuits are covered by backup power to allow the schools to</p>	High	Denali Borough Emergency Planning and Projects Coordinator	HMGP, PDM	2020-2021	B/C: All three are over 30 years old and parts are difficult to find.

Action ID	Description	Priority	Responsible Entity	Potential Funding	Time-frame	Benefit-Cost/Technical Feasibility
	operate as a shelter in the event of an emergency.					TF: This mitigation action is easily implemented.
EQ 2G New in 2020	Install back-up generator at the Borough Office.	High	Denali Borough Emergency Planning and Projects Coordinator	HMGP, PDM	2020-2021	B/C: A generator is needed to ensure ongoing Borough operations in case of a disaster event. TF: This mitigation action is easily implemented.
SW 3A	Research and consider implementation of “Storm Ready”, a National Weather Service program.  <b>2020 Progress:</b> Research has been completed. A decision will be made during the next five-year cycle.	High	Denali Borough Emergency Planning and Projects Coordinator	Denali Borough	2025	B/C: Life/Safety issue/Risk reduction/benefit to entire community. TF: This action can be accomplished by existing workers and resources.
SW 3B	Conduct special awareness activities, such as Winter Weather Awareness Week, Flood Awareness Week, etc.  <b>2020 Progress:</b> The Borough uses Monday with the Mayor (three-minute videos posted each week on You Tube) its website, and public service announcements on the radio to educate its residents.	High	Denali Borough Emergency Planning and Projects Coordinator	Denali Borough	Ongoing	B/C: Benefit to entire community/Risk reduction. TF: This action is important because of geographic

Action ID	Description	Priority	Responsible Entity	Potential Funding	Time-frame	Benefit-Cost/Technical Feasibility
						distance; Denali Borough residents need to be self-sufficient in planning for their own needs to be resilient after a disaster event.
SW 3C	Expand public awareness about NOAA Weather Radio for continuous weather broadcasts and warning tone alert capability.  <b>2020 Progress:</b> An Integrated Public Alert and Warning System (IPAWS) will be activated as part of the addressing program.	High	Denali Borough Emergency Planning and Projects Coordinator	Funding is already in hand.	2020/ 2021	B/C: Life/Safety issue/Risk reduction/benefit to entire community. TF: This action is in progress.
SW 3D	Encourage weather resistant building construction materials and practices.  <b>2020 Progress:</b> This action will be deleted in the next HMP Update as it is out of the Borough and City of Anderson's control.	Medium	Denali Borough Emergency Planning and Projects Coordinator	Will be deleted in 2025.	Will be deleted in 2025.	B/C: Risk and damage reduction/benefit to entire community. TF: This action could require an ordinance change. Political and public support not determined.
SW 3E New in 2020	Develop personal use and educational outreach training for a "safe tree harvesting" program. Implement along utility and road corridors, preventing potential winter storm damage.	High	Denali Borough Emergency Planning and Projects Coordinator	Golden Valley Electrical Association	2020	B/C: This project is essential as winter storms are becoming more severe

Action ID	Description	Priority	Responsible Entity	Potential Funding	Time-frame	Benefit-Cost/Technical Feasibility
						(particularly winds). TF: This project could be easily implemented by residents and GVEA.
FL 4A	A list of homes, commercial structures and critical facilities that are in danger of flooding and in erosion danger should be identified and mitigation projects for elevating and/or relocating the structures determined.  <b>2020 Progress:</b> Any in Anderson? Borough has none.	Medium	Denali Borough Emergency Planning and Projects Coordinator	HMGP, and PDM	2025	B/C: Life/Safety issue/Risk reduction/benefit to entire community. TF: This action could be accomplished by existing workers and resources.
FL 4B	Investigate the benefits of joining the NFIP for Borough and City of Anderson.  <b>2020 Progress:</b> The Borough would like FEMA to do some preliminary flood mapping of the Borough.	High	Denali Borough Emergency Planning and Projects Coordinator and City of Anderson Mayor	FEMA	2025	B/C: Life/Safety issue/Risk reduction/benefit to entire community. TF: This action requires floodplain mapping which would need to be accomplished by FEMA.
FL 4C	Increase public knowledgeable about mitigation opportunities, floodplain functions, emergency service procedures, and potential hazards. This would include advising property owners, potential property owners, and visitors about the hazards. In addition,	High	Mayor of Anderson	City	Ongoing?	B/C: Life/Safety issue/Risk reduction/benefit to entire community. TF: This action

Action ID	Description	Priority	Responsible Entity	Potential Funding	Time-frame	Benefit-Cost/Technical Feasibility
	dissemination of a brochure or flyer on flood hazards in the City could be developed and distributed to all households.  <b>2020 Progress: Need.</b>					could be accomplished by existing workers and resources.
FL 4D	Work with USACE to ensure the continued maintenance of the Riverside Park Dike in the City of Anderson.  <b>2020 Progress: Need.</b>	High	Mayor of Anderson	USACE	Ongoing?	B/C: Life/Safety issue/Risk reduction/ Benefit to entire community. TF: This action could be accomplished by existing workers and resources.
FL 4E New in 2020	Improve culverts in Healy to prevent flooding near Dry Creek. In Fall 2019, driveway materials flooded away. No homes were damaged.	High	Denali Borough Emergency Planning and Projects Coordinator	HMGP, PDM	2020	B/C: Life/Safety issue/Risk reduction/ benefit to entire community. TF: This action could be accomplished by existing workers and resources.
GF 5A	Prohibit removal of vegetation in areas prone to landslides.  <b>2020 Progress:</b> This action will be deleted in the next HMP Update as it is out of the Borough and City of Anderson's control.	High	Denali Borough Emergency Planning and Projects Coordinator	Will be deleted in 2025.	Will be deleted in 2025.	TF: DOT&PF would be responsible.
GF 5B	Research and implement mitigation measures to keep rock from blocking the Nenana River.	Medium	Denali Borough Emergency Planning	Will be deleted in 2025.	Will be deleted in	TF: DOT&PF would be



Action ID	Description	Priority	Responsible Entity	Potential Funding	Time-frame	Benefit-Cost/Technical Feasibility
	<b>2020 Progress:</b> This action will be deleted in the next HMP Update as it is out of the Borough and City of Anderson's control.		and Projects Coordinator		2025.	responsible.
GF 5C New in 2020	Map areas with the potential to be affected by landslides. Also, provide training for the Borough Land Planner to work with the map.	High	Denali Borough Land Planner.	DGGS	2020	B/C: It would be helpful to have a record of where ground failure has occurred in the past and where not to build in the future. TF: DGGS prepares these maps for Alaskan communities.
CC 6A New in 2020	Map areas with the potential to be affected by avalanches. Also, provide training for the Borough Land Planner to work with the map.	Medium	Denali Borough Land Planner.	DGGS	2020	B/C: It would be helpful to have a record of where avalanches have the potential to occur. TF: DGGS prepares these maps for Alaskan communities.
CC 6B	Install warning signage in known avalanche zones. <b>2020 Progress:</b> Signs have been installed.	High	Denali Borough Emergency Planning and Projects Coordinator	Completed.	Completed	Completed.
CC 6C New in 2020	McKinley Village lacks power distribution redundancy. Encourage GVEA to construct a substation to backfeed each location with a secondary service line to each.	Medium	Denali Borough Emergency Planning and Projects Coordinator	GVEA	2025	B/C: It would be helpful to have a backup power source.

Action ID	Description	Priority	Responsible Entity	Potential Funding	Time-frame	Benefit-Cost/Technical Feasibility
						TF: GVEA is the power company.
CC 6D	<p>Continue to educate public about avalanche hazards. Information can be disseminated to the public through the Borough web site, press releases, media ads, schools and other methods.</p> <p><b>2020 Progress:</b> Ongoing.</p>	High	Denali Borough Emergency Planning and Projects Coordinator	Borough	Ongoing	<p>B/C: Life/Safety issue/Risk reduction/ Benefit entire community.</p> <p>TF: This action could be easily accomplished by existing workers and resources.</p>

DRAFT



**LeMay Engineering  
& Consulting, Inc.**

**Jennifer L. LeMay, PE, PMP**  
**Vice President**  
4272 Chelsea Way  
Anchorage, AK 99504  
(907) 350-6061  
jlemay@lemayengineering.com

March 13, 2020

Brent A. Nichols, EMSII, CFM  
State Hazard Mitigation Officer  
Department of Military and Veterans Affairs  
Division of Homeland Security and Emergency Management  
P.O. Box 5750  
JBER, AK 99505-5750

**Subject: Hazard Mitigation Planning Trip Report**

LeMay Engineering & Consulting, Inc. was hired by the Denali Borough on December 13, 2019 through a State DHS&EM grant to update the Denali Borough and City of Anderson Hazard Mitigation Plan that was adopted in 2010.

On March 10, 2020, I traveled to Anderson, Alaska. I met with Samantha Thompson, Mayor, at City Hall at 5:30 pm and discussed specific questions that I had for the City's portion of the Hazard Mitigation Plan. I then attended the 6:00 pm City Council meeting. The purpose of this trip was to brief the meeting attendees on the hazard mitigation process, highlight hazards with the potential to affect the City, and discuss potential mitigation actions. The following comments that were made during the meeting were incorporated into relevant sections of the Draft Hazard Mitigation Plan:

1. Table 24, Action ID F1A. The FY 2019 State Fire Assistance WUI Grant that the City applied for was awarded. Work will begin in April 2020. This work is the first phase of likely a four-phase project.
2. Table 24, Action ID F1B. Scott Thompson, Anderson Fire Chief, stated that the black spruce trees that grow right up to residents' houses are highly vulnerable to fire, and thus, considers the conflagration fire risk high.
3. Table 24, Action ID FL4A. There are no homes in the City of Anderson that meet the criteria as flooding hasn't been a threat to homes since the 1979 event.
4. Table 24, Action ID FL4B. The City does not want to join the NFIP because of stories they have heard from family in Fairbanks about wrong assumptions determining potential flood zones.
5. Table 24, Action ID FL4C. The City has noticed the water table level is increasing.
6. Table 24, Action ID FL4D. The USACE did not build the Riverside Park Dike. Usibelli did. In 2004, residents added fill to the dike, but did not slope the dike like the original one was. The dike has dropped a foot since then, and the City would like more fill added.
7. Community Concern: The Clear Airstrip is owned and maintained by the State of Alaska. Clear AFS is currently drafting up a "no fly zone" for the airstrip. The City of Anderson does not want to lose access to the airport if the Clear AFS finalizes a "no fly zone" for the airstrip as this airstrip is used by the City and neighboring communities for medical evacuations and fire-fighting. If the airstrip were moved, maybe the access road to the new airstrip could double as another access road to the City of Anderson and Clear AFS.
8. Please add a glossary to the Hazard Mitigation Plan to define terms.

If you have any questions, please do not hesitate to call me at (907) 350-6061.

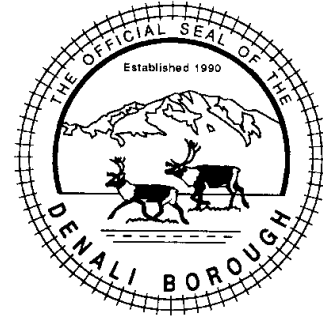
A handwritten signature in black ink that reads "Jennifer L. LeMay". The signature is written in a cursive style with a large initial "J" and "L".

3/13/20

Jennifer L. LeMay, PE, PMP/Date  
LeMay Engineering & Consulting, Inc.

# DENALI BOROUGH

PO Box 480  
Healy, Alaska 99743  
Phone: (907) 683-1330  
Fax: (907) 683-1340  
www.denaliborough.org



*Clay Walker, Mayor*

## **MEETING NOTICE** **DENALI BOROUGH ASSEMBLY** **UPCOMING MEETINGS**

### **WEDNESDAY, FEBRUARY 5, 2020:**

JOINT WORK SESSION WITH THE DENALI BOROUGH SCHOOL BOARD AT THE TRI-VALLEY COMMUNITY CENTER, HEALY, AK, STARTING AT 6:00 PM

### **WEDNESDAY, FEBRUARY 12, 2020:**

WORK SESSION, PUBLIC HEARING AND REGULAR MEETING AT THE TRI-VALLEY COMMUNITY CENTER, HEALY, AK, STARTING AT 6:00 PM

### **WEDNESDAY, MARCH 11, 2020:**

PUBLIC HEARING AND REGULAR MEETING AT THE MCKINLEY COMMUNITY CENTER, DENALI, AK, STARTING AT 6:00 PM

### **WEDNESDAY, MARCH 25, 2020:**

GRANT REVIEW COMMITTEE MEETING AT THE TRI-VALLEY COMMUNITY CENTER, HEALY, AK, STARTING AT 6:00 PM

### **WEDNESDAY, APRIL 8, 2020:**

PUBLIC HEARING AND REGULAR MEETING AT THE TRI-VALLEY COMMUNITY CENTER, HEALY, AK, STARTING AT 6:00 PM

### **WEDNESDAY, MAY 13, 2020:**

PUBLIC HEARING AND REGULAR MEETING AT THE ANDERSON SCHOOL, ANDERSON, AK, STARTING AT 6:00 PM

**THE PUBLIC IS INVITED TO ATTEND**  
Contact the Borough Office for more information

**POSTED**  
**01/23/2020**

March 11, 2020 -  
6:00 PM

McKinley Community Center  
Denali, Alaska

Public Hearing  
and Regular Meeting

**HELPFUL AGENDA**

**PUBLIC HEARING**

**A. ORDINANCE 20-04: Fiscal Year 2020 Budget Amendment**

**B. ORDINANCE 20-05: Mayors Salary**

**REGULAR MEETING**

**A. PLEDGE OF ALLEGIANCE**

**B. ROLL CALL**

**“I MOVE TO EXCUSE...”**

**VOTE: BY SHOW OF HANDS**

**C. PUBLIC COMMENTS** (During this section of the agenda the Assembly listens to oral communications from audience members. When speaking during this section of the agenda, please state your name, and limit your testimony to approximately three minutes per person.)

**D. APPROVAL OF AGENDA**

**“I MOVE TO APPROVE THE AGENDA”**

**VOTE: BY SHOW OF HANDS**

**E. MINUTES OF PREVIOUS MEETING**

February 12, 2020 Work Session, Public Hearing and Regular Meeting Minutes

**“I MOVE TO APPROVE THE MINUTES FROM THE February 12, 2020 ASSEMBLY MEETING”**

**VOTE: BY SHOW OF HANDS**

**F. REPORTS**

1. Receive the JANUARY 2020 Financial Report

**“I MOVE TO RECEIVE THE JANUARY 2020 FINANCIAL REPORT”**

**VOTE: BY SHOW OF HANDS**

2. School District Report

3. Mayor’s Report

4. Assembly Comments

**G. COMMUNICATION AND APPEARANCE REQUEST**

Jennifer LeMay, with LeMay Engineering presenting the Denali Borough and City of Anderson Hazard Mitigation Plan draft update

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*Mission Statement: The Denali Borough Assembly, in the service of the Borough citizens, seeks to defend and sustain the spirit and will of the people.*

**H. ORDINANCES**

1.) **DRAFT ORDINANCES:**

a) **ORDINANCE 20-06: Bison Gulch Project Allocation**

**“I MOVE TO INTRODUCE ORDINANCE 20-06”**

**VOTE: = BY ROLL CALL**

**“I MOVE TO POSTPONE ORDINANCE 20-06”**

**VOTE: BY SHOW OF HANDS**

a. **PENDING ORDINANCES:**

b. **ORDINANCE 20-04: Fiscal Year 2020 Budget Amendment**

**“I MOVE TO APPROVE OR POSTPONE ORDINANCE 20-04”**

**VOTE TO APPROVE: = BY ROLL CALL**

**VOTE TO POSTPONE: = SHOW OF HANDS**

c. **ORDINANCE 20-05: Mayor’s Salary**

**“I MOVE TO APPROVE OR POSTPONE ORDINANCE 20-05”**

**VOTE TO APPROVE: = BY ROLL CALL**

**VOTE TO POSTPONE: = SHOW OF HANDS**

**I. RESOLUTIONS**

1.) **RESOLUTION 20-04: Supporting the relocation of the derelict bus from the west side of the Teklanika River**

**“I MOVE TO APPROVE OR POSTPONE RESOLUTION 20-04”**

**VOTE TO APPROVE: = BY ROLL CALL**

**VOTE TO POSTPONE: = SHOW OF HANDS**

**J. OTHER BUSINESS**

1.) **Liquor License Renewal**

a. **AMCO License #5221: Tonglen Lake Lodge Renewal Application**

b. **AMCO License #5470: Cantwell Lodge Renewal Application**

c. **AMCO License #1969: Kantishna Roadhouse Renewal Application**

- d. AMCO License #170: Mountain View Renewal Application and Transfer to Vitus Application

**“I MOVE TO NOT-PROTEST THE RENEWAL OF LIQUOR LICENSE NUMBERS 5221, 5470, 1696 AND THE TRANSFER AND RENEWAL OF LIQUOR LICENSE NUMBER 170.”**

**VOTE: BY SHOW OF HANDS**

2.) Public Comments

**K. ASSEMBLY COMMENTS**

**L. TIME AND PLACE OF NEXT MEETING**

1. Wednesday, March 25, 2020: Grant Review Meeting at the Tri-Valley Community Center, Healy, AK at 6:00 PM
2. Wednesday, April 8, 2020: Regular Meeting at the Tri-Valley Community Center, Healy, AK starting at 6:00 PM.

**M. ADJOURNMENT**



**Borough Assembly Meeting and Public Hearing  
for 2020 Hazard Mitigation Plan Update**

**March 11, 2020**

**6 pm at McKinley Community Center in McKinley Village**

Name	Organization Represented or Resident of Which Community in the Denali Borough	Contact Information (phone and email)
Lisa Minor	Healy	(907) 841-4732
Jake Hill	McKinley	907-903-9835 jhill@denaliborough.com
Gileen Holmes	Anderson	PO BOX 3011 Anderson AK 99744 eholmes98@yahoo.com
KRISTA M. ZAPPONE	HEALY	P.O. Box 357 Healy. (509)-868-3574
Jared Zimmerman	Stampede	Box 540 Healy 603-2127
JEFF STENGER	ANDERSON HEALY	Box 4080 healy AK 99743
Tallon Shreeve	Healy	P.O. Box 539 Healy AK 99743
Jill Bolsma	Cantwell	Po Box 105 Cantwell, AK 99729
Dan Kotta	Healy	707-231-3217 Box 172 Healy AK 99743
KRIS CAPPS	Denali Park	kcapps@newsminer.com 907.388.2781
Vanessa Jusczak	Denali Chamber of Commerce	director@denalichamber.com
Carrie Skinner	McKinley Village - Denali Chamber	carrie@denalichamber.com

Name	Organization	Contact Information (phone and email)
Enca Watson		y-talvezporquelluere@gmail.com
JESS TALMA		PO Box 988 Denali Park, AK 99757
SUSAN GAUVIN		got_younger@yahoo.com
James Gauvin		todsg@hotmail.com
Chris Noel	Denali Borough	cnoel@denaliborough.com
Patrick LeMay	LeMay Engineering	
CLAY WALKER	Denali Borough	cwalker@denaliborough.com
Connie MacMaster	Denali Borough	cmacmaster@denaliborough.com
JENNIFER LEMAY	LEMAY ENGINEERING.COM	jlemay@lemayengineering.com



**LeMay Engineering  
& Consulting, Inc.**

**Jennifer L. LeMay, PE, PMP**  
**Vice President**  
4272 Chelsea Way  
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(907) 350-6061  
jlemay@lemayengineering.com

March 13, 2020

Brent A. Nichols, EMSII, CFM  
State Hazard Mitigation Officer  
Department of Military and Veterans Affairs  
Division of Homeland Security and Emergency Management  
P.O. Box 5750  
JBER, AK 99505-5750

**Subject: Hazard Mitigation Planning Trip Report**

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On March 11, 2020, I traveled to McKinley Village to attend the 6:00 pm Borough Assembly meeting at the McKinley Community Center. The purpose of this trip was to brief the meeting attendees on the hazard mitigation process, highlight hazards with the potential to affect the Borough, and discuss potential mitigation actions. The following comments that were made during the meeting were incorporated into relevant sections of the Draft Hazard Mitigation Plan:

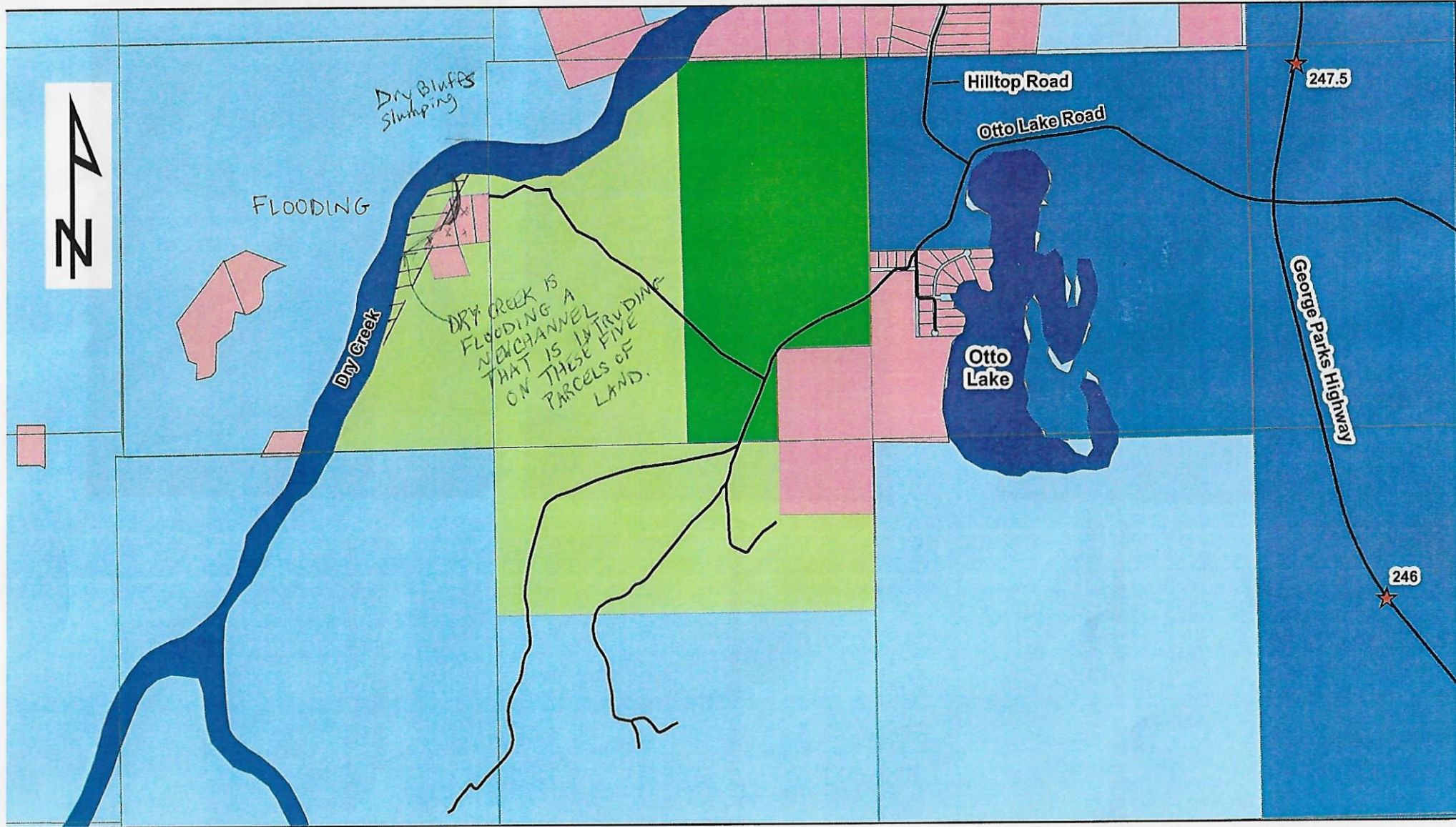
1. Table 24, Action ID FL4A. James and Susan Gauvin, residents of Healy, testified before the Borough Assembly about flooding that is occurring in their Otto Lake Neighborhood. I've attached a map showing the flooding location to this trip report. Dry Creek ranges from "dry" as the name suggests to the flow of the Mississippi. Changes in Dry Creek began impacting their neighborhood as early as 2016 when the Dry Bluffs slumped. Kris Capps wrote an article in the January 24, 2016 Fairbanks Daily News-Miner. Five parcels of land in the Otto Lake neighborhood are affected as well as other lots near Healy where Dry Creek loops back. They would like a ditch dug adjacent to Dry Creek so that the water from Dry Creek has somewhere to route to rather than through their properties.
2. Table 24, Action ID CC6C. Not just McKinley Village lacks power distribution redundancy. Consider seeing which other Denali Borough communities lack power distribution redundancy and add them or delete this action.
3. The Denali Borough School District Superintendent attended the meeting. The Anderson school had an exhaust fan cover fall from the ceiling during the 2018 Earthquake; this issue has since been addressed.

If you have any questions, please do not hesitate to call me at (907) 350-6061.

3/13/20

Jennifer L. LeMay, PE, PMP/Date  
LeMay Engineering & Consulting, Inc.

# Otto Lake ADL 415801



Note: This map is for graphic representation only. It is intended to be used as a guide only and may not show the exact location of existing surveyed parcels or show all easements and reservations.

Created: 5/31/16

- |                 |                              |
|-----------------|------------------------------|
| Roads           | Alaska Railroad Corporation  |
| Section Lines   | DB Management Authority Land |
| State of Alaska | Private Parcels              |
|                 | DB Patented Land             |

## Denali Borough Hazard Awareness and Mitigation Survey

53

Responses

12:30

Average time to complete

Closed

Status

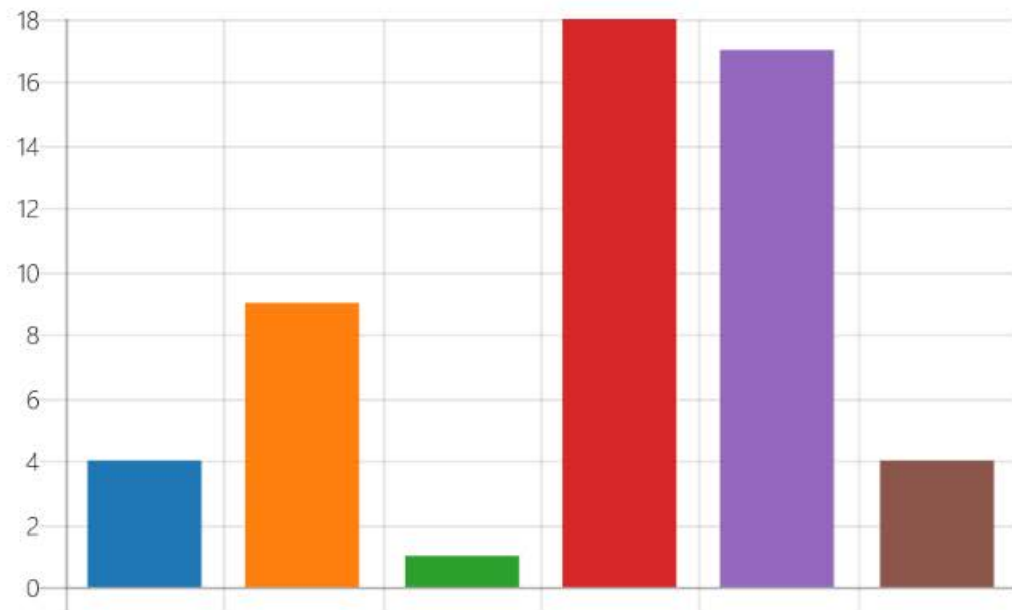
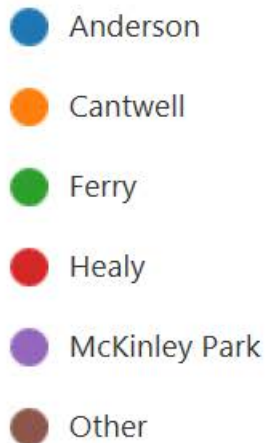
Ideas[View results](#)[Open in Excel](#)

1. In which community do you live?

[More Details](#)

# 1. In which community do you live?

[More Details](#)



## 2. How long have you lived in your community?

[More Details](#)

● Less than 5 years	6
● 5-10 years	16
● 11-20 years	15
● 21 or more years	15



## 3. Do you own or rent your home?

[More Details](#)

● Own	44
● Rent	7



4. What is the most efficient way for you to receive information on emergencies and other Denali Borough topics (please rank in order of best to worst with 1 being the best way to receive information)?

[More Details](#)

**Rank Options**

First choice        Last choice

1 Email

2 Social media

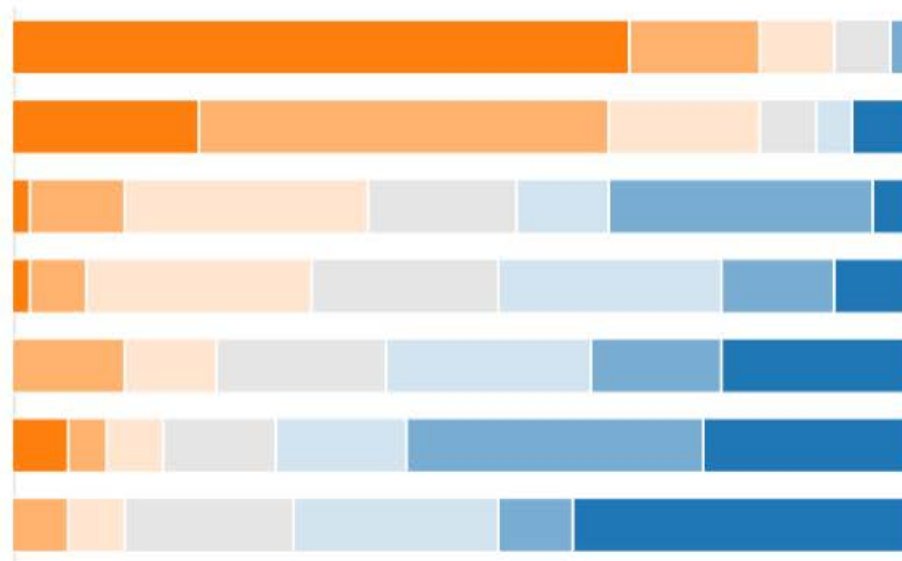
3 Mail

4 Borough Website

5 Television/ Radio

6 Newspaper

7 Public Workshops/meetings



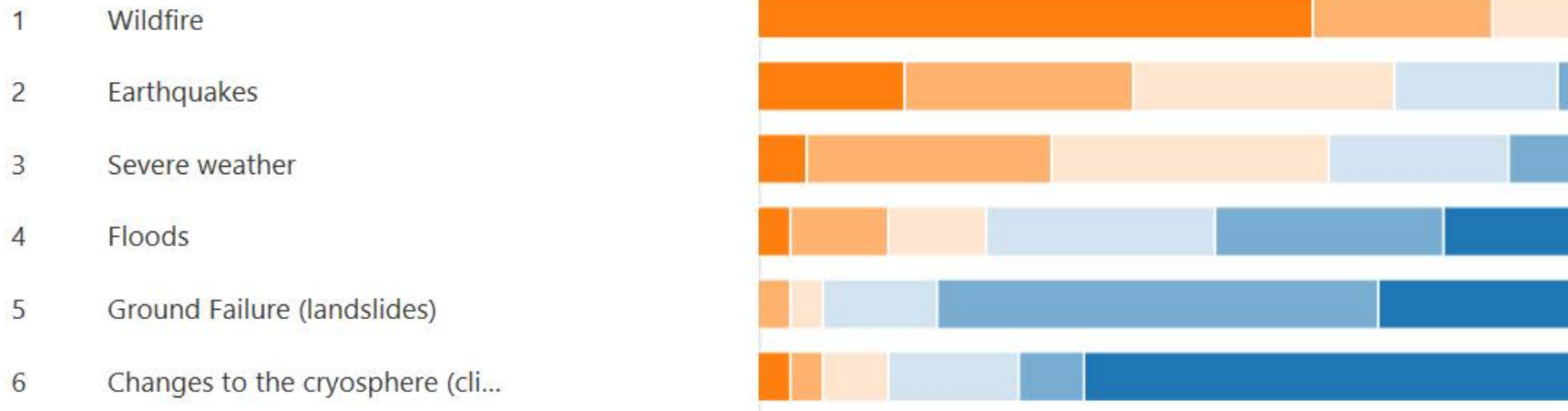


5. Which hazards present the greatest risk to you (please rank in order of highest to lowest with 1 being the hazard of most concern to you, followed by the second most hazard of concern, etc.)?

[More Details](#)

**Rank Options**

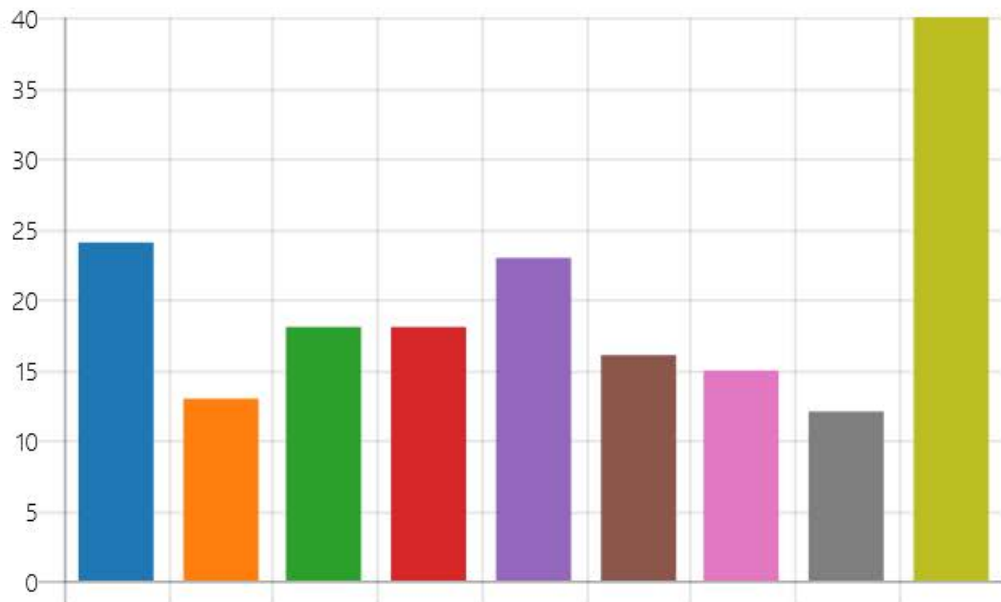
First choice       Last choice



## 6. What information do you expect to receive from the Denali Borough during a natural disaster?

### [More Details](#)

● Current information of present...	24
● Responses and projections on...	13
● School, road, and bridge closu...	18
● Warnings	18
● Evacuations	23
● What is expected of residents ...	16
● Available resources	15
● Priorities of first responders	12
● All of the above	40



## 6. What information do you expect to receive from the Denali Borough during a natural disaster?

52 Responses

ID ↑	Name	Responses
1	anonymous	["Current information of present situation", "School, road, and bridge closures; emergency shelter locations and openings", "Evacuations", "What is expected of residents (safety measures to be taken)"]
2	anonymous	["All of the above"]
3	anonymous	["Current information of present situation", "Warnings", "Evacuations", "What is expected of residents (safety measures to be taken)"]
4	anonymous	["All of the above"]
5	anonymous	["Current information of present situation", "School, road, and bridge closures; emergency shelter locations and openings", "Warnings", "Evacuations", "Available resources"]
6	anonymous	["Current information of present situation", "Responses and projections on response timing", "School, road, and bridge closures; emergency shelter locations and openings", "Evacuations"]

## 6. What information do you expect to receive from the Denali Borough during a natural disaster?

52 Responses

7	anonymous	["Current information of present situation", "Responses and projections on response timing", "School, road, and bridge closures; emergency shelter locations and openings", "Evacuations", "What is expected of residents (safety measures to be taken)", "Available resources"]
8	anonymous	["Current information of present situation", "Warnings", "Evacuations"]
9	anonymous	["Current information of present situation", "Responses and projections on response timing", "School, road, and bridge closures; emergency shelter locations and openings", "Warnings", "Evacuations", "What is expected of residents (safety measures to be taken)", "Available resources", "Priorities of first responders", "All of the above"]
10	anonymous	["All of the above"]
11	anonymous	["All of the above"]
12	anonymous	["All of the above"]
13	anonymous	["All of the above"]

## 6. What information do you expect to receive from the Denali Borough during a natural disaster?

52 Responses

14	anonymous	["All of the above"]
15	anonymous	["Current information of present situation", "Responses and projections on response timing", "School, road, and bridge closures; emergency shelter locations and openings", "Warnings", "Evacuations", "What is expected of residents (safety measures to be taken)", "Available resources", "All of the above"]
16	anonymous	["Current information of present situation", "Responses and projections on response timing", "School, road, and bridge closures; emergency shelter locations and openings", "Warnings", "Evacuations", "What is expected of residents (safety measures to be taken)", "Available resources", "Priorities of first responders", "All of the above"]
17	anonymous	["Current information of present situation", "School, road, and bridge closures; emergency shelter locations and openings", "Evacuations", "What is expected of residents (safety measures to be taken)", "Priorities of first responders"]
18	anonymous	["Current information of present situation", "Responses and projections on response timing", "School, road, and bridge closures; emergency shelter locations and openings", "Warnings", "Evacuations", "What is expected of residents (safety measures to be taken)", "Available resources", "Priorities of first responders", "All of the above"]

## 6. What information do you expect to receive from the Denali Borough during a natural disaster?

52 Responses

		timely ; available resources ; priorities of first responders ; all of the above ;
19	anonymous	["Current information of present situation", "School, road, and bridge closures; emergency shelter locations and openings", "Warnings", "Evacuations", "What is expected of residents (safety measures to be taken)", "Available resources"]
20	anonymous	["All of the above"]
21	anonymous	["Current information of present situation", "School, road, and bridge closures; emergency shelter locations and openings", "Warnings", "Evacuations"]
22	anonymous	["Current information of present situation", "Responses and projections on response timing", "Priorities of first responders"]
23	anonymous	["All of the above"]
24	anonymous	["Current information of present situation", "Warnings", "Evacuations", "What is expected of residents (safety measures to be taken)", "Available resources", "Priorities of first responders"]
25	anonymous	["All of the above"]

## 6. What information do you expect to receive from the Denali Borough during a natural disaster?

52 Responses

26	anonymous	["All of the above"]
27	anonymous	["Current information of present situation", "Evacuations", "Available resources"]
28	anonymous	["All of the above"]
29	anonymous	["All of the above"]
30	anonymous	["All of the above"]
31	anonymous	["All of the above"]
32	anonymous	["All of the above"]
33	anonymous	["Current information of present situation", "Responses and projections on response timing", "School, road, and bridge closures; emergency shelter locations and openings", "Warnings", "Evacuations", "What is expected of residents (safety measures to be taken)", "Available resources", "Priorities of first responders", "All of the above"]

## 6. What information do you expect to receive from the Denali Borough during a natural disaster?

52 Responses

26	anonymous	["All of the above"]
27	anonymous	["Current information of present situation", "Evacuations", "Available resources"]
28	anonymous	["All of the above"]
29	anonymous	["All of the above"]
30	anonymous	["All of the above"]
31	anonymous	["All of the above"]
32	anonymous	["All of the above"]
33	anonymous	["Current information of present situation", "Responses and projections on response timing", "School, road, and bridge closures; emergency shelter locations and openings", "Warnings", "Evacuations", "What is expected of residents (safety measures to be taken)", "Available resources", "Priorities of first responders", "All of the above"]



## 6. What information do you expect to receive from the Denali Borough during a natural disaster?

52 Responses

34	anonymous	["All of the above"]
35	anonymous	["Warnings", "Evacuations", "All of the above"]
36	anonymous	["Current information of present situation", "Responses and projections on response timing", "School, road, and bridge closures; emergency shelter locations and openings", "Warnings", "Evacuations", "What is expected of residents (safety measures to be taken)", "Available resources", "Priorities of first responders", "All of the above"]
37	anonymous	["All of the above"]
38	anonymous	["Current information of present situation", "Responses and projections on response timing", "School, road, and bridge closures; emergency shelter locations and openings", "Warnings", "Evacuations", "All of the above"]
39	anonymous	["All of the above"]

## 6. What information do you expect to receive from the Denali Borough during a natural disaster?

52 Responses

39	anonymous	["All of the above"]
40	anonymous	["Current information of present situation", "Responses and projections on response timing", "School, road, and bridge closures; emergency shelter locations and openings", "Warnings", "Evacuations", "What is expected of residents (safety measures to be taken)", "Available resources", "Priorities of first responders", "All of the above"]
41	anonymous	["All of the above"]
42	anonymous	["All of the above"]
43	anonymous	["All of the above"]
44	anonymous	["All of the above"]
45	anonymous	["Current information of present situation", "Responses and projections on response timing", "School, road, and bridge closures; emergency shelter locations and openings", "Warnings", "Evacuations", "What is expected of residents (safety measures to be taken)", "Available resources", "Priorities of first responders", "All of the above"]

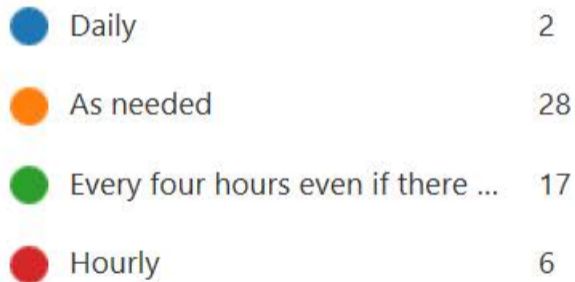
## 6. What information do you expect to receive from the Denali Borough during a natural disaster?

52 Responses

46	anonymous	["Current information of present situation", "All of the above"]
47	anonymous	["Current information of present situation", "School, road, and bridge closures; emergency shelter locations and openings", "Warnings", "Evacuations", "What is expected of residents (safety measures to be taken)", "Available resources", "Priorities of first responders", "All of the above"]
48	anonymous	["All of the above"]
49	anonymous	["Current information of present situation", "Responses and projections on response timing", "School, road, and bridge closures; emergency shelter locations and openings", "Warnings", "Evacuations", "What is expected of residents (safety measures to be taken)", "Available resources", "Priorities of first responders", "All of the above"]
50	anonymous	["All of the above"]
51	anonymous	["All of the above"]
52	anonymous	["All of the above"]





## 7. What is the frequency that the Denali Borough should provide updates during a natural disaster?

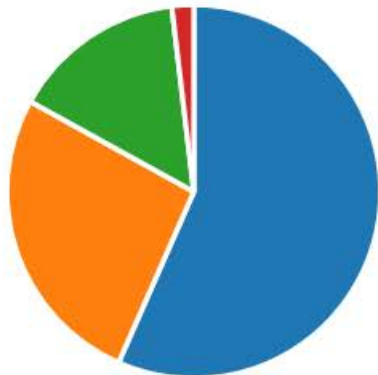
[More Details](#)



8. How important are hazard mitigation prevention measures such as planning and zoning, building codes, open space preservation, and floodplain regulations to influence the way land is developed and buildings are built?





[More Details](#)

 Extremely important	30
 Somewhat important	14
 Neutral	8
 Not important	1



9. How important are property protection actions such as removing homes from the floodplain, elevating homes to stay above water levels in flooding, etc. to lessen the risk of property damage to homes?

[More Details](#)

 Extremely important	10
 Somewhat important	23
 Neutral	15
 Not important	5



10. How important are public education and awareness such as outreach programs, public service announcements, and notices to residents and property owners to inform the public about natural hazards and the actions necessary to avoid potential injury or damage?





[More Details](#)

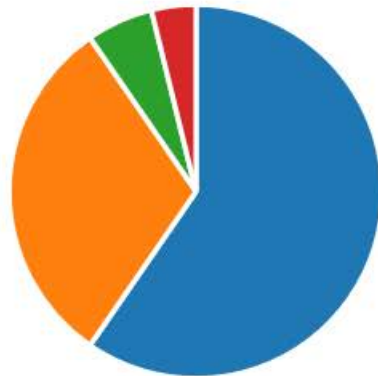
Extremely important	26
Somewhat important	22
Neutral	2
Not important	1



11. How important are natural resource protection actions such as floodplain protection, habitat preservation, slope stabilizations, riparian buffers, and forest management to preserve or restore the functions of natural systems?

[More Details](#)





 Extremely important	31
 Somewhat important	16
 Neutral	3
 Not important	2

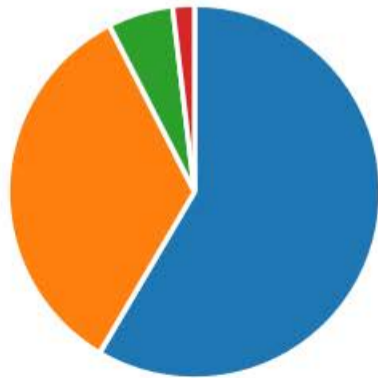




12. How important is critical facility protection such as placing generators at community centers to ensure electrical power during a widespread power failure?





[More Details](#)

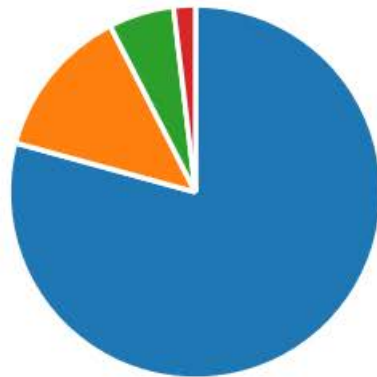
 Extremely important	31
 Somewhat important	18
 Neutral	3
 Not important	1



13. How important are emergency service actions such as warning systems, evacuation planning, emergency response training, and protection of critical emergency facilities or systems to protect people and property during and immediately after a hazard event?

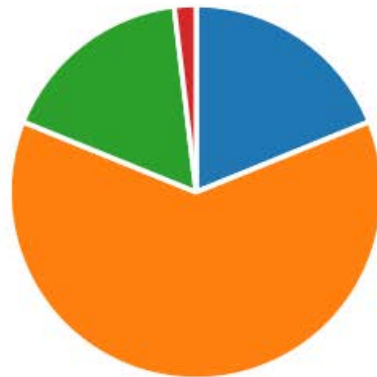
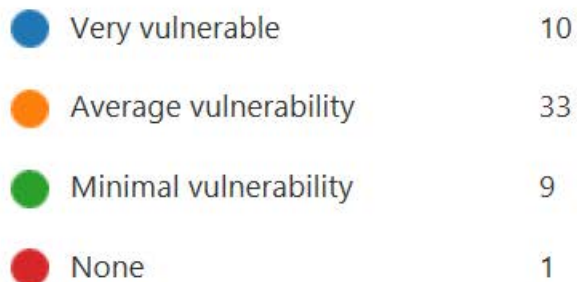
[More Details](#)

 Extremely important	42
 Somewhat important	7
 Neutral	3
 Not important	1



14. How vulnerable are critical facilities (schools, community centers, government buildings, communications towers, places of worship, water and wastewater treatment buildings, fire stations, landfills) in your community to hazards?

[More Details](#)



15. Does your property (rented or owned) have a history of recorded damages?

[More Details](#)



16. Are you willing to spend money to make your home more resilient to damage from natural hazards?

[More Details](#)



17. Would you be willing to make your property more resistant to natural hazards?

[More Details](#)



18. Preparedness activities are often the first line of defense for protection of your family and the community. In the following list, please check those activities that you or someone in your household have done, plan to do in the near future, have not done, or are unable to do. Please check one answer for each preparedness activity.

[More Details](#)

■ Have done   ■ Plan to do   ■ Not done   ■ Unable to do

Attended meetings or received written information on natural disasters or emergency preparedness?



Talked with family members about what to do in case of a disaster or emergency?



Made a "Household/Family Emergency Plan" in order to decide what everyone would do in the event of a ...



Prepared a "7 Day Emergency Supply Kit" extra food, water, medications, batteries, first aid items, and oth...



In the last year, has anyone in your household been trained in First Aid or CPR?



100%

0%

100%

18. Preparedness activities are often the first line of defense for protection of your family and the community. In the following list, please check those activities that you or someone in your household have done, plan to do in the near future, have not done, or are unable to do. Please check one answer for each preparedness activity.

53 Responses

ID ↑	Name	Responses				
		Attended meetings or received written information on natural disasters or emergency preparedness?	Talked with family members about what to do in case of a disaster or emergency?	Made a "Household/Family Emergency Plan" in order to decide what everyone would do in the event of a disaster?	Prepared a "7 Day Emergency Supply Kit" (extra food, water, medications, batteries, first aid items, and other emergency supplies)?	In the last year, has anyone in your household been trained in First Aid or CPR?
1	anonymous	Have done	Have done		Plan to do	Not done
2	anonymous	Have done	Plan to do	Plan to do	Plan to do	Have done



18. Preparedness activities are often the first line of defense for protection of your family and the community. In the following list, please check those activities that you or someone in your household have done, plan to do in the near future, have not done, or are unable to do. Please check one answer for each preparedness activity.

### 53 Responses

3	anonymous	Have done	Have done	Have done	Plan to do	Have done
4	anonymous	Have done	Not done	Not done	Not done	Have done
5	anonymous	Have done	Have done	Have done	Plan to do	Have done
6	anonymous	Have done	Have done	Have done	Plan to do	Have done
7	anonymous	Have done	Have done	Have done	Have done	Have done
8	anonymous	Have done	Have done	Plan to do	Have done	
9	anonymous	Have done	Have done	Plan to do	Not done	Have done
10	anonymous	Have done	Have done	Have done	Plan to do	Have done
11	anonymous	Have done	Have done	Have done	Have done	Have done
12	anonymous	Have done	Have done	Have done	Plan to do	Have done

18. Preparedness activities are often the first line of defense for protection of your family and the community. In the following list, please check those activities that you or someone in your household have done, plan to do in the near future, have not done, or are unable to do. Please check one answer for each preparedness activity.

### 53 Responses

13	anonymous	Not done	Have done	Have done	Have done	Have done
14	anonymous	Have done	Have done	Have done	Plan to do	Have done
15	anonymous	Plan to do	Plan to do	Have done	Plan to do	Have done
16	anonymous	Have done	Have done	Have done	Have done	Have done
17	anonymous	Have done	Have done	Plan to do	Plan to do	Have done
18	anonymous	Have done	Have done	Have done	Have done	Have done
19	anonymous	Plan to do	Have done	Plan to do	Not done	Have done

18. Preparedness activities are often the first line of defense for protection of your family and the community. In the following list, please check those activities that you or someone in your household have done, plan to do in the near future, have not done, or are unable to do. Please check one answer for each preparedness activity.

53 Responses

19	anonymous	Plan to do	Have done	Plan to do	Not done	Have done
20	anonymous	Have done	Not done	Not done	Have done	Not done
21	anonymous	Have done	Have done	Have done	Have done	Have done
22	anonymous	Have done	Have done	Have done	Have done	Have done

18. Preparedness activities are often the first line of defense for protection of your family and the community. In the following list, please check those activities that you or someone in your household have done, plan to do in the near future, have not done, or are unable to do. Please check one answer for each preparedness activity.

53 Responses

23	anonymous	Have done	Have done	Not done	Plan to do	Have done
24	anonymous	Have done	Have done	Have done	Have done	Have done
25	anonymous	Have done	Have done	Have done	Plan to do	Have done
26	anonymous	Have done	Have done	Have done	Have done	Have done
27	anonymous	Not done	Unable to do	Not done	Not done	Not done
28	anonymous	Have done	Have done	Have done	Not done	Have done
29	anonymous	Plan to do	Have done	Have done	Have done	Have done
30	anonymous	Not done	Plan to do	Plan to do	Not done	Have done
31	anonymous	Have done	Unable to do	Have done	Have done	Not done
32	anonymous	Have done	Have done	Plan to do	Plan to do	Have done

18. Preparedness activities are often the first line of defense for protection of your family and the community. In the following list, please check those activities that you or someone in your household have done, plan to do in the near future, have not done, or are unable to do. Please check one answer for each preparedness activity.

53 Responses

33	anonymous	Not done	Have done	Have done	Plan to do	Have done
34	anonymous	Have done	Unable to do	Unable to do	Not done	Not done
35	anonymous	Not done	Not done	Not done	Have done	Not done
36	anonymous	Have done	Have done	Have done	Have done	Have done
37	anonymous	Have done	Have done	Have done	Plan to do	Have done
38	anonymous	Not done	Have done	Plan to do	Plan to do	Have done
39	anonymous	Have done	Have done	Have done	Not done	Have done
40	anonymous	Unable to do	Unable to do	Not done	Unable to do	Not done
41	anonymous	Unable to do	Have done	Have done	Plan to do	Not done
42	anonymous	Not done	Have done	Not done	Not done	Have done

18. Preparedness activities are often the first line of defense for protection of your family and the community. In the following list, please check those activities that you or someone in your household have done, plan to do in the near future, have not done, or are unable to do. Please check one answer for each preparedness activity.

53 Responses

43	anonymous	Plan to do	Unable to do	Plan to do	Not done	Not done
44	anonymous	Not done	Plan to do	Plan to do	Plan to do	Not done
45	anonymous	Have done	Have done	Have done	Have done	Have done
46	anonymous	Not done	Have done	Plan to do	Plan to do	Not done
47	anonymous	Have done	Unable to do	Not done	Have done	Not done
48	anonymous	Have done	Have done	Have done	Have done	Have done
49	anonymous	Have done	Have done	Have done	Have done	Have done
50	anonymous	Not done	Plan to do	Not done	Not done	Have done
51	anonymous	Have done	Plan to do	Have done	Have done	Not done
52	anonymous	Have done	Not done	Not done	Not done	Have done

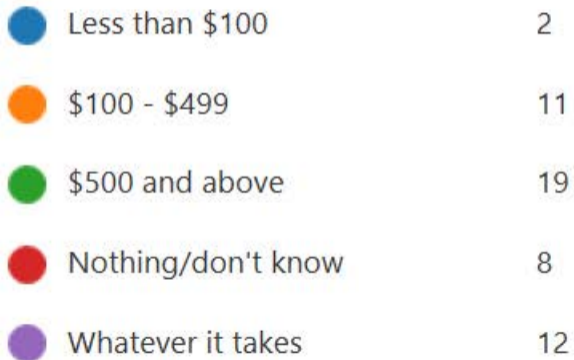
18. Preparedness activities are often the first line of defense for protection of your family and the community. In the following list, please check those activities that you or someone in your household have done, plan to do in the near future, have not done, or are unable to do. Please check one answer for each preparedness activity.

53 Responses

	anonymous	Have done	Unable to do	Plan to do	Not done	Not done
44	anonymous	Not done	Plan to do	Plan to do	Plan to do	Not done
45	anonymous	Have done	Have done	Have done	Have done	Have done
46	anonymous	Not done	Have done	Plan to do	Plan to do	Not done
47	anonymous	Have done	Unable to do	Not done	Have done	Not done
48	anonymous	Have done	Have done	Have done	Have done	Have done
49	anonymous	Have done	Have done	Have done	Have done	Have done
50	anonymous	Not done	Plan to do	Not done	Not done	Have done
51	anonymous	Have done	Plan to do	Have done	Have done	Not done
52	anonymous	Have done	Not done	Not done	Not done	Have done
53	anonymous	Have done	Have done	Have done	Have done	Have done

## 19. How much are you willing to spend to better protect your home from natural disasters?

### [More Details](#)





# 19. How much are you willing to spend to better protect your home from natural disasters?

52 Responses

ID ↑	Name	Responses
1	anonymous	\$100 - \$499
2	anonymous	Whatever it takes
3	anonymous	\$100 - \$499
4	anonymous	Whatever it takes
5	anonymous	\$500 and above
6	anonymous	\$500 and above
7	anonymous	Nothing/don't know
8	anonymous	\$500 and above
9	anonymous	\$500 and above

# 19. How much are you willing to spend to better protect your home from natural disasters?

52 Responses

10	anonymous	Whatever it takes
11	anonymous	\$500 and above
12	anonymous	Whatever it takes
13	anonymous	\$500 and above
14	anonymous	Whatever it takes
15	anonymous	\$100 - \$499
16	anonymous	Whatever it takes
17	anonymous	\$100 - \$499
18	anonymous	Whatever it takes
19	anonymous	\$100 - \$499
20	anonymous	\$500 and above

# 19. How much are you willing to spend to better protect your home from natural disasters?

52 Responses

21	anonymous	Whatever it takes
22	anonymous	\$500 and above
23	anonymous	\$100 - \$499
24	anonymous	Whatever it takes
25	anonymous	Less than \$100
26	anonymous	Less than \$100
27	anonymous	\$100 - \$499
28	anonymous	Nothing/don't know
29	anonymous	\$500 and above
30	anonymous	\$500 and above

# 19. How much are you willing to spend to better protect your home from natural disasters?

52 Responses

31	anonymous	Whatever it takes
32	anonymous	Nothing/don't know
33	anonymous	Nothing/don't know
34	anonymous	\$500 and above
35	anonymous	Whatever it takes
36	anonymous	\$500 and above
37	anonymous	Nothing/don't know
38	anonymous	\$500 and above
39	anonymous	Nothing/don't know
40	anonymous	\$100 - \$499
41	anonymous	\$100 - \$499

# 19. How much are you willing to spend to better protect your home from natural disasters?

52 Responses

42	anonymous	\$500 and above
43	anonymous	Nothing/don't know
44	anonymous	\$500 and above
45	anonymous	Nothing/don't know
46	anonymous	Whatever it takes
47	anonymous	\$500 and above
48	anonymous	\$500 and above
49	anonymous	\$100 - \$499
50	anonymous	\$500 and above
51	anonymous	\$100 - \$499

# 19. How much are you willing to spend to better protect your home from natural disasters?

52 Responses

42	anonymous	\$500 and above
43	anonymous	Nothing/don't know
44	anonymous	\$500 and above
45	anonymous	Nothing/don't know
46	anonymous	Whatever it takes
47	anonymous	\$500 and above
48	anonymous	\$500 and above
49	anonymous	\$100 - \$499
50	anonymous	\$500 and above
51	anonymous	\$100 - \$499
52	anonymous	\$500 and above

20. Mitigation activities are those types of actions you can take to protect your home and property from natural hazard events such as wildfire, severe weather, and floods. Please check the box for the following statements to best describe their importance to you. Your responses will help us determine your community's priorities for planning for these mitigation activities.

[More Details](#)

Very Important   Somewhat important   Neutral   Not very important   Not important

Protecting private property



Protecting critical facilities (clinic, school, community center, police/fire department, water/sewer, landfill)

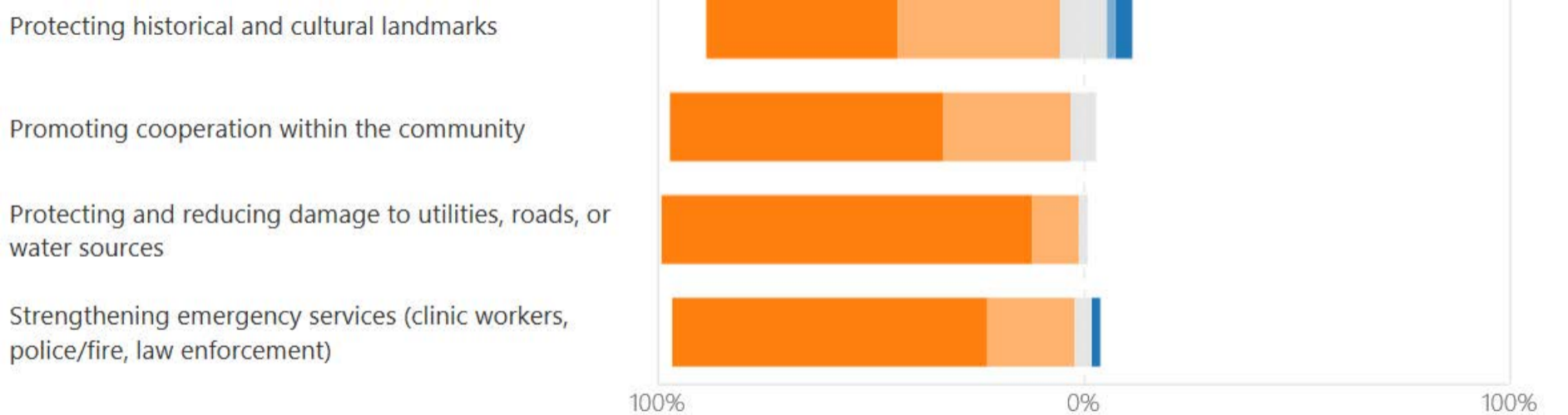


Preventing development in hazard areas



Protecting natural environment







20. Mitigation activities are those types of actions you can take to protect your home and property from natural hazard events such as wildfire, severe weather, and floods. Please check the box for the following statements to best describe their importance to you. Your responses will help us determine your community's priorities for planning for these mitigation activities.

53 Responses

		Protecting private property	Protecting critical facilities (clinic, school, community center, police/fire department, water/sewer, landfill)	Preventing development in hazard areas	Protecting natural environment	Protecting historical and cultural landmarks	Promoting cooperation within the community	Protecting and reducing damage to utilities, roads, and water sources
--	--	-----------------------------	--	--	--------------------------------	--	--	---

20. Mitigation activities are those types of actions you can take to protect your home and property from natural hazard events such as wildfire, severe weather, and floods. Please check the box for the following statements to best describe their importance to you. Your responses will help us determine your community's priorities for planning for these mitigation activities.

53 Responses

1	anonymous	Very Important	Very Important	Somewhat important	Somewhat important	Somewhat important	Very Important	Very Important
2	anonymous	Somewhat important	Very Important	Very Important	Somewhat important	Somewhat important	Very Important	Very Important
3	anonymous	Somewhat important	Very Important	Not very important	Somewhat important	Somewhat important	Somewhat important	Somewhat important

20. Mitigation activities are those types of actions you can take to protect your home and property from natural hazard events such as wildfire, severe weather, and floods. Please check the box for the following statements to best describe their importance to you. Your responses will help us determine your community's priorities for planning for these mitigation activities.

53 Responses

2	anonymous	Somewhat important	Very Important	Very Important	Somewhat important	Somewhat important	Very Important	Very Important
3	anonymous	Somewhat important	Very Important	Not very important	Somewhat important	Somewhat important	Somewhat important	Somewhat important
4	anonymous	Very Important	Very Important	Very Important	Very Important	Neutral	Very Important	Very Important
5	anonymous	Very Important	Very Important	Somewhat important	Very Important	Somewhat important	Very Important	Somewhat important
6	anonymous	Very Important	Very Important	Neutral	Neutral	Very Important	Neutral	Very Important
7	anonymous	Neutral	Somewhat important	Somewhat important	Very Important	Somewhat important	Somewhat important	Somewhat important

20. Mitigation activities are those types of actions you can take to protect your home and property from natural hazard events such as wildfire, severe weather, and floods. Please check the box for the following statements to best describe their importance to you. Your responses will help us determine your community's priorities for planning for these mitigation activities.

### 53 Responses

8	anonymous	Very Important	Very Important	Somewhat important	Neutral	Neutral	Very Important	Very Important
9	anonymous	Somewhat important	Very Important	Somewhat important	Neutral	Neutral	Very Important	Very Important
10	anonymous		Very Important	Very Important	Very Important	Very Important	Very Important	Very Important
11	anonymous	Very Important	Very Important	Somewhat important	Neutral	Somewhat important	Somewhat important	Very Important
12	anonymous	Very Important	Very Important	Very Important	Very Important	Very Important	Very Important	Very Important
13	anonymous	Very Important	Neutral	Very Important	Very Important	Somewhat important	Very Important	Very Important

20. Mitigation activities are those types of actions you can take to protect your home and property from natural hazard events such as wildfire, severe weather, and floods. Please check the box for the following statements to best describe their importance to you. Your responses will help us determine your community's priorities for planning for these mitigation activities.

### 53 Responses

14	anonymous	Very Important	Very Important	Very Important	Very Important	Very Important	Very Important	Very Important
15	anonymous	Somewhat important	Very Important	Somewhat important	Very Important	Neutral	Somewhat important	Very Important
16	anonymous	Very Important	Very Important	Very Important	Very Important	Very Important	Very Important	Very Important
17	anonymous	Somewhat important	Very Important	Very Important	Very Important	Very Important	Very Important	Very Important
18	anonymous	Somewhat important	Very Important	Very Important	Very Important	Very Important	Very Important	Very Important
19	anonymous	Very Important	Very Important	Somewhat important	Somewhat important	Somewhat important	Very Important	Very Important

20. Mitigation activities are those types of actions you can take to protect your home and property from natural hazard events such as wildfire, severe weather, and floods. Please check the box for the following statements to best describe their importance to you. Your responses will help us determine your community's priorities for planning for these mitigation activities.

53 Responses

20	anonymous	Very Important	Very Important	Somewhat important	Somewhat important	Somewhat important	Somewhat important	Somewhat important
21	anonymous	Very Important	Very Important	Very Important	Somewhat important	Somewhat important	Very Important	Very Important
22	anonymous	Very Important	Very Important	Somewhat important	Somewhat important	Neutral	Very Important	Very Important
23	anonymous	Somewhat important	Very Important	Very Important	Very Important	Very Important	Very Important	Very Important
24	anonymous	Very Important	Very Important	Very Important	Not important	Not important	Very Important	Very Important
25	anonymous	Very Important	Very Important	Somewhat important	Neutral	Somewhat important	Somewhat important	Very Important

20. Mitigation activities are those types of actions you can take to protect your home and property from natural hazard events such as wildfire, severe weather, and floods. Please check the box for the following statements to best describe their importance to you. Your responses will help us determine your community's priorities for planning for these mitigation activities.

53 Responses

26	anonymous	Very Important	Very Important	Somewhat important	Very Important	Somewhat important	Somewhat important	Very Important
27	anonymous	Not important	Not very important	Not important	Not very important	Not very important	Neutral	Neutral
28	anonymous	Very Important	Somewhat important	Very Important	Very Important	Somewhat important	Somewhat important	Somewhat important
29	anonymous	Very Important	Very Important	Very Important	Somewhat important	Somewhat important	Very Important	Very Important
30	anonymous	Very Important	Very Important	Somewhat important	Somewhat important	Somewhat important	Very Important	Very Important
31	anonymous	Very Important	Very Important	Somewhat important	Very Important	Very Important	Somewhat important	Somewhat important

20. Mitigation activities are those types of actions you can take to protect your home and property from natural hazard events such as wildfire, severe weather, and floods. Please check the box for the following statements to best describe their importance to you. Your responses will help us determine your community's priorities for planning for these mitigation activities.

### 53 Responses

32	anonymous	Very Important	Very Important	Somewhat important	Somewhat important	Very Important	Very Important	Very Important
33	anonymous	Very Important	Very Important	Somewhat important	Very Important	Very Important	Very Important	Very Important
34	anonymous	Neutral	Very Important	Very Important	Very Important	Very Important	Very Important	Very Important
35	anonymous	Neutral	Neutral	Neutral	Neutral	Not important	Somewhat important	Very Important
36	anonymous	Very Important	Very Important	Somewhat important	Very Important	Very Important	Very Important	Very Important
37	anonymous	Very Important	Somewhat important	Very Important	Very Important	Very Important	Very Important	Very Important





20. Mitigation activities are those types of actions you can take to protect your home and property from natural hazard events such as wildfire, severe weather, and floods. Please check the box for the following statements to best describe their importance to you. Your responses will help us determine your community's priorities for planning for these mitigation activities.

### 53 Responses

44	anonymous	Very Important	Very Important	Neutral	Very Important	Somewhat important	Somewhat important	Very Important
45	anonymous	Very Important	Very Important	Very Important	Very Important	Very Important	Very Important	Very Important
46	anonymous	Very Important	Very Important	Very Important	Very Important	Very Important	Very Important	Very Important
47	anonymous	Very Important	Very Important	Very Important	Very Important	Very Important	Very Important	Very Important
48	anonymous	Very Important	Very Important	Very Important	Somewhat important	Very Important	Somewhat important	Very Important
49	anonymous	Very Important	Very Important	Very Important	Very Important	Neutral	Very Important	Very Important

20. Mitigation activities are those types of actions you can take to protect your home and property from natural hazard events such as wildfire, severe weather, and floods. Please check the box for the following statements to best describe their importance to you. Your responses will help us determine your community's priorities for planning for these mitigation activities.

53 Responses

47	anonymous	Very Important	Very Important	Very Important	Very Important	Very Important	Very Important	Very Important
48	anonymous	Very Important	Very Important	Very Important	Somewhat important	Very Important	Somewhat important	Very Important
49	anonymous	Very Important	Very Important	Very Important	Very Important	Neutral	Very Important	Very Important
50	anonymous	Somewhat important	Very Important	Neutral	Somewhat important	Somewhat important	Neutral	Very Important
51	anonymous	Neutral	Very Important	Somewhat important	Somewhat important	Very Important	Somewhat important	Very Important
52	anonymous	Somewhat important	Very Important	Very Important	Very Important	Very Important	Somewhat important	Very Important

21. Do you have other suggestions for possible mitigation actions/strategies?

[More Details](#)

15

Responses

Latest Responses

*"Make gravel available for property owners to protect against floodin..."*

## 21. Do you have other suggestions for possible mitigation actions/strategies?

15 Responses

ID ↑	Name	Responses
1	anonymous	No, it sounds like you've considered them all.
2	anonymous	Not at this time.
3	anonymous	Fire Adaptive Communities - <a href="https://fireadaptednetwork.org/">https://fireadaptednetwork.org/</a> , Address network, contact book for local cooperators (GVEA, MTA, VFD's, state, state forestry, federal entities )
4	anonymous	ZONING!!
5	anonymous	We need a comprehensive plan for hazmat responses on the highway.
6	anonymous	No
7	anonymous	No
8	anonymous	The items on this survey are too "non-specific" to be helpful in determining strategies or actions.

## 21. Do you have other suggestions for possible mitigation actions/strategies?

15 Responses

8	anonymous	The items on this survey are too "non-specific" to be helpful in determining strategies or actions.
9	anonymous	We don't need more and bigger bureaucracies 'helping'.
10	anonymous	Maybe, not sure what has been done already.
11	anonymous	No
12	anonymous	no
13	anonymous	Don't use this survey as a way to "justify" new taxes or unnecessary expenses. Wisely use the money you already have.
14	anonymous	Continue the programs of brush/tree removal close to our homes to help reduce the hazard of wildfires that we have done through our fire departments and the Borough.
15	anonymous	Make gravel available for property owners to protect against flooding in places that are repeatedly at risk of flooding

22. Thank you for your participation! This survey may be submitted anonymously; however, if you provide us with your name and contact information, we will have the ability to follow up with you to learn more about your ideas or concerns (optional): Name and email recommended

[More Details](#)

16

Responses



**From:** Chris Noel <cnoel@denaliborough.com>  
**Sent:** Wednesday, March 11, 2020 1:09 PM  
**To:** Jennifer LeMay (jlemay@lemayengineering.com)  
**Subject:** FW: Notes for Denali Borough Multi-Jurisdictional Hazard Mitigation Plan  
**Attachments:** Denali Borough Large Fire History Map.pdf; Denali Borough Fire Ignitions 1995 - 2019 Map.pdf; Denali Borough Protection Orgaizations Map.pdf; Denali Borough Fire Management OptionsMap.pdf; Notes to CNoel.docx

Hi Jennifer,  
Please find some notes attached, and a few maps for us to consider including in the Plan update. I read through Keith's notes and fully support his proposed language changes.

If there is a spot to include him in our Planning team, that would be nice too.

I think I still owe you the critical infrastructure table with local edits.

See you tonight.

Chris

From: Mitchell, Keith <keith\_mitchell@nps.gov>  
Sent: Tuesday, March 10, 2020 5:42 PM  
To: Chris Noel <cnoel@denaliborough.com>  
Subject: Notes for Denali Borough Multi-Jurisdictional Hazard Mitigation Plan

[EXTERNAL EMAIL] This message was sent from outside the company. DO NOT click links or open attachments unless you recognize the source of this email and know the content is safe.  
Chris,

Here are a few notes for you to consider in updating your Multi-Jurisdictional Hazard Mitigation Plan

I have also attached some maps

Keith Mitchell

\*\*\*\*\*

[cid:image001.jpg@01D5F7A5.F8B4F150]



5.3.6.1

**Page 72** “The risk of wildfire has increased significantly over the past two decades, due in large part to the spruce-bark beetle infestation”

**Comment:** I don’t know if this is a true statement, I’ll search for some peer review articles and research and provide input on this topic.

5.3.6.2

**Comment:** Should reference the Alaska

MASTER COOPERATIVE WILDLAND FIRE MANAGEMENT AND STAFFORD ACT RESPONSE AGREEMENT

**Page 73** “In the Borough, the DOF has the responsibility to manage fire response”.

**Comment:** There are two protection agencies that operate in the Denali Borough, DOF, and Alaska Fire Service.

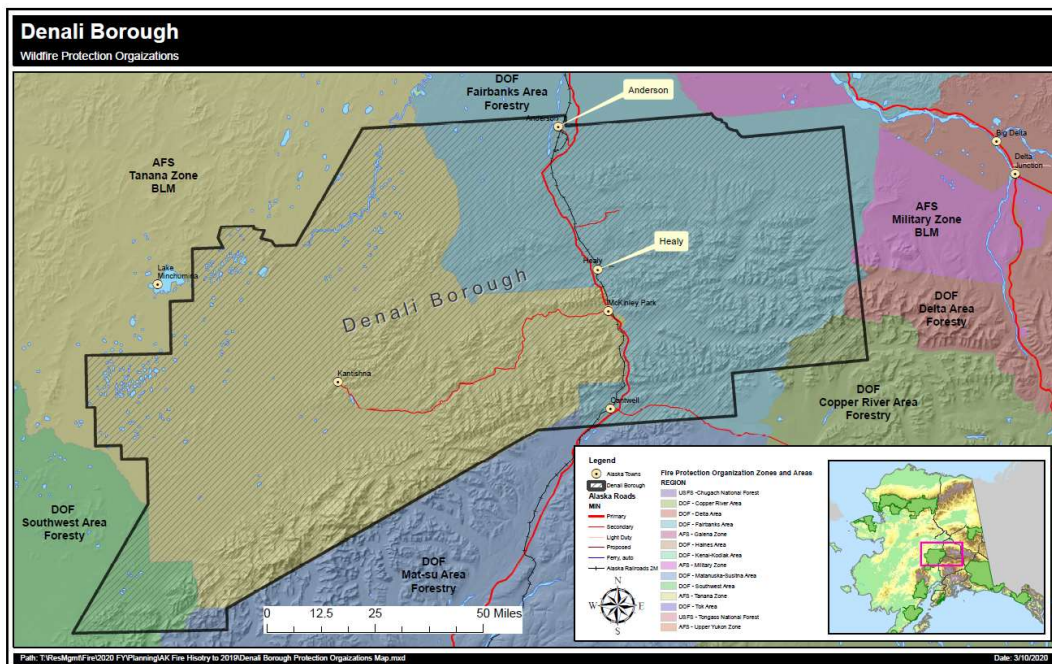
Alaska Fire Service

- Tannana Zone (BLM)
- Military Zone (BLM)

Department of Forestry

- Fairbanks Area Forestry
- Southwest Area Forestry
- Matsu Area Forestry
- Copper River Area Forestry
- Delta Area Forestry

### Fire Protections Organization Zones and Areas

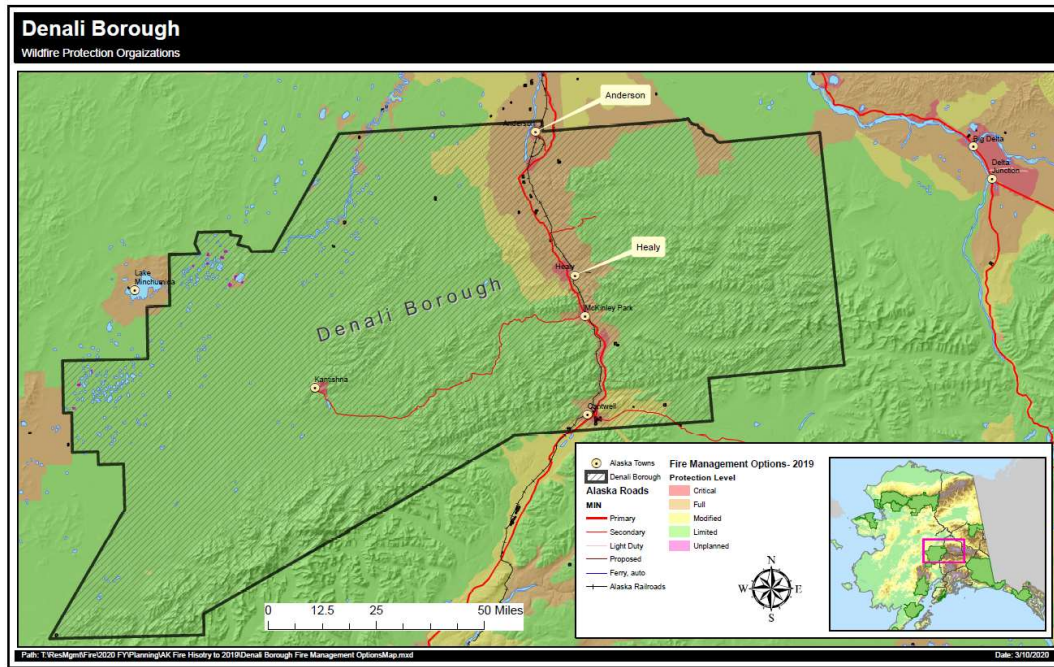


**Page 73** “The CWPP only designates a small portion of the burnable land in the Borough as Limited, and very few fires are ignited in these regions”.

**Comment:** The CWPP does not designate the protection option, the jurisdictional agency does.

- For Private and State Lands (State of Alaska)
- For Federal Lands (Jurisdictional Federal Agency)

## Fire Management Options

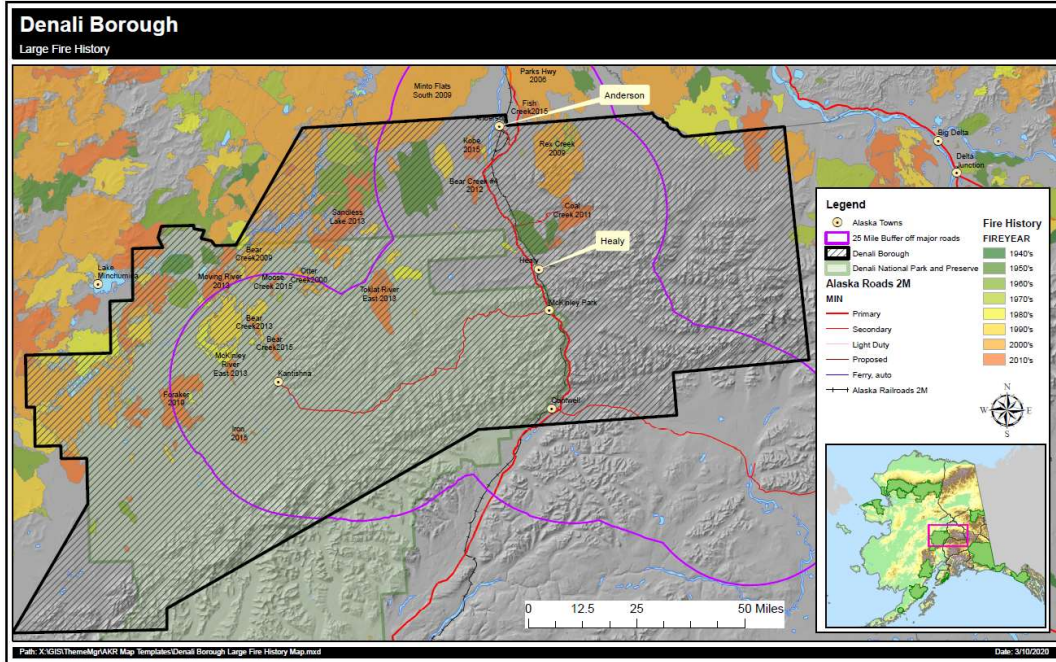


### 5.3.6.4 Hazard History

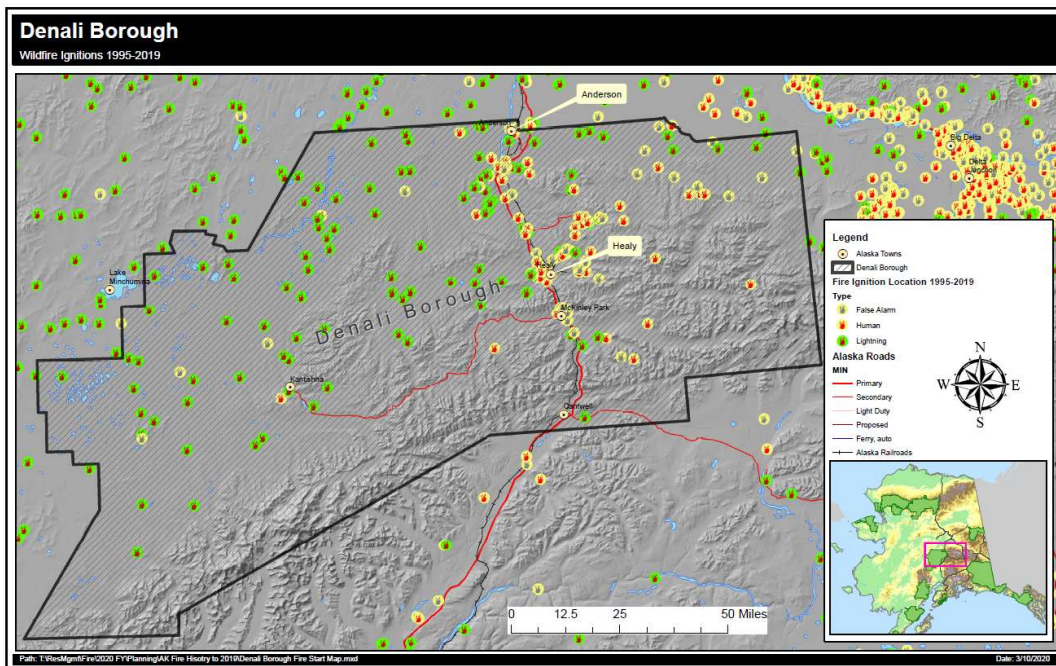
Page 76 "Other areas of particular concern include:"

Comment: include McKinley Village, and Kantishna

## Large Fire History



## Fire Ignitions (Starts)



#### 5.3.6.6 Extent

**Page 77** “Generally, fire vulnerability dramatically increases in the late summer and early fall as vegetation dries out, decreasing plant moisture content, and increasing the ratio of dead fuel to living fuel.”

**Comment:** I’ll get you some numbers, but I generally see the core fire season from June 1<sup>st</sup> – July 31<sup>st</sup>. I’m not sure where this statement is coming from, as in the late summer and early fall is usually when we see our rains, which reduces the chance fires ignition.

### Notes for Community Mitigations Action Plan Matrix

- Add CWPP for Kantishna
- Add Fire Adapted Community Self Assessment Tool and Facilitators Guide  
<https://fireadaptednetwork.org/resources/fac-assessment-tool/>

**From:** Chris Noel <cnoel@denaliborough.com>  
**Sent:** Wednesday, March 25, 2020 4:36 PM  
**To:** Jennifer LeMay (jlemay@lemayengineering.com)  
**Subject:** Fw: 100 Mile Buffer info for fires near Healy/ Anderson  
**Attachments:** Anderson Fires 100 Mile Buffer.xls; Healy Fires 100 Mile Buffer.xls; Anderson 100 Mile Buffer Map.pdf; Healy100 Mile Buffer Map.pdf

**Categories:** Red Category

Hi Jennifer,  
Please see the attached graphics. Do you think we can incorporate into the hazard mitigation plan?  
Chris

---

**From:** Mitchell, Keith <keith\_mitchell@nps.gov>  
**Sent:** Monday, March 9, 2020 3:49 PM  
**To:** Chris Noel <cnoel@denaliborough.com>  
**Subject:** 100 Mile Buffer info for fires near Healy/ Anderson

[EXTERNAL EMAIL] This message was sent from outside the company DO NOT click links or open attachments unless you recognize the source of this email and know the content is safe.

Chris,

I think this is the information you where looking for.

Thanks

Keith Mitchell

\*\*\*\*\*

	<p>Keith Mitchell Assistant Fire Management Officer Alaska Western Area Fire Management Denali National Park &amp; Preserve PO Box 9 Denali Park, AK 99755 Office: 907 683 9549 Cell: 907 242 4555</p>
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**Appendix B: Adoption Resolutions and FEMA Approval Letters**

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## **Appendix C: FEMA Review Tool**



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**Appendix D: Benefit-Cost Analysis Fact Sheet**

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## Benefit Cost Analysis Fact Sheet

Hazard mitigation projects are specifically aimed at reducing or eliminating future damages. Although hazard mitigation projects may sometimes be implemented in conjunction with the repair of damages from a declared disaster, the focus of hazard mitigation projects is on strengthening, elevating, relocating, or otherwise improving buildings, infrastructure, or other facilities to enhance their ability to withstand the damaging impacts of future disasters. In some cases, hazard mitigation projects may also include training or public education programs if such programs can be demonstrated to reduce future expected damages.

A Benefit-Cost Analysis (BCA) provides an estimate of the “benefits” and “costs” of a proposed hazard mitigation project. The “benefits” considered are avoided future damages and losses that are expected to accrue as a result of the mitigation project. In other words, benefits are the reduction in expected future damages and losses (i.e., the difference in expected future damages before and after the mitigation project). The costs considered are those necessary to implement the specific mitigation project under evaluation. Costs are generally well-determined for specific projects for which engineering design studies have been completed. The timing and severity of benefits, however, must be estimated probabilistically because they depend on the improved performance of the building or facility in future hazard events.

All benefit-costs must be:

- Credible and well documented
- Prepared in accordance with accepted BCA practices
- Cost-effective ( $BCR \geq 1.0$ )

General Data Requirements:

- All data entries (other than FEMA) standard or default values) must be documented in the application.
- Data must be from a credible source.
- Provide complete copies of reports and engineering analyses.
- Detailed cost estimate.
- Identify the hazard (e.g., flood, wind, seismic).
- Discuss how the proposed measure will mitigate against future damages.
- Document the project’s useful life.
- Document the proposed Level of Protection.
- The Very Limited Data (VLD) BCA module cannot be used to support cost-effectiveness (screening purposes only).
- Alternative BCA software must be approved in writing by FEMA HQ and FEMA Region 10 staff prior to submittal of the application.

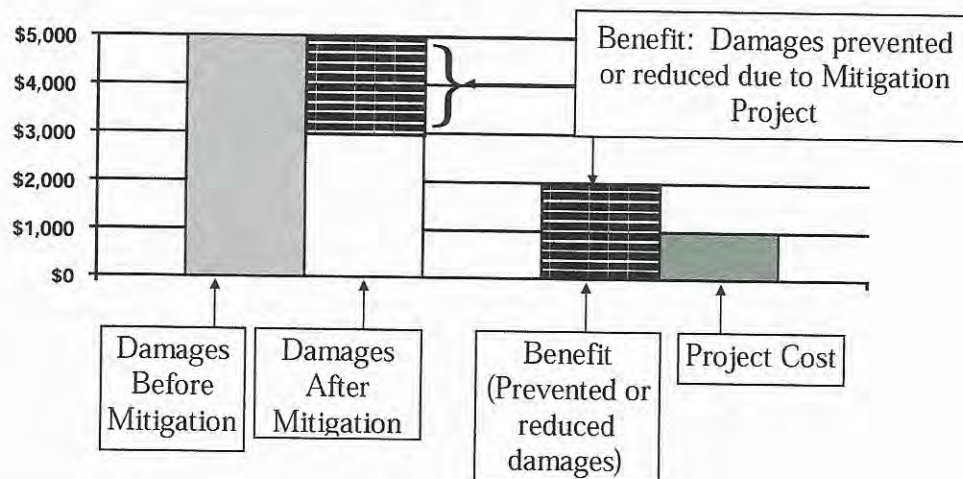
Damage and Benefit Data

- Well documented for each damage event.
- Include estimated frequency and method of determination per damage event.
- Data used in place of FEMA standard or default values must be documented and justified.
- The Level of Protection must be documented and readily apparent.

## Benefit Cost Analysis Process

### How to Determine Cost-Effectiveness of Mitigation Projects

When Congress enacted the Stafford Act's mitigation provisions, one of the criteria to determine priorities for mitigation funding was cost effectiveness. This cost effective provision was in response to the recognition that there would never be enough funding to completely mitigate against every hazard. To determine the cost effectiveness of proposed mitigation projects, FEMA implemented a benefit cost analysis (BCA) requirement to mitigation grant funding applications. The basic requirement of the BCA is that the benefit of the mitigation project must equal or exceed the cost, a benefit cost ratio (BCR) of 1:1 or greater. Over several years, FEMA developed a set standard values for use in BCA and custom software that establishes mitigation benefits and calculates the BCR. Benefit cost analysis submitted to FEMA to justify mitigation funding requires substantial documentation of project costs and benefits. FEMA provides the custom BCA software and training online at <https://www.fema.gov/benefit-cost-analysis>. An overview of the BCA process for a mitigation projects follows.



*FEMA Basic Benefit-Cost Model. For more information about FEMA's Benefit-Cost Modules, please contact the FEMA Region X Mitigation Division at 425-487-4600.*

It is important to understand that benefit-cost analysis is basically the same for each type of hazard mitigation project. The only differences are the types of data that are used in the calculations, depending on whether the project is for floods, earthquakes, or other natural hazards. For example, whereas the depth of flooding is used to estimate damage for flood mitigation projects, the severity of ground shaking is used to estimate damage for earthquake mitigation projects.

#### Calculating the Benefit - Cost Ratio

In the graph above, cost-effectiveness is determined by comparing the project cost of \$1,000, to the value of damages prevented after the mitigation measure, which is \$2,000. Because the dollar value of benefits exceeds the costs of funding the project, the project is cost-effective. This relationship is depicted numerically by dividing the benefits by the costs, resulting in a benefit-cost ratio (BCR). The BCR is simply a way of stating whether benefits exceed project costs, and

## Benefit Cost Analysis Process

by how much. To derive the BCR, divide the benefits by the cost ( $\$2,000 \div \$1,000$ ); if the result is 1.0 or greater, then the project is cost-effective. In this instance, the BCR is 2.0, which far exceeds the 1.0 level. On the other hand, if the cost of the project is \$2,000 and the benefits are only \$1,000, the project would have a BCR of 0.50 ( $\$1,000 \div \$2,000$ ) and would not be cost-effective.

Conducting a benefit-cost analysis determines one of two things: either the project is cost-effective ( $BCR > 1.0$ ), or it is not ( $BCR < 1.0$ ). If the project is cost-effective, then no further work or analysis needs to be done, there is no third step other than to move the project to the next phase in the approval process. However, if the project is not cost-effective, then it is generally not eligible for FEMA mitigation grant funding.

There are four key elements to all benefit-cost analyses of hazard mitigation projects:

1. An estimate of damages and losses before mitigation
2. An estimate of damages and losses after mitigation
3. An estimate of the frequency and severity of the hazard causing damages (e.g., floods), and
4. The economic factors of the analysis (e.g., discount rate and mitigation project's useful lifetime)

These four key elements and their relationships to one another are detailed in the following example.

Consider a 1,500 square foot, one-story, single family residence located in the Acorn Park subdivision along Squirrel Creek. A proposed mitigation project will elevate the structure four feet at a cost of \$20,000. Whether this project is cost-effective depends on the damages and losses from flooding without the mitigation project, the effectiveness of the mitigation project in reducing those damages and losses, the frequency that the house is flooded and the depth of the flood water, and the mitigation project's useful lifetime.

If the pre-mitigation damages are frequent and/or severe, then the project is more likely to be cost-effective. Even minor damage that occurs frequently can, over the life of a project, exceed the up-front costs of implementing a mitigation measure. On the other hand, if the building in the example above only flooded once, then it may not be cost-effective to elevate, unless the damages were significant in relation to the value of the structure and its contents.

## Benefit Cost Fact Sheet

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- When using the Limited Data (LD) BCA module, users cannot extrapolate data for higher frequency events for unknown lower frequency events.

### Building Data

- Should include FEMA Elevation Certificates for elevation projects or projects using First Floor Elevations (FFE)s).
- Include data for building type (tax records or photos).
- Contents claims that exceed 30 percent of building replacement value (BRV) must be fully documented.
- Method for determining BRVs must be documented. BRVs based on tax records must include the multiplier from the County Tax Assessor.
- Identify the amount of damage that will result in demolition of the structure (FEMA standard is 50 percent of pre-damage structure value).
- Include the site location (e.g., miles inland) for the hurricane module.

### Use Correct Occupancy Data

- Design occupancy for hurricane shelter portion of tornado module.
- Average occupancy per hour for the tornado shelter portion of the tornado module.
- Average occupancy for seismic modules.

### Questions to Be Answered

- Has the level of risk been identified?
- Are all hazards identified?
- Is the BCA fully documented and accompanied by technical support data?
- Will residual risk occur after the mitigation project is implemented?

### Common Shortcomings

- Incomplete documentation.
- Inconsistencies among data in the application, BCA module runs, and the technical support data.
- Lack of technical support data.
- Lack of a detailed cost estimate.
- Use of discount rate other than FEMA-required amount of 7 percent.
- Overriding FEMA default values without providing documentation and justification.
- Lack of information on building type, size, number of stories, and value.
- Lack of documentation and credibility for FFEs.
- Use of incorrect project useful life (not every mitigation measure equals 100 years).

**Appendix E: Plan Maintenance Documents**



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## Annual Review Questionnaire

PLAN SECTION	QUESTIONS	YES	NO	COMMENTS
<b>PLANNING PROCESS</b>	Are there internal or external organizations and agencies that have been invaluable to the planning process or to mitigation action?	<input type="checkbox"/>	<input type="checkbox"/>	
	Are there procedures (e.g., meeting announcements, plan updates) that can be done more efficiently?	<input type="checkbox"/>	<input type="checkbox"/>	
	Has the Task Force undertaken any public outreach activities regarding the MHMP or implementation of mitigation actions?	<input type="checkbox"/>	<input type="checkbox"/>	
<b>HAZARD PROFILES</b>	Has a natural and/or human-caused disaster occurred in this reporting period?	<input type="checkbox"/>	<input type="checkbox"/>	
	Are there natural and/or human-caused hazards that have not been addressed in this HMP and should be?	<input type="checkbox"/>	<input type="checkbox"/>	
	Are additional maps or new hazard studies available? If so, what have they revealed?	<input type="checkbox"/>	<input type="checkbox"/>	
<b>VULNERABILITY ANALYSIS</b>	Do any new critical facilities or infrastructure need to be added to the asset lists?	<input type="checkbox"/>	<input type="checkbox"/>	
	Have there been changes in development patterns that could influence the effects of hazards or create additional risks?	<input type="checkbox"/>	<input type="checkbox"/>	
<b>MITIGATION STRATEGY</b>	Are there different or additional resources (financial, technical, and human) that are now available for mitigation planning within the	<input type="checkbox"/>	<input type="checkbox"/>	
	Are the goals still applicable?	<input type="checkbox"/>	<input type="checkbox"/>	
	Should new mitigation actions be added to the a community's Mitigation Action Plan?	<input type="checkbox"/>	<input type="checkbox"/>	
	Do existing mitigation actions listed in a community's Mitigation Action Plan need to be reprioritized?	<input type="checkbox"/>	<input type="checkbox"/>	
	Are the mitigation actions listed in a community's Mitigation Action Plan appropriate for available resources?	<input type="checkbox"/>	<input type="checkbox"/>	

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Plan Goal (s) Addressed:

Goal: \_\_\_\_\_

Indicator of Success: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

Project Status

Project Cost Status

Project on schedule

Cost unchanged

Project completed

Cost overrun\*

Project delayed\*

\*explain: \_\_\_\_\_

\*explain: \_\_\_\_\_

\_\_\_\_\_

Cost underrun\*

Project canceled

\*explain: \_\_\_\_\_

\_\_\_\_\_

Summary of progress on project for this report:

A. What was accomplished during this reporting period?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

B. What obstacles, problems, or delays did you encounter, if any?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

C. How was each problem resolved?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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Next Steps: What is/are the next step(s) to be accomplished over the next reporting period?

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Other Comments:

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## 2019 Hazard Awareness and Mitigation Survey Questions

This survey is an opportunity for you to share your opinions and participate in the hazard mitigation planning process. The information that you provide will help us better understand your concerns for hazards and risks, which could lead to mitigation projects that will help reduce those risks and the impacts of future hazard events. **The hazard mitigation process is not complete without your feedback.** All individual responses are strictly confidential and will be used for mitigation planning purposes only.

***Please help us by taking a few minutes to complete this survey and return it to:***

Chris Noel, Emergency Planning and Projects Coordinator  
Denali Borough  
PO Box 480  
Healy, AK 99743

1. In which community do you live?
  - a. Anderson
  - b. Cantwell
  - c. Ferry
  - d. Healy
  - e. McKinley Park
  - f. Another area in Denali Borough \_\_\_\_\_ (Please write in)
  
2. How long have you lived in your community?
  - a. Less than 5 years
  - b. 5-10 years
  - c. 11-20 years
  - d. 21 or more years
  
3. Do you own or rent your home?
  - a. Own
  - b. Rent
  
4. What is the most efficient way for you to receive information on emergencies and other Denali Borough topics (please rank in order of best to worst with 1 being the best way to receive information)?
  - a. Newspaper advertisement
  - b. Television/radio
  - c. Email
  - d. Social media
  - e. Borough website
  - f. Mail
  - g. Public workshops/meetings

5. Which hazards present the greatest risk to you (please rank in order of highest to lowest with 1 being the hazard of most concern to you, followed by the second most hazard of concern, etc.)?
  - a. Earthquakes
  - b. Severe weather
  - c. Floods
  - d. Fire
  - e. Ground failure (landslides)
  - f. Changes to the cryosphere (climate change, changes in the permafrost active layer, avalanches)
  
6. How informed do you feel about natural hazards with the potential to affect the Denali Borough?
  - a. Very informed
  - b. Somewhat informed
  - c. Not informed
  
7. What information do you expect to receive from the Denali Borough during a natural disaster?
  - a. Current information of present situation
  - b. Responses and projections on response timing
  - c. School, road, and bridge closures; emergency shelter locations and openings
  - d. Warnings
  - e. Evacuations
  - f. What is expected of residents (safety measures to be taken)
  - g. Available resources
  - h. Priorities of first responders
  - i. Is water safe to consume?
  - j. All of the above.
  
8. What is the frequency that the Denali Borough should provide updates during a natural disaster?
  - a. Daily
  - b. As Needed
  - c. Every four hours even if there is no new information
  - d. Hourly
  
9. How important are hazard mitigation prevention measures such as planning and zoning, building codes, open space preservation, and floodplain regulations to influence the way land is developed and buildings are built?
  - a. Extremely important
  - b. Very important
  - c. Somewhat important
  - d. Not important

10. How important are property protection actions such as removing homes from the floodplain, elevating homes to stay above water levels in flooding, etc. to lessen the risk of property damage to homes?
  - a. Extremely important
  - b. Very important
  - c. Somewhat important
  - d. Not important
  
11. How important are public education and awareness such as outreach programs, public service announcements, and notices to residents and property owners to inform the public about natural hazards and the actions necessary to avoid potential injury or damage?
  - a. Extremely important
  - b. Very important
  - c. Somewhat important
  - d. Not important
  
12. How important are natural resource protection actions such as floodplain protection, habitat preservation, slope stabilizations, riparian buffers, and forest management to preserve or restore the functions of natural systems?
  - a. Extremely important
  - b. Very important
  - c. Somewhat important
  - d. Not important
  
13. How important is critical facility protection such as placing generators at community centers to ensure electrical power during a widespread power failure?
  - a. Extremely important
  - b. Very important
  - c. Somewhat important
  - d. Not important
  
14. How important are emergency service actions such as warning systems, evacuation planning, emergency response training, and protection of critical emergency facilities or systems to protect people and property during and immediately after a hazard event?
  - a. Extremely important
  - b. Very important
  - c. Somewhat important
  - d. Not important
  
15. How vulnerable are critical facilities (schools, community centers, government buildings, places of worship, communications towers, water and wastewater treatment buildings, fire stations, landfills) in your community to hazards?
  - a. Very vulnerable
  - b. Average vulnerability
  - c. Minimal vulnerability
  - d. None



16. How vulnerable to displacement, evacuation, or life safety is your community?
- Very vulnerable
  - Average vulnerability
  - My community isn't vulnerable.
17. Does your property (rented or owned) have a history of recorded damages?
- Yes
  - No
  - Write in answer: Estimated amount for each hazard event and year it occurred.
- 
18. Are you willing to spend money to make your home more resilient to damage from natural hazards?
- Yes
  - No
19. Would you be willing to make your property more resistant to natural hazards?
- Yes
  - No

**Preparedness**

Preparedness activities are often the first line of defense for protection of your family and the community. In the following list, please check those activities that you have done, plan to do in the near future, have not done, or are unable to do. *Please check one answer for each preparedness activity.*

Have you or someone in your household:	Have Done	Plan to do	Not Done	Unable to do
Attended meetings or received written information on natural disasters or emergency preparedness?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Talked with family members about what to do in case of a disaster or emergency?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Made a "Household/Family Emergency Plan" in order to decide what everyone would do in the event of a disaster?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Prepared an "Emergency Supply Kit" extra food, water, medications, batteries, first aid items, and other emergency supplies)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
In the last year, has anyone in your household been trained in First Aid or CPR?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

How much are you willing to spend to better protect your home from natural disasters? (*Check only one*)

<input type="checkbox"/>	Less than \$100	<input type="checkbox"/>	Desire to relocate for protection
<input type="checkbox"/>	\$100-\$499	<input type="checkbox"/>	Other, please explain
<input type="checkbox"/>	\$500 and above		
<input type="checkbox"/>	Nothing / Don't know		
<input type="checkbox"/>	Whatever it takes		

**Mitigation Activities**

A component of the Local Hazard Mitigation Plan activities is developing and documenting additional mitigation strategies that will help the community in protecting life and property from the impacts of future natural disasters.

Mitigation activities are those types of actions you can take to protect your home and property from natural hazard events such as wildfires, severe weather, and floods. Please check the box for the following statements to best describe their importance to you. Your responses will help us determine your community's priorities for planning for these mitigation activities.

<b>Statement</b>	<b>Very Important</b>	<b>Somewhat Important</b>	<b>Neutral</b>	<b>Not Very Important</b>	<b>Not Important</b>
Protecting private property	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Protecting critical facilities (clinic, school, community center, police/fire department, water/sewer, landfill)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Preventing development in hazard areas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Protecting natural environment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Protecting historical and cultural landmarks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Promoting cooperation within the community	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Protecting and reducing damage to utilities, roads, or water sources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Strengthening emergency services (clinic workers, police/fire)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Do you have other suggestions for possible mitigation actions/strategies?

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**Thank You for Your Participation!**

This survey may be submitted anonymously; however, if you provide us with your name and contact information, we will have the ability to follow up with you to learn more about your ideas or concerns (optional):

Name: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

Phone: \_\_\_\_\_

## **Appendix F: Glossary**

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## **APPENDIX B. Definitions**

**Asset:** Any manmade or natural feature that has value, including, but not limited to people; buildings; infrastructure like bridges, roads, and sewer and water systems; lifelines like electricity and communication resources; or environmental, cultural, or recreational features like parks, dunes, wetlands, or landmarks.

**Avalanche:** Mass of snow and ice falling suddenly down a mountain slope and often taking with it earth, rocks and rubble of every description.

**Base Flood Elevation:** The computed elevation to which floodwater is anticipated to rise during the base flood. Base Flood Elevations are shown on FIRMs and on the flood profiles. The Base Flood Elevation is the regulatory requirement for the elevation or floodproofing of structures. The relationship between the Base Flood Elevation and a structure's elevation determines the flood insurance premium.

**Borough:** The basic unit of local government in Alaska, analogous to counties in other states.

**Building:** Any structure used or intended for supporting or sheltering any use or occupancy.

**Building Code:** The regulations adopted by a local governing body principally setting forth standards for the construction, addition, modification, and repair of buildings and other structures for the purpose of protecting the health, safety, and general welfare of the public.

**Community:** Any state, area or political subdivision thereof, or any Indian tribe or tribal entity that has the authority to adopt and enforce statutes for areas within its jurisdiction.

**Critical Facility:** Facilities critical to the health and welfare of the population and that are especially important during and after a hazard event. Critical facilities include, but are not limited to, shelters, hospitals, and fire stations.

**Dam:** A structure built across a waterway to impound water.

**Development:** Any manmade change to improved or unimproved real estate including, but not limited to, buildings or other structures, mining, dredging, filling, grading, paving, excavation or drilling operations, or storage of equipment or materials.

**Disaster Mitigation Act (DMA 2000) (public Law 106-390):** This act was signed into law on October 10, 2000. This legislation reinforces the importance of mitigation planning and emphasizes planning for disasters before they occur.

**Earthquake:** A sudden motion or trembling that is caused by a release of strain accumulated within or along the edge of the earth's tectonic plates.

**Elevation:** The raising of a structure to place it above flood waters, generally above the base flood elevation, on an extended support structure.

**Emergency Operations Plan:** A document that: describes how people and property will be protected in disaster and disaster threat situations; details who is responsible for carrying out specific actions; identifies the personnel, equipment, facilities,

supplies, and other resources available for use in the disaster; and outlines how all actions will be coordinated.

**Erosion:** The wearing away of the land surface by running water, wind, ice, or other geological agents.

**Federal Disaster Declaration:** See Presidential Disaster Declaration.

**Federal Emergency Management Agency (FEMA):** A federal agency created in 1979 to provide a single point of accountability for all federal activities related to hazard mitigation, preparedness, response, and recovery.

**Flash Flood:** A flood event occurring with little or no warning where water levels rise at an extremely fast rate.

**Flood:** A general and temporary condition of partial or complete inundation of normally dry land areas from (1) the overflow of inland or tidal waters, (2) the unusual and rapid accumulation or runoff of surface waters from any source, or (3) mudflows or the sudden collapse of shoreline land.

**Floodplain:** A "floodplain" is the lowland adjacent to a river, lake, or ocean. Floodplains are designated by the frequency of the flood that is large enough to cover them. For example, the 10-year floodplain will be covered by the 10-year flood; the 100-year floodplain by the 100-year flood.

**"Flood frequencies:"** Frequencies are determined by plotting a graph of the size of all known floods for an area and determining how often floods of a particular size occur. The frequency is the chance of a flood occurring during a given timeframe. It is the percentage of the probability of flooding each year. For example, the 100-year flood has a 1% chance, and the 10-year flood has a 10% chance of occurring in any given year.

**Geographic Information System:** A computer software application that relates physical features of the earth to a database that can be used for mapping and analysis.

**Governing Body:** The legislative body of a jurisdiction such as a municipal or Borough assembly or a city council.

**Hazard:** A source of potential danger or adverse condition. Any situation that has the potential for causing personal injury or death, or damage to property and the environment.

**Hazard Event:** A specific occurrence of a particular type of hazard.

**Hazard Identification:** The process of identifying hazards that threaten an area.

**Hazard Mitigation:** Any action taken to reduce or eliminate the long-term risk to human life and property from natural hazards (44 CFR Subpart M 206.401).

**Hazard Mitigation Grant Program:** The program authorized under section 404 of the Stafford Act, which may provide funding for mitigation measures identified through the

evaluation of natural hazards conducted under §322 of the Disaster Mitigation Act 2000.

**Hazard and Vulnerability Analysis:** The identification and evaluation of all the hazards that potentially threaten a jurisdiction and analyzing them in the context of the jurisdiction to determine the degree of threat that is posed by each.

**Hydro Unit:** Short for Hydrologic Unit. A drainage area delineated to nest in a multi-level, hierarchical drainage system. Its boundaries are defined by hydrographic and topographic criteria that delineate an area of land upstream from a specific point on a river, stream, or similar surface water. A hydrologic unit can accept surface water directly from upstream drainage areas, and indirectly from associated surface areas such as remnant, non-contributing, and diversions to form a drainage area with single or multiple outlet points.

**Infrastructure:** The public services of a community that have a direct impact to the quality of life. Infrastructure refers to communication technology such as phone lines or Internet access, vital services such as public water supply and sewer treatment facilities, and includes an area's transportation system, regional dams or bridges, etc.

**Inundation:** The maximum horizontal distance inland reached by a tsunami.

**Landslide:** Downward movement of a slope and materials under the force of gravity.

**Liquefaction:** The phenomenon that occurs when ground shaking cause's loose soils to lose strength and act like a thick or viscous fluid. Liquefaction causes two types of ground failure: lateral spread and loss of bearing strength.

**Local Government:** Any county, Borough, municipality, city, township, public authority, school district, intrastate district, council of governments (regardless of whether the council of governments is incorporated as a nonprofit corporation under State law), regional or interstate government entity, or agency, or instrumentality of a local government; any Indian tribe or authorized tribal organization, or Alaska Native village or organization; and any rural community, unincorporated town or village, or other public entity, for which an application for assistance is made by a State or political subdivision of a state.

**Magma:** Molten rock originating from the Earth's interior.

**Magnitude:** A measure of the strength of a hazard event. The magnitude (also referred to as severity) of a given hazard event is usually determined using technical measures specific to the hazard.

**Mitigate:** To cause something to become less harsh or hostile, to make less severe or painful.

**Mitigation Plan:** A systematic evaluation of the nature and extent of vulnerability to the effects of natural hazards typically present in the State and includes a description of actions to minimize future vulnerability to hazards.



**Municipality:** A political subdivision incorporated under the laws of the state that is a home rule or general law city, a home rule or general law borough, or a unified municipality.

**Natural Disaster:** Any natural catastrophe, including any hurricane, tornado, storm, high water, wind, driven water, tsunami, earthquake, volcanic eruption, landslide, snowstorm, fire, or drought. (44 CFR Subpart M206.401).

**New Construction:** New construction means structures for which the “start of construction” on or after the effective date of a floodplain management regulation adopted by a community and includes any subsequent improvement to such structures.

**One Hundred (100)-Year:** The flood elevation that has a one-percent chance of occurring in any given year. It is also known as the Base Flood.

**Overlay Zone:** Overlay zones (overlay districts) create a framework for conservation or development of special geographical areas. In a special resource overlay district, overlay provisions typically impose greater restrictions on the development of land, but only regarding those parcels whose development, as permitted under the zoning, may threaten the viability of the natural resource. In a development area overlay district, the provisions may impose restrictions as well, but also may provide zoning incentives and waivers to encourage certain types and styles of development. Overlay zone provisions are often complemented by the adoption of other innovative zoning techniques, such as floating zones, special permits, incentive zoning, cluster development and special site plan or subdivision regulations, to name a few.

**Period:** A length of time. For waves, it is the length of time between two successive peaks or troughs, which may vary due to interference of waves. Tsunami periods generally range from 5 to 60 minutes.

**Planning:** The act or process of making or carrying out plans; the establishment of goals, policies and procedures for a social or economic unit.

**Preparedness:** The steps taken to decide what to do if essential services break down, developing a plan for contingencies, and practicing the plan. Preparedness ensures that people are ready for a disaster and will respond to it effectively.

**Presidential Disaster Declaration:** The formal action by the President of the United States to make a state eligible for major disaster or emergency assistance under the Robert T. Stafford Relief and Emergency Assistance Act, Public Law 93- 288, as amended.

**Probability:** A statistical measure of the likelihood that a hazard event will occur.

**Recovery:** The long-term activities beyond the initial crisis period and emergency response phase of disaster operations that focus on returning all systems in the community to a normal status or to reconstitute these systems to a new, less vulnerable condition.

**Response:** Those activities and programs designed to address the immediate and short-term effects of the onset of an emergency or disaster.

**Retrofit:** The strengthening of existing structures to mitigate disaster risks.

**Risk:** The estimated impact that a hazard would have on people, services, facilities, and structures in a community; the likelihood of a hazard event resulting in an adverse condition that causes injury or damage. Risk is often expressed in relative terms such as a high, moderate or low likelihood of sustaining damage above a particular threshold due to a specific type of hazard event. It can also be expressed in terms of potential monetary losses associated with the intensity of the hazard.

**Riverine:** Relating to, formed by, or resembling rivers (including tributaries), streams, creeks, brooks, etc.

**Riverine Flooding:** Flooding related to or caused by a river, stream, or tributary overflowing its banks due to excessive rainfall, snowmelt or ice.

**Runoff:** That portion of precipitation that is not intercepted by vegetation, absorbed by land surface, or evaporated, and thus flows overland into a depression, stream, lake, or ocean (runoff, called immediate subsurface runoff, also takes place in the upper layers of soil).

**Run-up:** The maximum vertical height of a tsunami in relation to sea level.

**Seiche:** An oscillating wave (also referred to as a seismic sea wave) in a partially or fully enclosed body of water. May be initiated by long period seismic waves, wind and water waves, or a tsunami.

**Stafford Act:** 1) The Robert T. Stafford Disaster Relief and Emergency Assistance Act, Public Law 93-288, as amended. 2) The Stafford Act provides an orderly and continuing means of assistance by the Federal Government to State, local and tribal governments in carrying out their responsibilities to alleviate the suffering and damage which result from disaster.

**State Disaster Declaration:** A disaster emergency shall be declared by executive order or proclamation of the Governor upon finding that a disaster has occurred or that the occurrence or the threat of a disaster is imminent. The state of disaster emergency shall continue until the governor finds that the threat or danger has passed or that the disaster has been dealt with to the extent that emergency conditions no longer exist and terminates the state of disaster emergency by executive order or proclamation. Along with other provisions, this declaration allows the governor to utilize all available resources of the State as reasonably necessary, direct and compel the evacuation of all or part of the population from any stricken or threatened area if necessary, prescribe routes, modes of transportation and destinations in connection with evacuation and control ingress and egress to and from disaster area. It is required before a Presidential Disaster Declaration can be requested.

**State Hazard Mitigation Officer (SHMO):** The SHMO is the representative of state government who is the primary point of contact with FEMA, other state and Federal agencies, and local units of government in the planning and implementation of pre- and post-disaster mitigation activities.

**Storm Surge:** Rise in the water surface above normal water level on open coast due to the action of wind stress and atmospheric pressure on the water surface.

**Stream:** A body of water flowing in a natural surface channel. Flow may be continuous or only during wet periods. Streams that flow only during wet periods are termed “intermittent streams.”

**Structure:** That which is constructed above or below ground in some definite manner for any use or purpose.

**Subdivision Regulations:** Ordinances or regulations governing the subdivision of land with respect to things such as adequacy and suitability of building sites and utilities and public facilities.

**Tectonic Plate:** Torsionally rigid, thin segments of the earth’s lithosphere that may be assumed to move horizontally and adjoin other plates. It is the friction between plate boundaries that causes seismic activity.

**Topography:** The contour of the land surface. The technique of graphically representing the exact physical features of a place or region on a map.

**Tribal Government:** A Federally recognized governing body of an Indian or Alaska Native Tribe, band, nation, pueblo, village or community that the Secretary of the Interior acknowledges to exist as an Indian tribe under the Federally Recognized Tribe List Act of 1994, 25 U.S.C. 479a. This does not include Alaska Native corporations, the ownership of which is vested in private individuals.

**Tsunami:** A sea wave produced by submarine earth movement or volcanic eruption with a sudden rise or fall of a section of the earth's crust under or near the ocean. A seismic disturbance or land slide can displace the water column, creating a rise or fall in the level of the ocean above. This rise or fall in sea level is the initial formation of a tsunami wave.

**Volcano:** A volcano is an opening, or rupture, in a planet's surface or crust, which allows hot magma, ash, and gases to escape from below the surface. Volcanoes are generally found where tectonic plates are diverging or converging. A mid-oceanic ridge, for example the Mid-Atlantic Ridge, has examples of volcanoes caused by divergent tectonic plates pulling apart; the Pacific Ring of Fire has examples of volcanoes caused by convergent tectonic plates coming together.

**Vulnerability:** Describes how exposed or susceptible to damage an asset is. Vulnerability depends on an asset’s construction, contents, and the economic value of its functions. The vulnerability of one element of the community is often related to the vulnerability of another. For example, many businesses depend on uninterrupted electrical power – if an electrical substation is flooded, it will affect not only the

substation itself, but a number of businesses as well. Other, indirect effects can be much more widespread and damaging than direct ones.

**Vulnerability Assessment:** The extent of injury and damage that may result from hazard event of a given intensity in a given area. The vulnerability assessment should address impacts of hazard events on the existing and future built environment.

**Watercourse:** A natural or artificial channel in which a flow of water occurs either continually or intermittently.

**Watershed:** An area that drains to a single point. In a natural basin, this is the area contributing flow to a given place or stream.

**Water Surface Elevation:** Water surface elevation means the height, in relation to the National Geodetic Vertical Datum (NGVD) of 1929, (or other datum, where specified) of floods of various magnitudes and frequencies in the floodplains of coastal riverine areas.

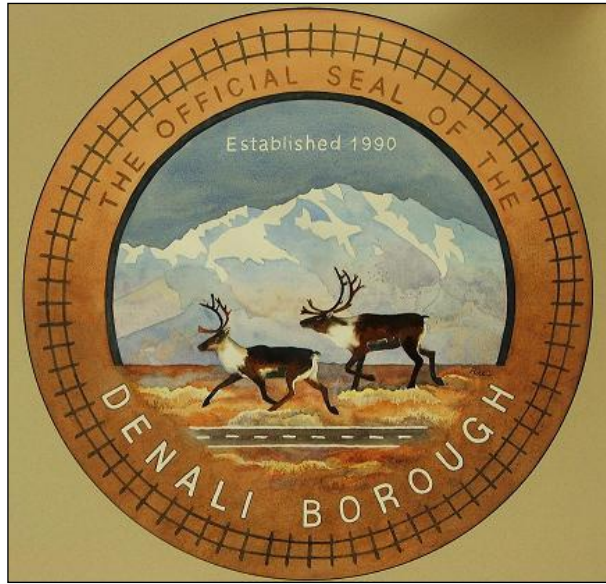
**Water Table:** The uppermost zone of water saturation in the ground.

**Wetlands:** Areas that are inundated or saturated frequently and for long enough to support vegetative or aquatic life requiring saturated or seasonally saturated soil conditions for growth and reproduction.

**Wildfire:** An uncontrolled fire that spreads through vegetative fuels, exposing and possibly consuming structures.

**Worst Case Scenario:** The term "worst case scenario" is somewhat self-explanatory. It includes the potential for a "cascade effect", which was assumed in analyzing the risk from each hazard. The term "cascade effect" is used to describe the triggering of several hazard occurrences from an initial event. An earthquake for instance, might also trigger avalanches, collapsed buildings, transportation and utility disruptions, and hazardous material releases, each of which might trigger additional events, all part of the same incident.

**Zoning Ordinance:** An ordinance under the state or local government's police powers that divides an area into districts and, within each district, regulates the use of land and buildings, height, and bulk of buildings or other structures, and the density of population.



# DENALI BOROUGH LAND MANAGEMENT PLAN

ADOPTED XX XX, 2020

PO BOX 480, HEALY, ALASKA 99743

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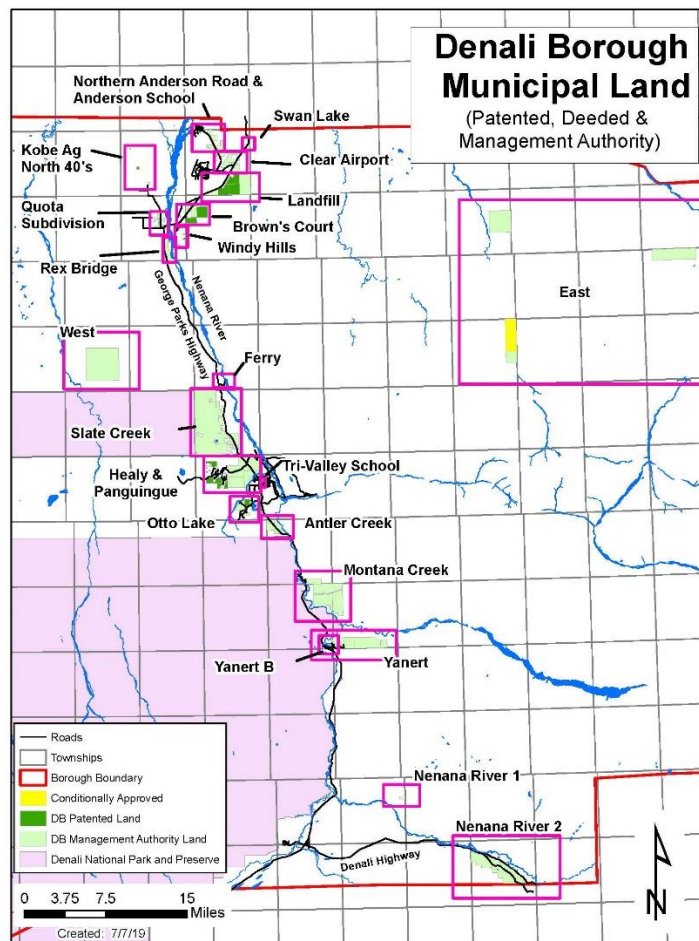
# 1. INTRODUCTION

Alaska Statutes, section 29.65, sets out rules for the State of Alaska to transfer lands to local municipalities, with the goal of supporting locally important land use needs, including private residential and commercial uses as well as retention for public purposes. Following these guidelines, the State has transferred to the Denali Borough approximately 47,000 acres of land. These lands – officially known as Municipal Land Entitlements or Municipal Land – are owned by the borough and are separate and distinct from lands in the borough held by other parties, including private companies and individuals, Native Corporations, the state and federal governments, and the Alaska Railroad.

As required by Denali Borough Code, the borough determines the appropriate use for each borough-owned property, including short- and longer-term plans to sell, lease, or retain specific properties.

These borough properties have been grouped into the 24 clusters listed below and mapped at right page.

- Anderson School
- Northern Anderson Road
- Clear Airport
- Swan Lake
- Landfill
- Kobe Ag. North 40's
- Brown's Court
- Windy Hills
- Quota Subdivision
- Rex Bridge
- East
- West
- Ferry
- Slate Creek
- Panguingue
- Healy
- Tri-Valley School
- Otto Lake
- Antler Creek
- Montana Creek
- Yanert
- Yanert B
- Nenana River 1
- Nenana River 2



The borough is authorized to sell, lease, retain, or use their entitlements in accordance with Title 4 of the Denali Borough Code, *Real Property Acquisition, Management, and Disposal*. Per the code, a prerequisite for taking any significant action with its property is: 1) to classify each parcel (i.e. identify the parcel's present and intended future use); and 2) to prepare a management plan that specifies in more detail the borough's intent for the parcel, for example, for areas intended for sale, the management plan would set out specifics of access, the locations and forms of sales, areas to be retained in public ownership, and policies controlling the use of land after it is sold.

## 2. GOALS FOR BOROUGH-OWNED LAND

As noted in the previous chapter, the large majority of land in the Denali Borough is held by the state and federal governments. This land will likely remain in public ownership into the indefinite future. Private land for residential uses and for business activities is very limited. As a result, the overarching goal for much of the 47,000+/- acres of borough-owned land is *to support uses that meet local needs, in particular uses not possible on land in other ownerships*, including developed residential and commercial activities, local public facilities, and uses that expand local economic opportunities.

The broad intention of this plan is to work towards the overarching goal above, and to set the stage for the wise use of borough lands. Two sets of goals are presented below to clarify these intentions.

### Goals for Use of Borough-Owned Lands

*(Derived from the “Denali Borough Bill of Rights” in the 2009 Comprehensive Plan)*

- **Economy** – manage borough-owned lands to enhance the sustainable health and diversity of the local economy, and to support opportunities for borough residents to seek economic security.
- **Quality of Life** – manage borough-owned lands to support the range of characteristics that make the a good place to live, including access to public lands and waters, efficient and adequate public facilities, the right to be free from interference in chosen lifestyles, and the right to live in a clean, safe, and orderly environment.
- **Growth** – manage borough-owned lands to provide more opportunities for people to make a life in the borough, in particular to provide more chances for young people/young families to own land for homes.
- **Environment** – manage borough-owned lands to protect the health and quality of Borough’s unique natural setting, considering individual borough properties as well as adjoining lands.
- **Fiscal Health** – manage borough-owned lands to generate revenue, for example, through sales, leases or permit fees, to help support public services and facilities needed by borough residents and businesses, including exceptional educational opportunities.

### Goals for Improved Borough Oversight of Borough-Owned Lands

The starting point for the management of borough-owned lands – “to support uses that support local needs, particularly uses not possible on land in other ownerships” does not mean “anything goes” on borough property. Instead, the intent is to thoughtfully manage properties on a case by case basis, reaching conclusions on the uses that best balance the different goals listed above. This will require considering a site’s physical characteristics, such as slopes and drainage, as well as access, proximity to utilities, and historical and current uses the site itself and on the surrounding properties. To these considerations will be added current and anticipated future demands for the use of the site, such as residential, commercial, facilities, or open space. Consequently, while the general theme for management of borough-owned lands leans towards developed uses, the highest and best use for any specific property may range from maintaining it as undeveloped open space to selling it for residential development to leasing it for commercial or industrial uses, such as a gravel extraction.



# 3. TITLE 4 CODE

**Title 4- Real Property Acquisition, Management, and Disposal-** Denali Borough Code regulates the acquisition, sale, lease, and classification of borough-owned land and is comprised of the following sections:

## 4.01 General Provisions

**4.01.018 Financial Provisions for Land Sales & Leases** – establishes the land management and that the land management fund is the operating fund for all activities that concern the acquisition, management, development, sale or administration of borough real property.

**4.05 Real Property Acquisition** – establishes the borough’s right to own property and the procedural requirements that must be followed when the borough acquires property.

## 4.10 Management of Borough Real Property

4.10.005 Definitions.

4.10.010 Management plans.

4.10.015 Classification requirement, categories and definition.

4.10.020 Annual work plan.

### 4.10.005 Definitions

A. “Commercial Use”- means any activity, goods or services that are offered for sale or rent.

B. “Disposal” - means the sale, transfer, conveyance or exchange of fee simple interest in land, and does not include the granting of an easement or right of way.

C. “Fair market value”- means the most probable price, as of a specified date, in cash, or in terms equivalent to cash, or in other precisely revealed terms for which the specified property rights should sell after reasonable exposure in a competitive market under all conditions requisite to a fair sale, with the buyer and seller acting prudently, knowledgeably, and for self-interest, and assuming that neither is under undue duress.

D. “Interest in property”- means a right, claim, title, or legal share in that property. Refers to the bundle of rights which may be transferred or conveyed separately or in total. Methods of transfer include deed, lease, or easement.

E. “Lease” - means a contract granting use or occupation of property during a specified period in exchange for a specified rent.

F. “Lot” - a measured parcel of land having fixed boundaries and designated on a plat or survey.

G. “Natural resources”- to which the borough holds title may be sold pursuant to approval by the assembly including, but not limited to, gravel, sand, soil, rock, peat, timber, firewood and natural vegetation.

H. “Parcel” - a tract or plot of land.

I. “Public interest”- means the welfare of the general public (in contrast to the narrow interest of a person, group, or firm) in which the whole society has a stake and which warrants recognition,

promotion, and protection by the government and its agencies, and includes both monetary and non-monetary values.

J. “Real property” - includes any estate in land, easement, right-of-way, lease, permit, franchise, future interest, building, fixture, or any other right, title or interest in land or a building permanently affixed to land.

#### **4.10.010 Management plans**

A. The mayor or designee shall prepare a written management plan for borough real properties where required in this section. The planning commission shall review, and the assembly will provide final approval.

B. A management plan is required before any real property management action may occur including, but not limited to, any disposal, sale, lease, exchange, or permit.

C. Management plans provide a basis for well-informed decisions on the best use of borough real property, particularly where larger blocks of borough real property have the potential for a variety of uses. Specific objectives for management plans include:

1. Provide better understanding of current and potential uses.
2. Provide the opportunity for public involvement.
3. Develop broad goals for the affected real property.
4. Identify appropriate land use classification(s), standards and guidelines.

D. A management plan shall contain two elements:

1. Information about the real property parcel, including:
  - a. Physical characteristics of the parcel, for example, elevations and slopes, vegetation, and water bodies.
  - b. Current and potential access, including roads, trails, airstrips.
  - c. Current and potential uses on-site and on surrounding properties; any potential public health, safety, or welfare issues.
  - d. Improvements (e.g., buildings, infrastructure).
  - e. Easements, leases, and permits; utilities or other infrastructure serving or crossing the parcel.
2. Management policies, including:
  - a. Overall goals and objectives.
  - b. Classification(s), including boundaries and management intent statement for each classification area.
  - c. Plans for access and other needed infrastructure.
  - d. Site-specific management standards and guidelines.
  - e. Implementation actions and schedule.
  - f. Objectives for terms and conditions of use for real property intended for disposal sale, lease, or permits shall be described.

#### **4.10.015 Classification requirement, categories and definition**

All borough real property must be classified through an assembly approved land management plan.

A. All borough real property shall be classified as one of the following:

1. Agriculture and Forestry
2. Amenity Value
3. Commercial and Light Industrial

4. Heavy Industrial
5. Land Bank
6. Material Site
7. Multiple Use
8. Public Facilities
9. Recreation
10. Residential

Classification categories defined:

1. Agriculture and Forestry – Real property intended for raising and harvesting crops, grazing, breeding and management of livestock, dairying, commercial timber harvest, or woodlot management. This includes activities such as processing, cleaning, packing, storing, and distribution of agriculture products grown on the real property.
2. Amenity Value – Real property intended to be retained and kept in a natural state to maintain a sense of open space that may also protect wildlife habitat and support non-commercial recreational opportunities, scenic vistas, historic structures and landscapes, greenbelts, or other natural qualities.
3. Commercial and Light Industrial – Real property intended primarily for uses related to trade and commerce, such as the sale, rental, or distribution of products and services, and/or for light industrial uses. Light industrial uses are those that do not create significant off-site impacts and are generally conducted inside closed buildings, for example warehousing, storage, and light manufacturing.
4. Heavy Industrial – Real property intended for industrial and related uses that are best separated from most other uses, due to their potential for off-site impacts. Examples include landfills, large scale material or mineral extraction and processing, waste handling and storage, electric generation, large scale manufacturing, or other uses that involve significant noise, odors, bright lights, or other potential nuisances or safety risks that make them poor neighbors with most other real property uses. Parcels should be of a size that allows for sufficient buffer zones to reduce potential impacts of these types of use on adjoining properties.
5. Land Bank – Real property which will remain in borough ownership. Following approval of a management plan, these areas will be reclassified to designate the specific intended uses. In the interim, the real property will be available for generally allowed uses per DBC 4.01.040.
6. Material Site- Natural resources primarily used for construction of local roads, trails, easements, and building lots.
7. Multiple Use - Real property in areas with potential to have multiple classifications.
8. Public Facilities – Real property intended to be retained and reserved for public facilities including schools, clinics, day-care centers, government buildings, parks, and other public uses. Parcels are sized to meet the need, and allow for future expansion. Such lands will generally be retained in borough ownership, but could also be sold or leased to another public or non-profit entity that will retain real property for this purpose.
9. Recreation – Real property intended to be retained where the primary use is public and/or commercial outdoor recreational areas and facilities. Recreational uses, include, but are not limited to, trails (non-motorized and motorized), ski areas, golf courses, day use facilities, campgrounds, and wilderness camps.

10. Residential – is intended primarily for single- and multifamily dwellings. These areas may also include, as secondary uses, areas for greenbelts, playgrounds, schools, churches, libraries, and parks.

#### **4.10.020 Annual work plan**

- A. The mayor or designee shall prepare by March 1st of each year a work plan for borough real property specifying disposal, sale, leasing and exchange plans for the coming year, and more general intentions for the subsequent five years. Following review by the planning commission, the annual work plan shall be submitted to the assembly. Elements of the work plan shall include:
  1. A summary of the previous year’s actions, expenditures and revenues; a general overview of intentions for future real property management actions.
  2. A current inventory of the location and status of borough real property.
  3. Proposed actions concerning real property for the coming year:
    - a. Priority areas for management plans including real property classification.
    - b. Priority areas for real property disposals, sales, acquisitions, and/or leases.
    - c. Other land management priorities, including issuance and/or renewal of use permits.
  4. Anticipated finances of real property activities, including:
    - a. Projections of revenue from sales, leases, permits or fund investments for the coming year.
    - b. Anticipated expenditures including costs for staff, contractors, capital improvements or other activities.
  5. Preliminary plans for borough real property for the following five years, including:
    - a. Likely locations of future management plans, disposals, leases, exchanges and larger scale permits or rights of way.
    - b. Planned changes in management activity.

**4.16 Disposal of Borough Real Property** – establishes the types of sales permitted and the procedure that must be followed when the borough sells its land.

#### **ZONING CODE-Chapter 9.15**

- All borough land is zoned “unrestricted” except for the land surrounding the landfill.
- All zoning is done by ordinance, for Assembly approval.
- Local option zoning and conditional use permits are currently being added to code.

## **4. BOROUGH-OWNED PARCELS**

### **INTRODUCTION**

Denali Borough currently owns approximately 47,000 acres, given to the borough by the State pursuant to Alaska Statutes. These lands were transferred under the State’s Municipal Land Entitlement program in clusters, with each cluster having a single ADL number (Alaska Division of Lands). Examples include a set of parcels in the Anderson-Clear and Panguingue areas. This document will follow the lead of previous state and borough maps, and refer to any given cluster as a **Municipal Land**. A few parcels were acquired outside the Municipal Land Entitlement program like the Tri-Valley School property which the borough received from the Railbelt School District when the Denali Borough School District was formed when the Denali Borough was incorporated as a borough.

The borough’s municipal lands are dispersed throughout the central portions of the borough, mostly near the George Parks Highway or Denali Highway. However, all or portions of several municipal land are currently inaccessible from a roadway. See *Denali Borough Municipal Land* map on the following page.

Clusters of borough-owned lands have been grouped based on proximate location as follows:

- Anderson School
- Northern Anderson Road
- Clear Airport
- Swan Lake
- Landfill
- Kobe Ag. North 40’s
- Brown’s Court
- Windy Hills
- Quota Subdivision
- Rex Bridge
- East
- West
- Ferry
- Slate Creek
- Panguingue
- Healy
- Tri-Valley School
- Otto Lake
- Antler Creek
- Montana Creek
- Yanert
- Yanert B
- Nenana River 1
- Nenana River

## **LAND CLASSIFICATION**

Denali Code Section 4.01.015 *Authority for management of borough real property* requires borough-owned land to have management plans including classifications for land use prior to any action being taken that affects that land, such as a sale or lease. Classifying land identifies the present and/or future potential use(s) of that land and may also communicate the borough’s short-and long-term plans to sell, lease, or retain that land.

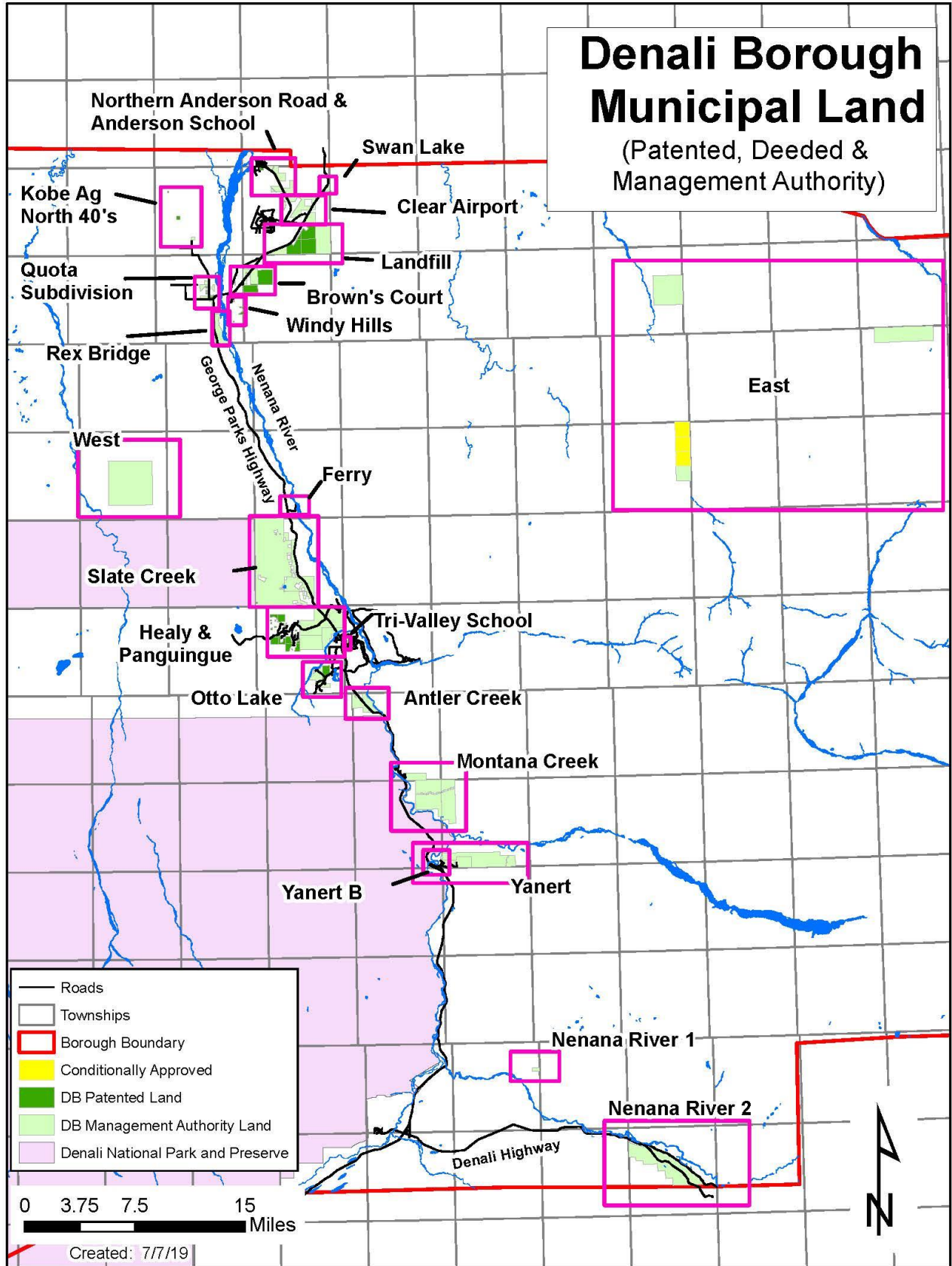
## **PARCEL DEFINITION**

The Denali Borough Code currently uses the term “parcel” when referring to Municipal Land. “Parcel” is defined as a tract or plot of land in code.

## **Management Authority**

When the state conveyed the parcels to the borough through the Municipal Land Entitlement program the parcels were conveyed in two ways. First, if the land has been surveyed already the borough can apply to get the patents. Second, if the land is not surveyed already then the borough is granted “Management Authority”. Management authority means the borough has all the rights to manage the land until the borough completes the survey of the land and receives the patents. The borough can lease the land but the borough cannot sell the land since title has not been taken.

## Location of Denali Borough Municipal Land



# ANDERSON SCHOOL MUNICIPAL LAND

## INTRODUCTION

The Anderson school municipal land is located in the City of Anderson which is in the northern region of the Denali Borough and includes approximately 39.86 total acres. The municipal land is located near Clear Air Force Station and has direct access via Anderson Road.

## OVERALL MUNICIPAL LAND CHARACTERISTICS

- Relatively flat with elevations ranging from 600 to 700 ft
- Predominantly forested
- Train tracks traverse Anderson Road half a mile away
- 100' Transmission Line Right-of-Way by the train tracks
- Much of the municipal land is bordered by state-owned land, City of Anderson, or Clear Air Force Station

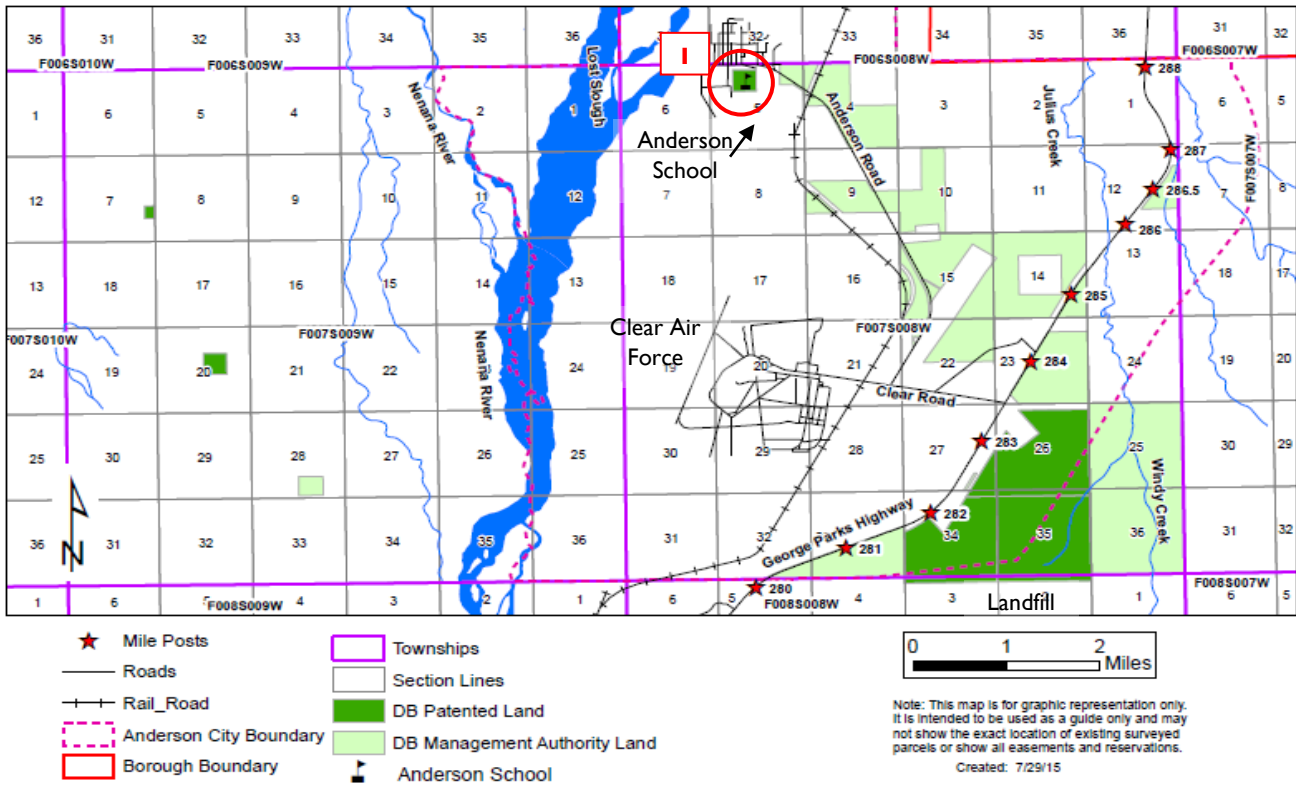
## LAND CLASSIFICATION RECOMMENDATIONS

*See: Map 1 for subarea locations. Map 2 for Anderson municipal land Landownership & Easements and a topographic map are also provided for additional information purposes.*

Subarea	Area (approx)	Land Classification (proposed)	Management Intent	Rationale & Other Notes
1 Anderson School	39.86 acres	Public Facilities	To maintain the current educational use	The school serves a vital service to the citizens of Anderson and the surrounding area

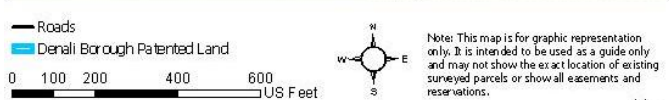
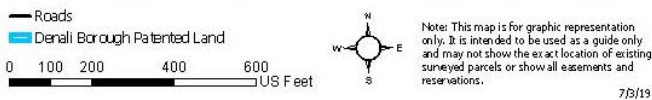
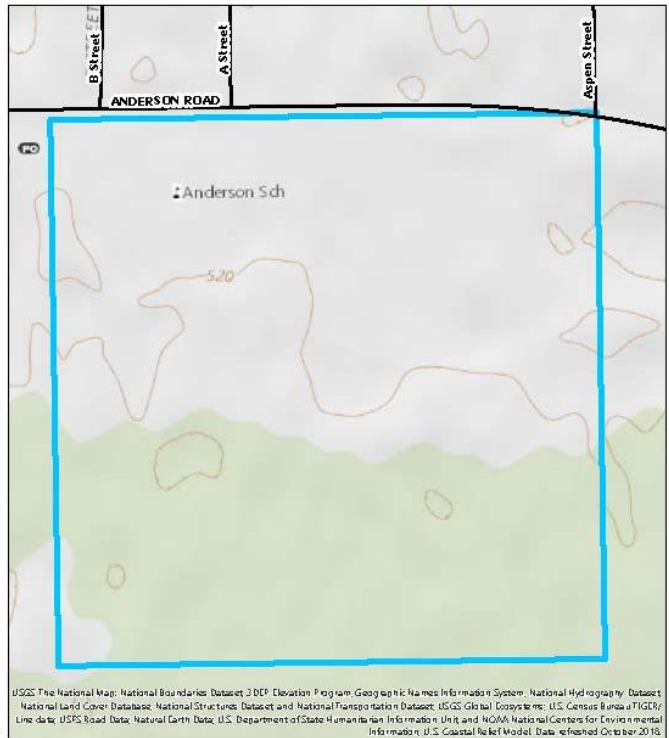
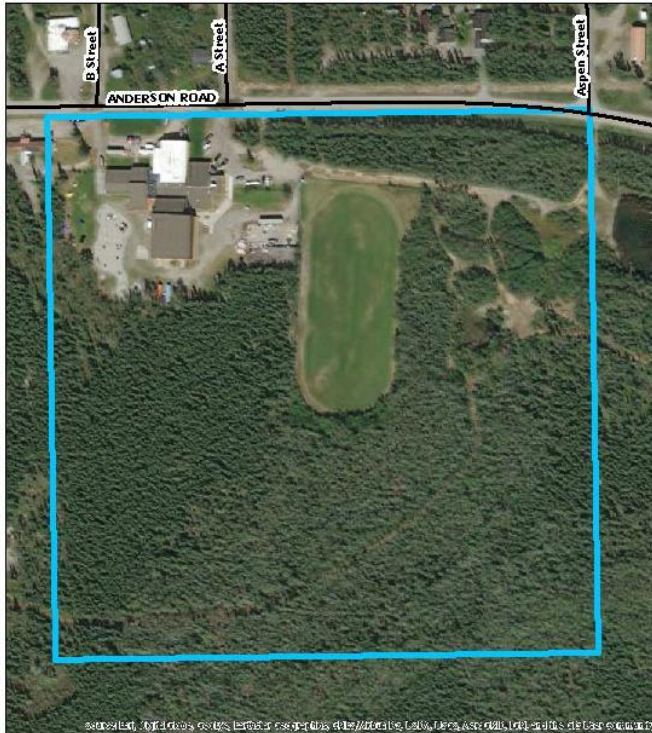
Patent #	Date	Plat	Acres	Description	ADL#	Notes
15384	7/22/1996	n/a	39.86	Lot 3, Section 5 Township 7S, Range 8W, FM	415345	Anderson School Property

# MAP I: ANDERSON SCHOOL MUNICIPAL LAND SUBAREA



TOPOGRAPHIC MAP

AERIAL PHOTOGRAPH





# NORTHERN ANDERSON ROAD

## INTRODUCTION

The Northern Anderson Road municipal land is located in the City of Anderson city limits which is in the northern region of the Denali Borough and includes approximately 818.98 total acres. The municipal land is located within the City of Anderson city limits and near Clear Air Force Station and has direct access to Anderson Road.

## OVERALL MUNICIPAL LAND CHARACTERISTICS

- Relatively flat with elevations ranging from 600 to 700 ft
- Predominantly forested
- Train tracks traverse portions of Subarea 1 & 2
- Much of the MUNICIPAL LAND is bordered by state-owned land, City of Anderson land, or Clear Air Force Station

## LAND CLASSIFICATION RECOMMENDATIONS

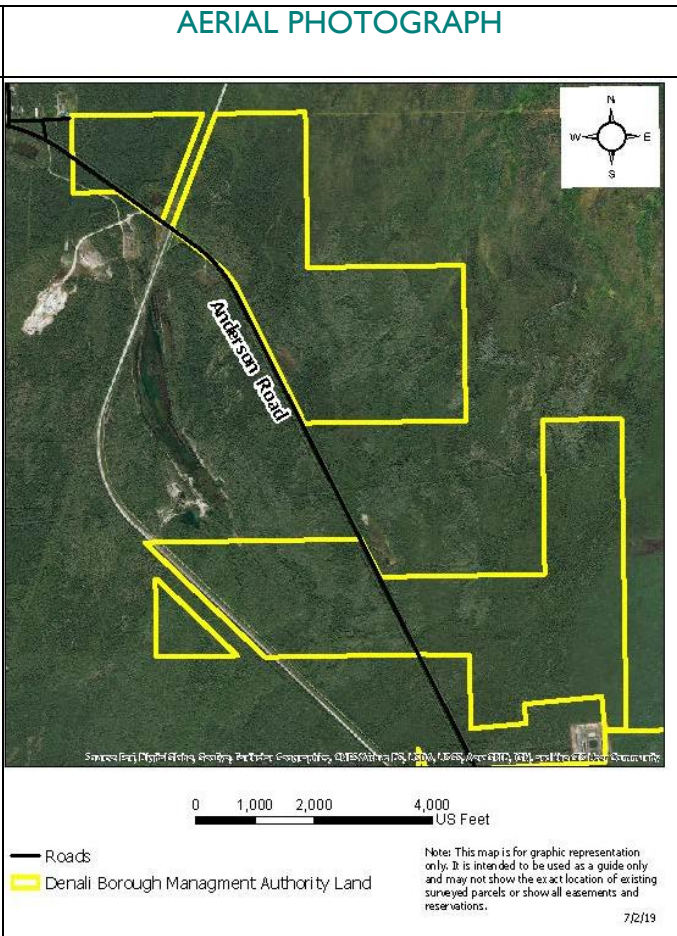
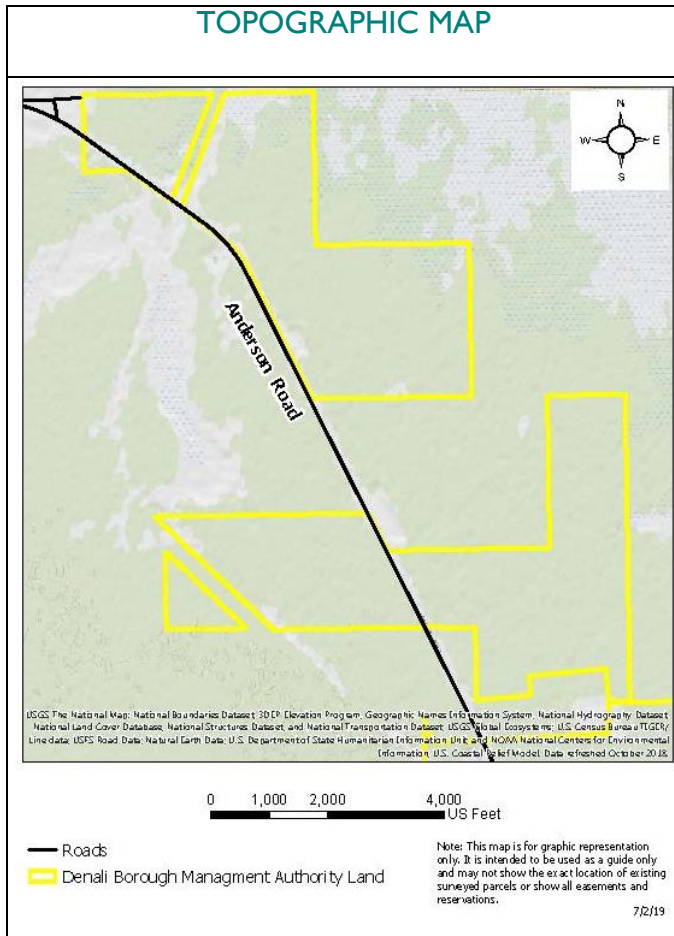
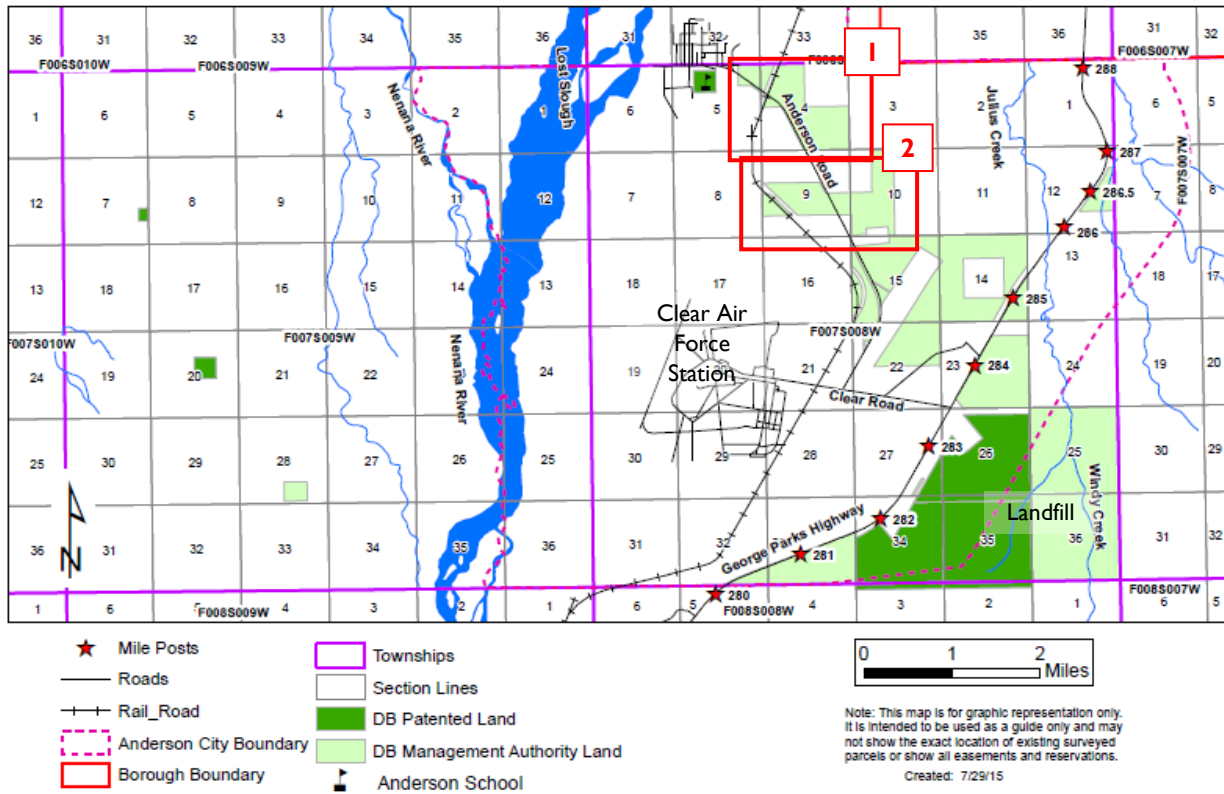
*See: Map 1 for subarea locations. Map 2 for Northern Anderson Road Municipal Landownership & Easements and a topographic map are also provided for additional information purposes.*

Subarea	Area (approx)	Land Classification (proposed)	Management Intent	Rationale & Other Notes
1	418 acres	Multiple Use	To prepare a more in depth management plan that identifies specific portions of the subarea for sale for residential development	While Anderson’s population has been decreasing in the last few years, Clear Air Force Station is slated for a new radar detection system that could result in additional jobs at the base. This could result in the need for additional off-base housing.
2	400.98 acres	Commercial & Light Industrial	To prepare a more in depth management plan that identifies specific portions of the subarea for commercial and/or industrial uses.	The subarea is more aptly used for commercial and/or industrial uses due to the following: <ul style="list-style-type: none"> <li>• Access to Parks Highway</li> <li>• Existing uses incompatible with residential uses, including an airstrip for EMS services, communication tower, and gravel pit</li> <li>• Train tracks traverse small portions of the subarea at two points in the western portion</li> </ul>

**Management Authority Lands  
Northern Anderson Road**

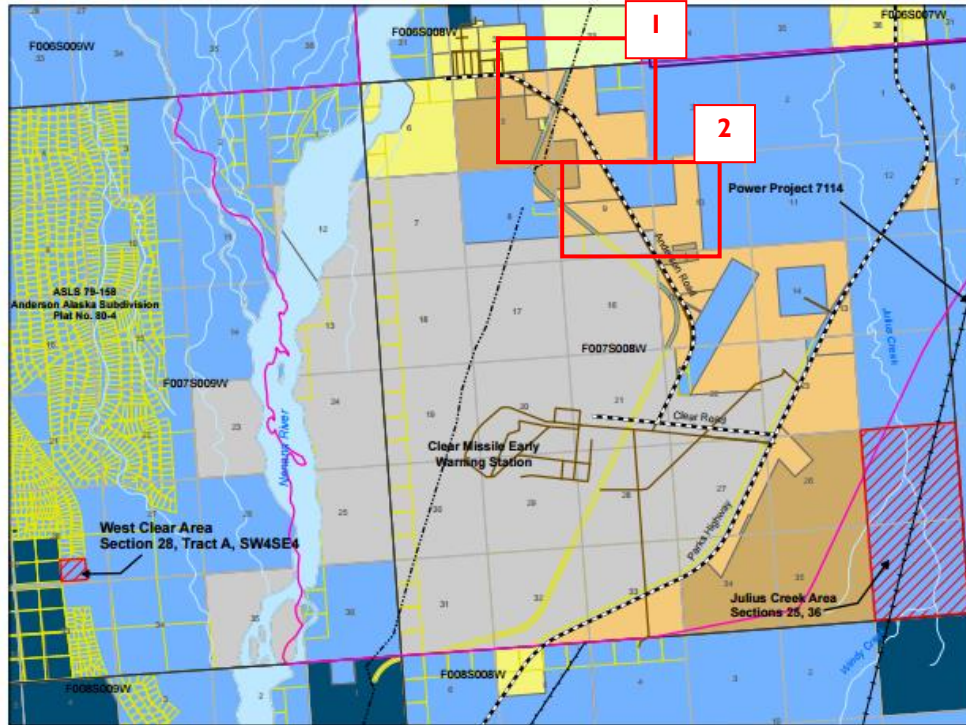
ADL #	DESCRIPTION	ACRES
415638	F007S008W Section 10 W2 excluding ASLS 88-169, ADL 415373, and ADL 414225.	225
415638	F007S008W Section 09 N2S2 East of Anderson Road excluding ADL 414378.	36
415638	F007S008W Section 09 N2S2 East of ARR R/W.	115
415638	F007S008W Section 09 N2S2 West of ARR R/W.	42
415638	F007S008W Section 05 USS 9056 Lot 1 North and East of Anderson Road.	35
415638	F007S008W Section 04 Lot 3.	40.02
415638	F007S008W Section 04 SE4NW4.	40
415638	F007S008W Section 04 Lot 6.	19.45
415638	F007S008W Section 04 Lot 7.	4.01
415638	F007S008W Section 04 Lot 8.	29.99
415638	F007S008W Section 04 Lot 5.	14.51
415638	F007S008W Section 04 SW4 East of Anderson Road.	50
415638	F007S008W Section 04 SE4.	160
415638	F007S008W Section 05 USS 9056 Lot 1 South and West of Anderson Road.	5
415638	F007S008W Section 05 Lot 5 North and East of Anderson Road.	3
415638	F007S008W Section 04 Lot 9.	0

# MAP I: NORTHERN ANDERSON ROAD MUNICIPAL SUBAREA



# MAP 2: EASEMENTS IN THE NORTHERN ANDERSON ROAD MUNICIPAL LAND

*This map is provided to show the location of approved easements and to provide a general context of land ownership in the area only. This map was created prior to final approval of the land transfer, and therefore, does not accurately reflect the parcels ultimately conveyed to the borough. See Map 1 for the approved disposition of borough-owned land.*



**Map 1**  
Denali Borough Land Selection

**ADL 415639**  
**Julius Creek &**  
**West Clear Areas**

**Legend**

- 100' Transmission Line
- Right of Way
- DOT Highway

**Denali M.E. Selection**

- Denali Selections

**City and Borough**

- Approved
- Conveyed

**State Land**

- TA or Patented

**Other Land**

- Land Disposals
- Surveyed Parcels
- Private
- Clear Military Station
- City of Anderson



This map is for graphic representation only. It is intended to be used as a guide only and may not show the exact location of existing surveyed parcels or show all easements and reservations. Source documents remain the official record.

Created by: SDA-CNR-OMLV-Municipal Easements (M.E.)  
Preliminary Decision February 27, 2014

# CLEAR AIRPORT

## INTRODUCTION

The Clear Airport municipal land is located within the City of Anderson city limits which is in the northern region of the Denali Borough and includes approximately 1351.8 total acres. The Municipal Land is located near the City of Anderson and/or Clear Air Force Station and has direct access to Anderson Road or the George Parks Highway.

## OVERALL MUNICIPAL LAND CHARACTERISTICS

- Relatively flat with elevations ranging from 600 to 700 ft
- Predominantly forested
- Train tracks traverse Anderson Road
- Much of the municipal land is bordered by state-owned land, City of Anderson, or Clear Air Force Station

## LAND CLASSIFICATION RECOMMENDATIONS

*See: Map 1 for subarea locations. Map 2 for Clear Airport municipal land Landownership & Easements and a topographic map are also provided for additional information purposes.*

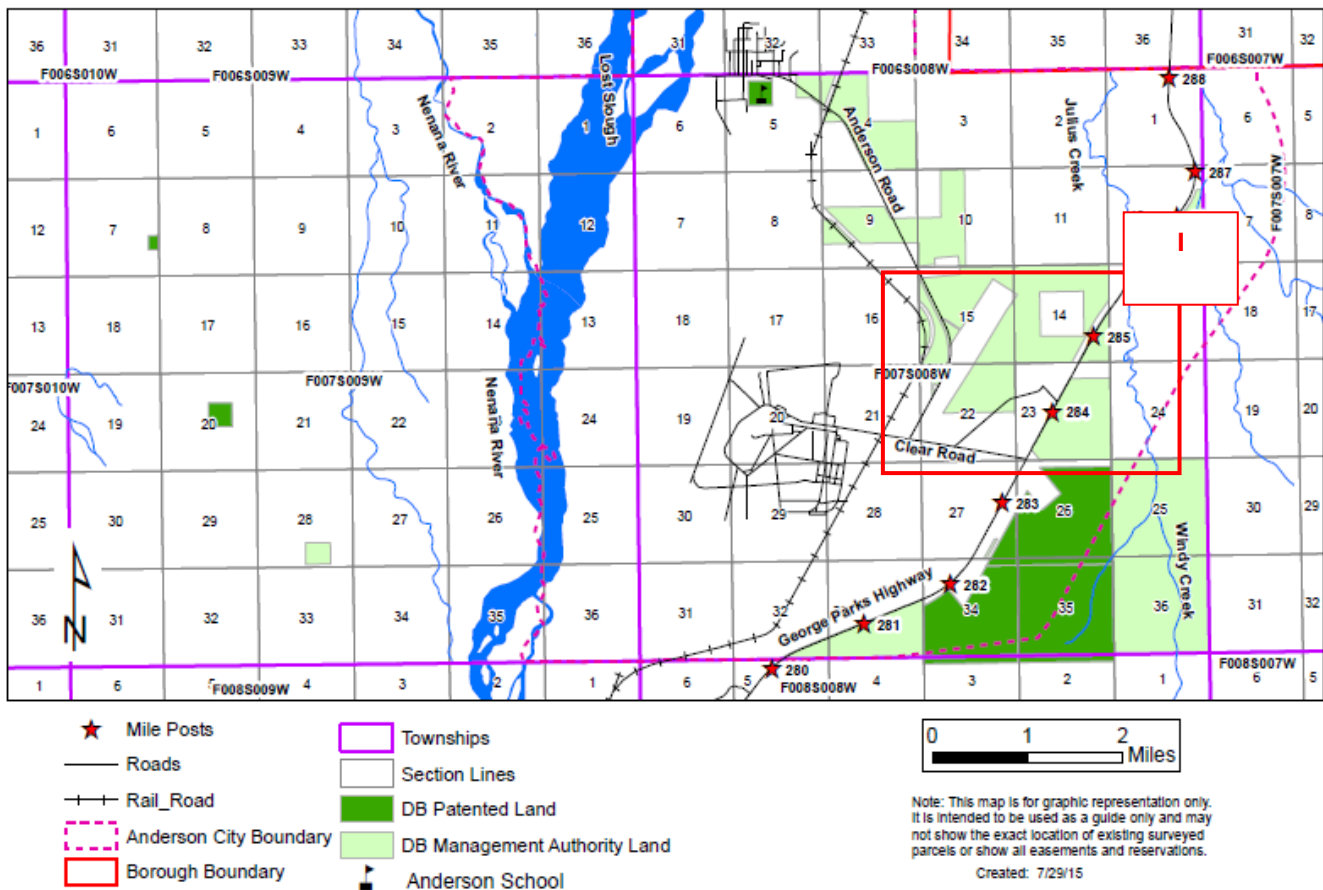
Subarea	Area (approx)	Land Classification (proposed)	Management Intent	Rationale & Other Notes
1	1,351.8 acres	Commercial, Light Industrial & Heavy Industrial	To prepare a management plan that identifies specific portions of the subarea for commercial and/or industrial uses.	<p>The subarea is more aptly used for commercial and/or industrial uses due to the following:</p> <ul style="list-style-type: none"> <li>• Access to Parks Highway</li> <li>• Existing uses incompatible with residential uses, including an airstrip for EMS services, communication tower, and gravel pit</li> <li>• Train tracks traverse small portions of the subarea at two points in the western portion</li> </ul>

Patent #	Date	Plat	Acres	Description	ADL#	Notes
23887	5/5/2016	2016-2	347.65	Tract B, ASLS 2010-27	415796	North of Landfill

## Management Authority Lands Clear Airport

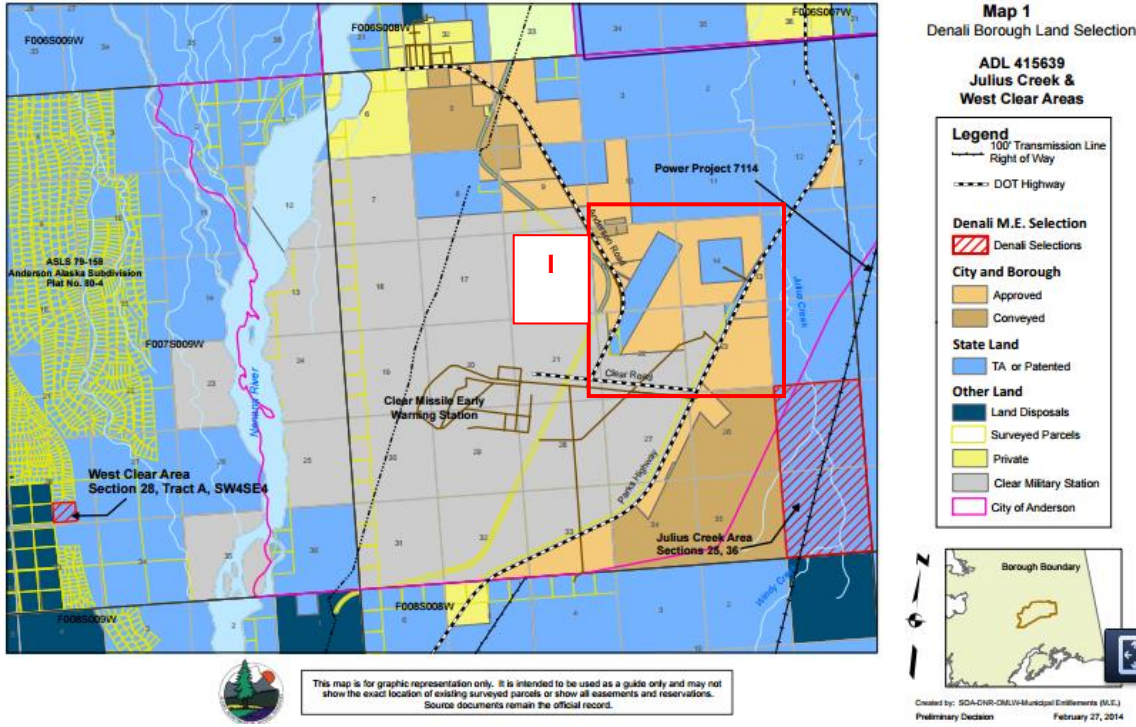
ADL #	DESCRIPTION	ACRES
415639	F007S008W Section 14 SE1/4 East of Parks Highway.	50
415639	F007S008W Section 15 Lot 1 East and South of ADL 414754.	103.7
415639	F007S008W Section 15 Lot 2.	29.15
415639	F007S008W Section 22 NE4, and E2NW4 excluding ADL 414754 and ADL 414224.	200
415639	F007S008W Section 15 Lot 1 West of Anderson Road and East of ARR.	15
415639	F007S008W Section 15 Lot 1 excluding Anderson Road and ADLs 413747, 414225, 415373, 414224, and 414754. Subject to a public access easement ADL 413971.	206.3
415639	F007S008W Section 14 All Excluding Parks Highway, ADL 414754, and ADL 408750.	400

### MAP I: CLEAR AIRPORT MUNICIPAL SUBAREA



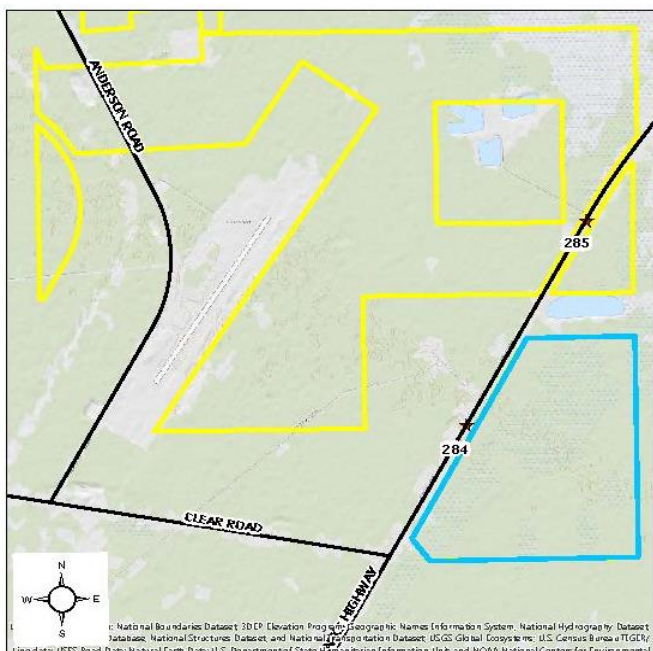
# MAP 2: EASEMENTS OF THE CLEAR AIRPORT MUNICIPAL LAND

This map is provided to show the location of approved easements and to provide a general context of land ownership in the area only. This map was created prior to final approval of the land transfer, and therefore, does not accurately reflect the parcels ultimately conveyed to the borough. See Map 1 for the approved disposition of borough-owned land.



TOPOGRAPHIC MAP

AERIAL PHOTOGRAPH



— Roads  
 ★ Mile Posts  
 ■ Denali Borough Patented Land  
 ■ Denali Borough Management Authority Land

Note: This map is for graphic representation only. It is intended to be used as a guide only and may not show the exact location of existing surveyed parcels or show all easements and reservations.

7/3/19

— Roads  
 ★ Mile Posts  
 ■ Denali Borough Patented Land  
 ■ Denali Borough Management Authority Land

Note: This map is for graphic representation only. It is intended to be used as a guide only and may not show the exact location of existing surveyed parcels or show all easements and reservations.

7/3/19

# SWAN LAKE

## INTRODUCTION

The Swan Lake municipal land is located within the City of Anderson city limits which is in the northern region of the Denali Borough and includes approximately 80 total acres. The municipal land is located near the City of Anderson and/or Clear Air Force Station and has direct access by the George Parks Highway at mile post 286.5.

## OVERALL MUNICIPAL LAND CHARACTERISTICS

- Relatively flat with elevations ranging from 600 to 700 ft
- Predominantly forested
- Julius Creek runs generally north south between Subareas 3 and 4. Julius Creek (or one of its tributaries) traverses Subareas 4
- Much of the municipal land is bordered by state-owned land or Clear Air Force Station

## LAND CLASSIFICATION RECOMMENDATIONS

*See: Map 1 for subarea locations, surrounding landownership & easements and a topographic map are also provided for additional information purposes.*

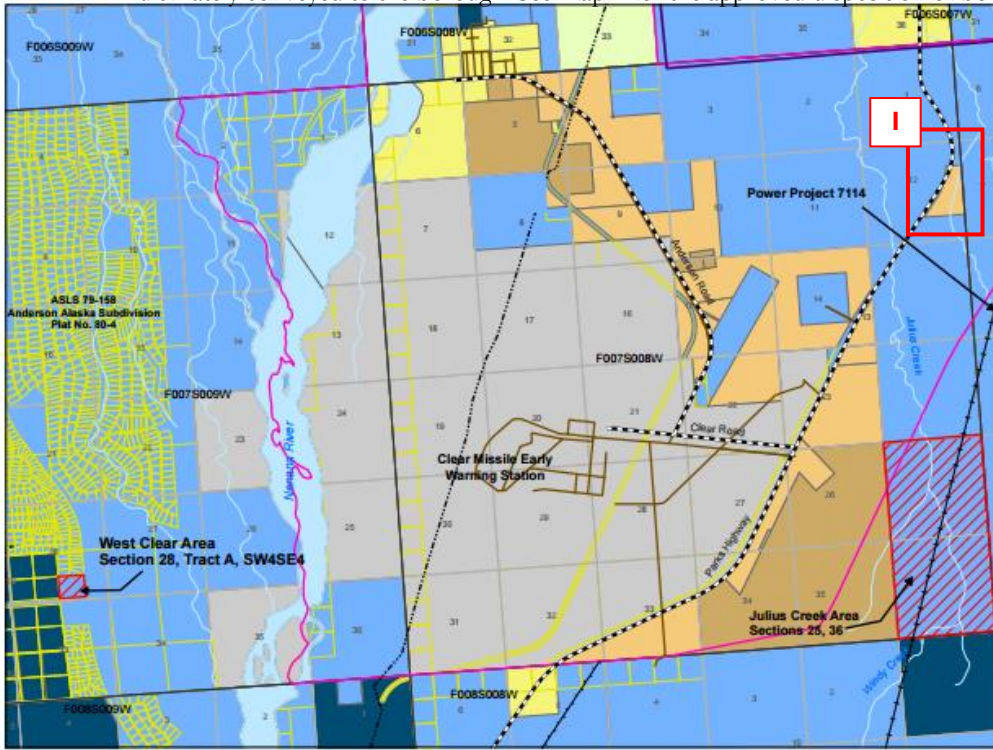
Subarea	Area (approx)	Land Classification (proposed)	Management Intent	Rationale & Other Notes
1	80 acres	Multiple use -Recreation -Public Facilities	To prepare a more in depth management plan that identifies specific portions of the subarea for commercial, recreational, visitor amenities and/or industrial uses.	<ul style="list-style-type: none"> <li>• Gateway to the borough</li> <li>• Direct access to Parks Highway</li> <li>• Adjacent to state rest stop on the highway</li> <li>• Clear views of Denali and Swan Lake                             <ul style="list-style-type: none"> <li>• Patented</li> </ul> </li> <li>• Potential Park or other area</li> </ul>

Patent #	Date	Plat	Acres	Description	ADL#	Notes
23839	2/11/2016	2014-1	89.55	ASLS 2011-14	415639	Swan Lake



# MAP I: EASEMENTS IN SWAN LAKE MUNICIPAL LAND

This map is provided to show the location of approved easements and to provide a general context of land ownership in the area only. This map was created prior to final approval of the land transfer, and therefore, does not accurately reflect the parcels ultimately conveyed to the borough. See Map 1 for the approved disposition of borough-owned land.



**Map 1**  
Denali Borough Land Selection

**ADL 415639**  
Julius Creek & West Clear Areas

**Legend**

- 100' Transmission Line Right of Way
- DOT Highway

**Denali M.E. Selection**

- Denali Selections

**City and Borough**

- Approved
- Conveyed

**State Land**

- TA or Patented

**Other Land**

- Land Disposals
- Surveyed Parcels
- Private
- Clear Military Station
- City of Anderson

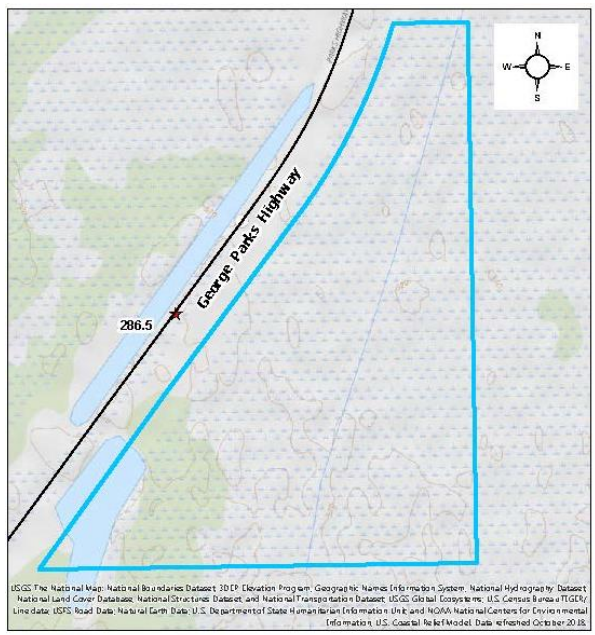


Created by: SGA-CNR-CMLW-Municipal Entitlements (M.E.)  
Preliminary Decision February 27, 2014



This map is for graphic representation only. It is intended to be used as a guide only and may not show the exact location of existing surveyed parcels or show all easements and reservations. Source documents remain the official record.

## TOPOGRAPHIC MAP



★ Mile Posts  
— Roads  
■ Denali Borough Patented Land

0 235 470 940 US Feet

Note: This map is for graphic representation only. It is intended to be used as a guide only and may not show the exact location of existing surveyed parcels or show all easements and reservations.  
7/2/19

## AERIAL PHOTOGRAPH



★ Mile Posts  
— Roads  
■ Denali Borough Patented Land

0 235 470 940 US Feet

Note: This map is for graphic representation only. It is intended to be used as a guide only and may not show the exact location of existing surveyed parcels or show all easements and reservations.  
7/2/19

# LANDFILL

## INTRODUCTION

The Landfill municipal land area is partially located within the City of Anderson city limits which is in the northern region of the Denali Borough and includes approximately 3,399.55 total acres. The municipal land is located near the City of Anderson and/or Clear Air Force Station and has direct access by the George Parks Highway between mile posts 280 - 283.5.

## OVERALL MUNICIPAL LAND CHARACTERISTICS

- Relatively flat with elevations ranging from 600 to 700 ft
- Predominantly forested
- Julius Creek (or one of its tributaries) traverses Subareas 2 & 3
- Much of the MUNICIPAL LAND is bordered by state-owned land or Clear Air Force Station

## LAND CLASSIFICATION RECOMMENDATIONS

*See: Map 1 for subarea locations.*

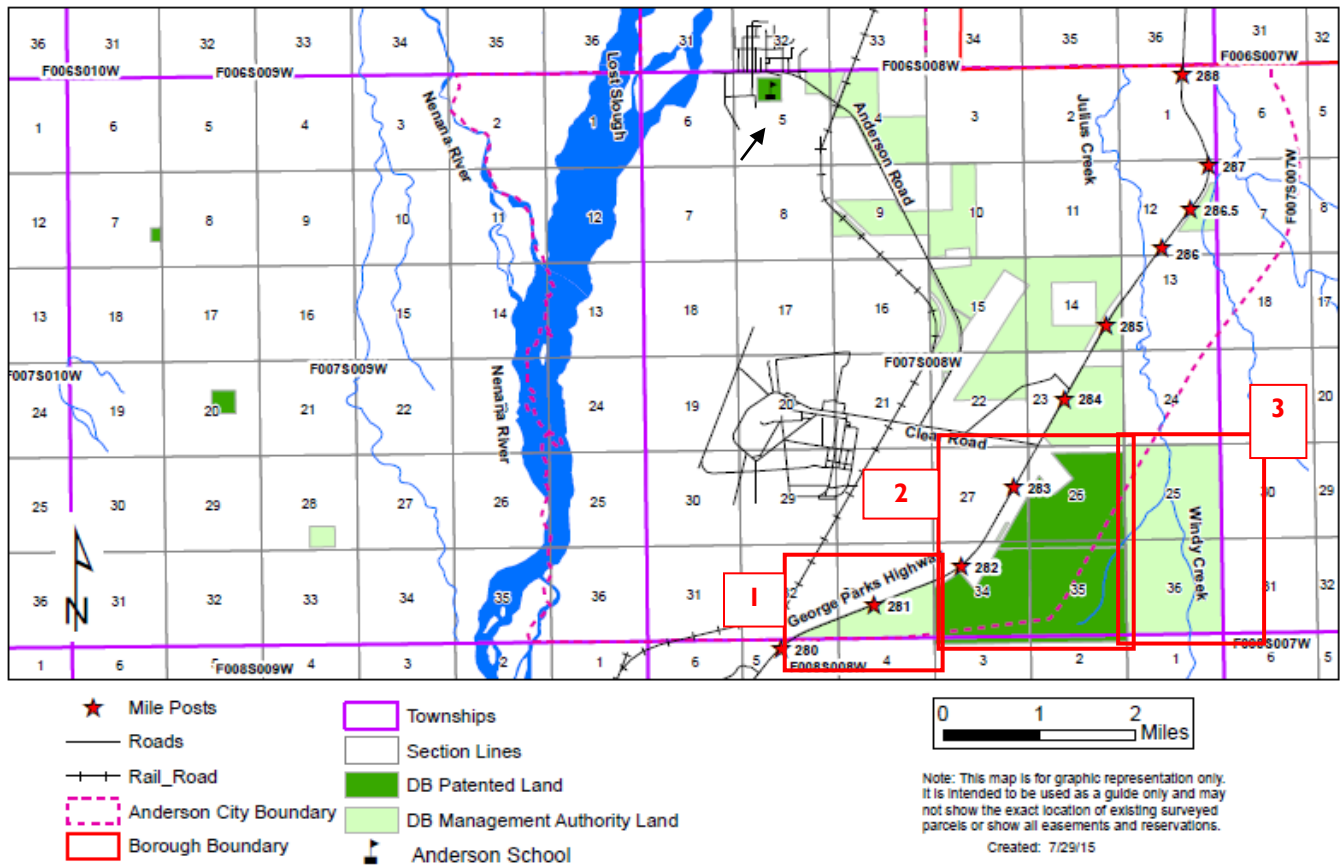
Subarea	Area (approx)	Land Classification (proposed)	Management Intent	Rationale & Other Notes
<b>1</b>	346.45 acres	Commercial & Industrial	To prepare a more in depth management plan that identifies specific portions of the subarea for commercial and/or industrial uses.	<ul style="list-style-type: none"> <li>• Direct access to Parks Highway</li> <li>• Adjacency to the borough’s landfill makes the site incompatible for residential uses and more appropriately used for commercial and/or industrial uses.</li> </ul>
<b>2</b> Denali Borough Landfill	1,773.1 acres	Industrial, Heavy	To maintain the current landfill indefinitely	Landfill serves a vital service to the borough.
<b>3</b>	1,280 acres	Land Bank	To maintain as-is until the market demand for the property becomes known	Future development constrained by its adjacency to the landfill, Windy Creek that bisects the site, and a 100’ transmission line right of way traverses the site.

Patent #	Date	Plat	Acres	Description	ADL#	Notes
16712	11/9/1998	98-3	1769.71	ASLS 97-35	415796	Landfill Survey
23887	5/5/2016	2016-2	4.21	Tract F, ASLS 2010-27	415796	Landfill Septic System is on it

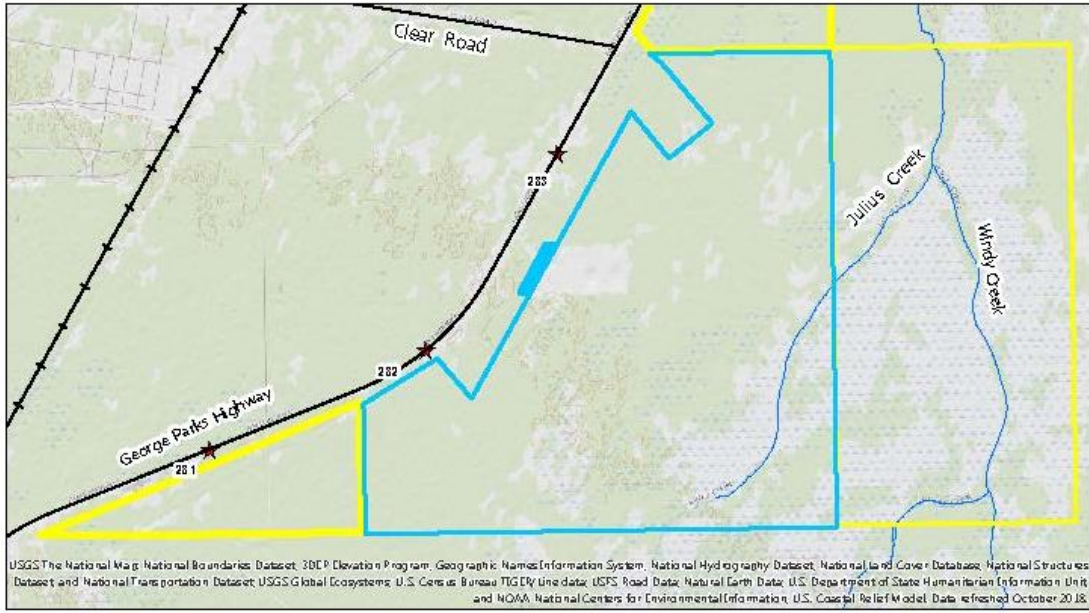
**Management Authority Lands  
Landfill**

ADL #	DESCRIPTION	ACRES
415796	F007S008W Section 32 Lot 2 South of Parks Hwy	54.6
415796	F007S008W Section 33 Lot 2 South of Parks Hwy.	291.85
415639	F007S008W Section 25: All & Section 36:All	1280

**MAP 1: LANDFILL MUNICIPAL SUBAREA**



## TOPOGRAPHIC MAP



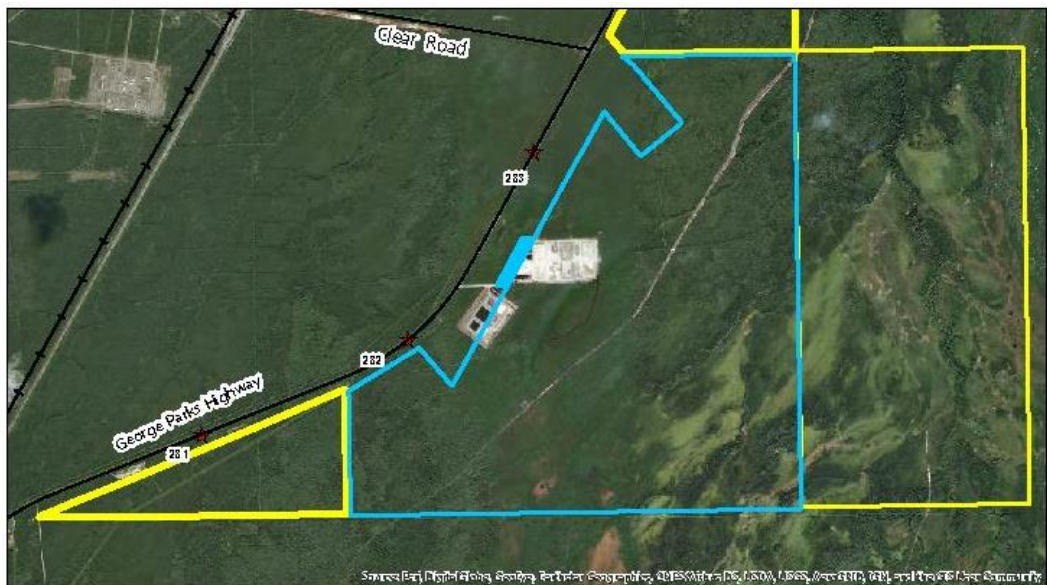
- ★ Mile Posts
- Roads
- +— Rail Road
- Denali Borough Patented Land
- Denali Borough Management Authority Land

0 1,500 3,000 6,000  
US Feet

Note: This map is for graphic representation only. It is intended to be used as a guide only and may not show the exact location of existing surveyed parcels or show all easements and reservations.

7/2/19

## AERIAL PHOTOGRAPH



- ★ Mile Posts
- Roads
- +— Rail Road
- Denali Borough Patented Land
- Denali Borough Management Authority Land

0 1,500 3,000 6,000  
US Feet

Note: This map is for graphic representation only. It is intended to be used as a guide only and may not show the exact location of existing surveyed parcels or show all easements and reservations.

7/2/19

# KOBE AG. NORTH 40'S

## INTRODUCTION

The Kobe Ag. North 40's is located north of the Quota Subdivision and the agricultural parcels on Kobe Road. This is in the northern region of the Denali Borough and includes 86.52 total acres. The municipal land is located west of the Nenana River, west of the City of Anderson and Clear Air Force Station. Kobe Road is accessible by the George Parks Highway mile post 275.

## OVERALL MUNICIPAL LAND CHARACTERISTICS

- Relatively flat with elevations ranging from 600 to 700 ft
- Predominantly forested
- Much of the municipal land is bordered by private property or state-owned land

## LAND CLASSIFICATION RECOMMENDATIONS

*See: Map 1 for subarea locations.*

Subarea	Area (approx)	Land Classification (proposed)	Management Intent	Rationale & Other Notes
1	10.18	Land Bank	To maintain as-is until the market demand for the property becomes known	Presently, site has limited access to/from Parks Highway from the road serving the Anderson Alaska Subdivision (Lot 9 ASLS 79-158, Plat 80-4).
2	39.09	Land Bank	To maintain as-is until the market demand for the property becomes known	Site has limited access to/from Parks Highway Lot 7 ASLS 79-26
3	37.25	Land Bank	To maintain as-is until the market demand for the property becomes known	ASLS 79-158 Tract I.

Patent #	Date	Plat	Acres	Description	ADL#	Notes
16184	12/16/1997	80-4	10.18	Lot 9 Block 23 ASLS 79-158, Anderson Subdivision	415641	
18480	6/19/2002	79-13	39.09	Lot 7 ASLS 79-26	415702	

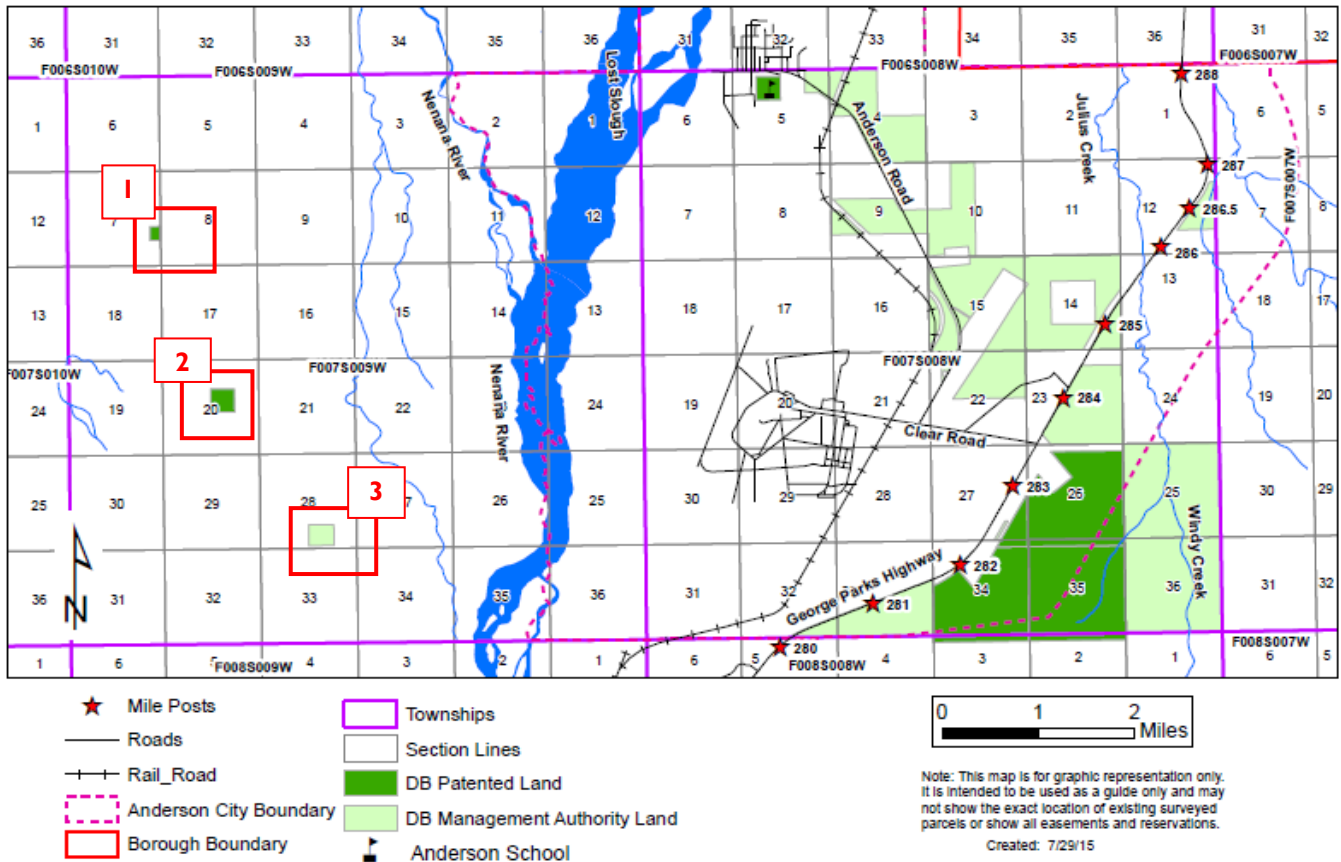
**Management Authority Lands  
Kobe Ag North 40's**

ADL #	DESCRIPTION	ACRES
415639	F007S009W Section 28 ASLS 79-158 Tract I.	37.25

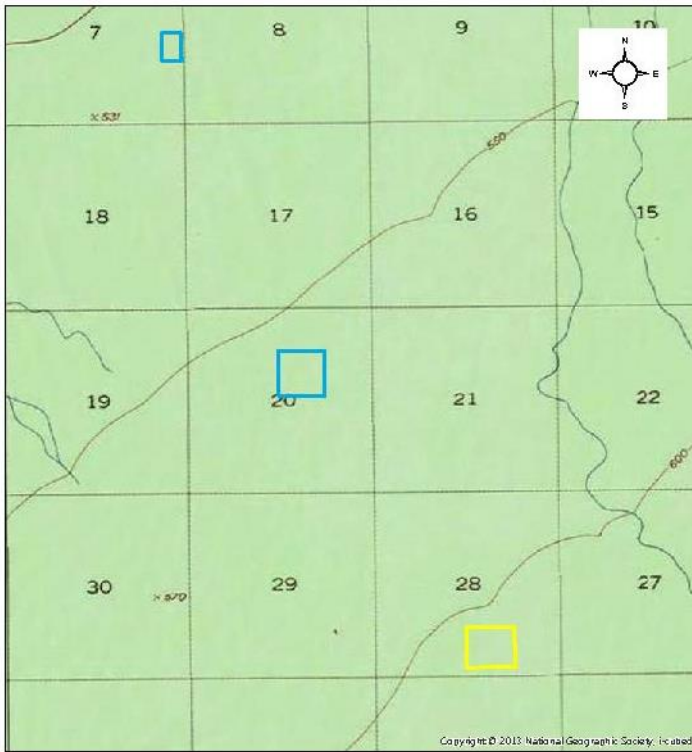
**POTENTIAL LAND ACTIONS RECOMMENDATION**

A material site is desired in this area to help with the construction of the roads in the area. To maintain as-is until the market demand for the property becomes known.

**MAP 1: KOBE AG. NORTH 40'S MUNICIPAL SUBAREA**



## TOPOGRAPHIC MAP

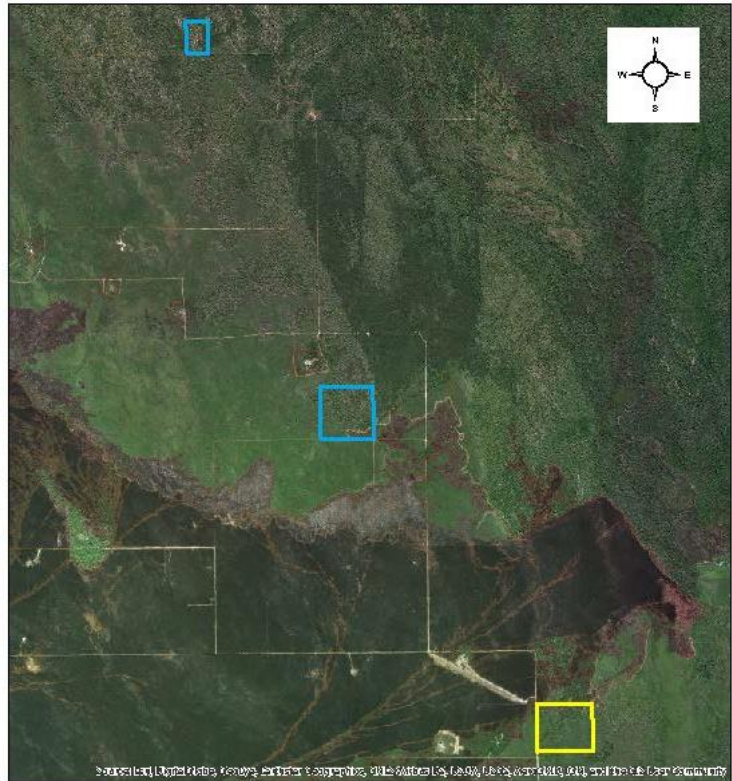


- Denali Borough Management Authority Land
- Denali Borough Patented Land

0 1,250 2,500 5,000  
US Feet

Note: This map is for graphic representation only. It is intended to be used as a guide only and may not show the exact location of existing surveyed parcels or show all easements and reservations.

## AERIAL PHOTOGRAPH



- Denali Borough Management Authority Land
- Denali Borough Patented Land

0 1,000 2,000 4,000  
US Feet

Note: This map is for graphic representation only. It is intended to be used as a guide only and may not show the exact location of existing surveyed parcels or show all easements and reservations.

7/1/19

# BROWN'S COURT

## INTRODUCTION

The Brown's Court municipal land is located in northern Denali Borough, approximately three miles south of Clear Air Force Station near the intersection of the George Parks Highway and the Nenana River. The entire municipal land is approximately 1,501.28 acres.

## OVERALL MUNICIPAL LAND CHARACTERISTICS

- Area is mostly flat, with elevation ranging from 750 to 800 feet
- Area predominantly covered with shrub and forest
- Nenana River traverses north-south through the municipal land area, all of the subareas are west of the river
- Good access/proximity to Parks Highway (Mile Post 277.5 – 278.8)

## LAND CLASSIFICATION RECOMMENDATIONS

*See: Map 1 for subarea locations. Map 2 for Brown's Court municipal land Landownership & Easements and a topographic map are provided for additional information.*

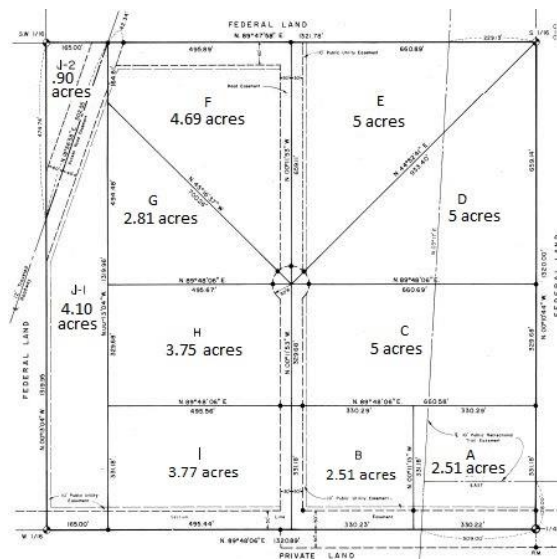
Subarea	Area (approx.)	Land Classification (proposed)	Management Intent	Rationale & Other Notes
<b>1</b>	33.78 acres	Residential	To prepare a more in depth management plan that identifies specific portions of the subarea for sale for residential development  <i>**High priority for possible land sales**</i>	<ul style="list-style-type: none"> <li>• Located within already platted subdivision</li> <li>• Bennet Road /Rex-Anna Trail is a good road with easy access to Parks Highway.</li> </ul>
<b>2</b>	351 acres	Multiple Use	To prepare a more in depth management plan that identifies specific portions of the subarea for a variety of uses.	Direct access to Parks Highway. Several gravel pits currently on-site.



Subarea	Area (approx.)	Land Classification (proposed)	Management Intent	Rationale & Other Notes
3	1,116.5 acres	Land Bank	To retain the land as-is until market demand more clearly identifies highest and best use	Abundance of proximate underutilized, already platted residential lots may make this subarea less marketable for residential. Lack of frontage on Parks Highway is not marketable to commercial uses wanting visibility from the highway.

Patent #	Date	Plat	Acres	Description	ADL#	Notes
21746	11/12/2009	84-8	159.98	SE1/4 Section 7, Township 8S, Range 8W, FM.	415797	
16188	12/16/1997	n/a	640	All of Section 8, Township 8S, Range 8W, FM.		
		84-8	316.52	E1/2NE1/4, W1/2NE1/4, Tract A-1 & A-2, Section 18, Township 8S, Range 8W, FM.		
16189	12/16/1997	78-4	2.51	Tract A ASLS 77-165	415798	
			5	Tract C ASLS 77-165		
			5	Tract D ASLS 77-165		
			5	Tract E ASLS 77-165		
			4.69	Tract F ASLS 77-165		
			2.81	Tract G ASLS 77-165		
			3.77	Tract I ASLS 77-165		
			4.10	Tract J-1 ASLS 77-165		
			.90	Tract J-2 ASLS 77-165		

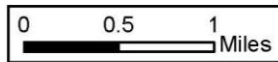
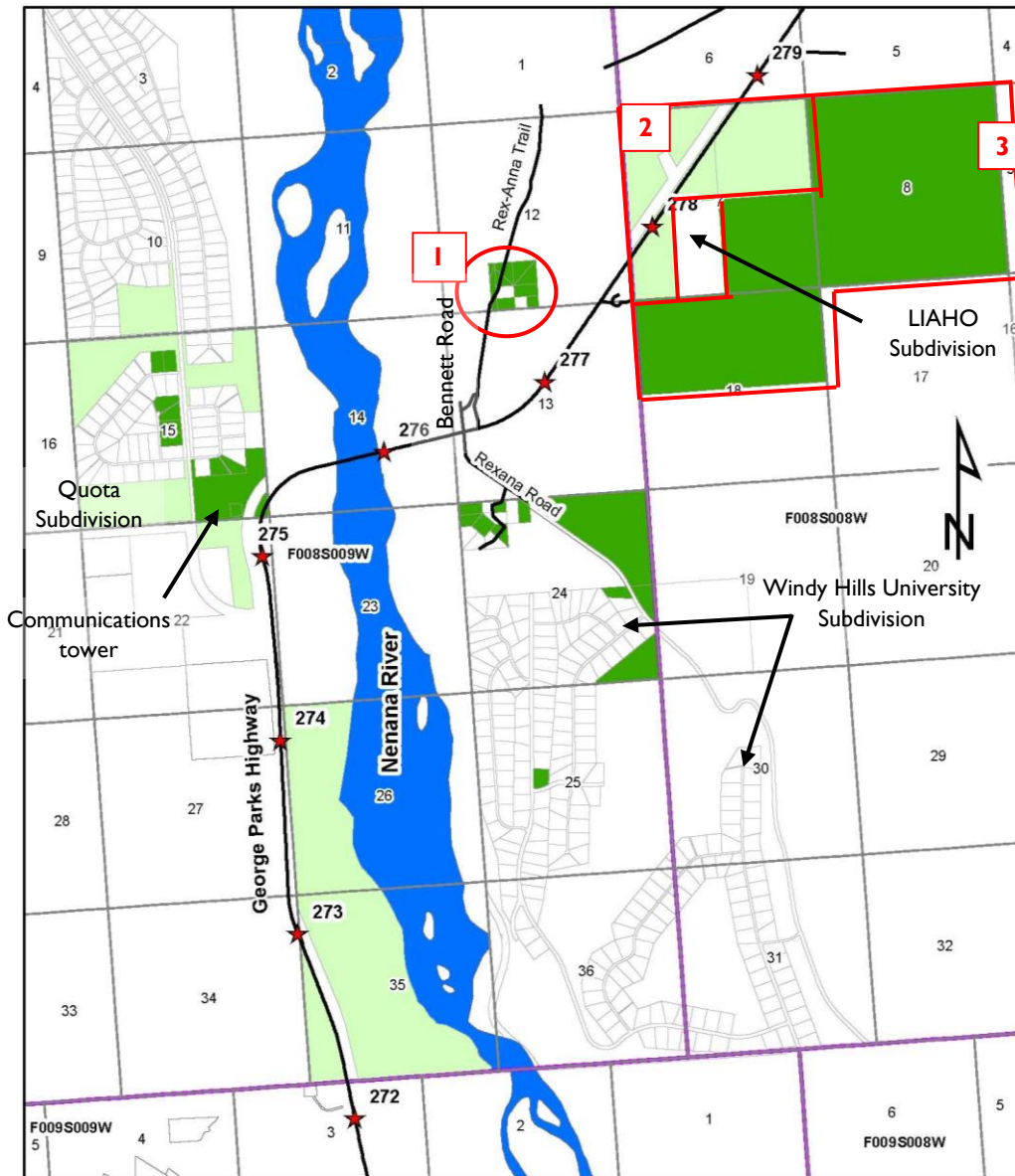
Snap shot of ASLS 77-165



**Management Authority Lands  
Brown's Court**

ADL #	DESCRIPTION	ACRES
415797	F008S008W Section 07 All excluding Tract A-3 of ASLS 85-257, Tracts B1 and B4 of State Cadastral Supplemental Plat of Sections 7 and 18, and the Parks Highway ROW	351

**MAP I: BROWN'S COURT MUNICIPAL LAND SUBAREAS**



- ★ Mile Posts
- Roads
- Section Lines
- ▭ Townships
- DB Patented Land
- DB Management Authority Land

Note: This map is for graphic representation only. It is intended to be used as a guide only and may not show the exact location of existing surveyed parcels or show all easements and reservations.

Created: 7/29/15

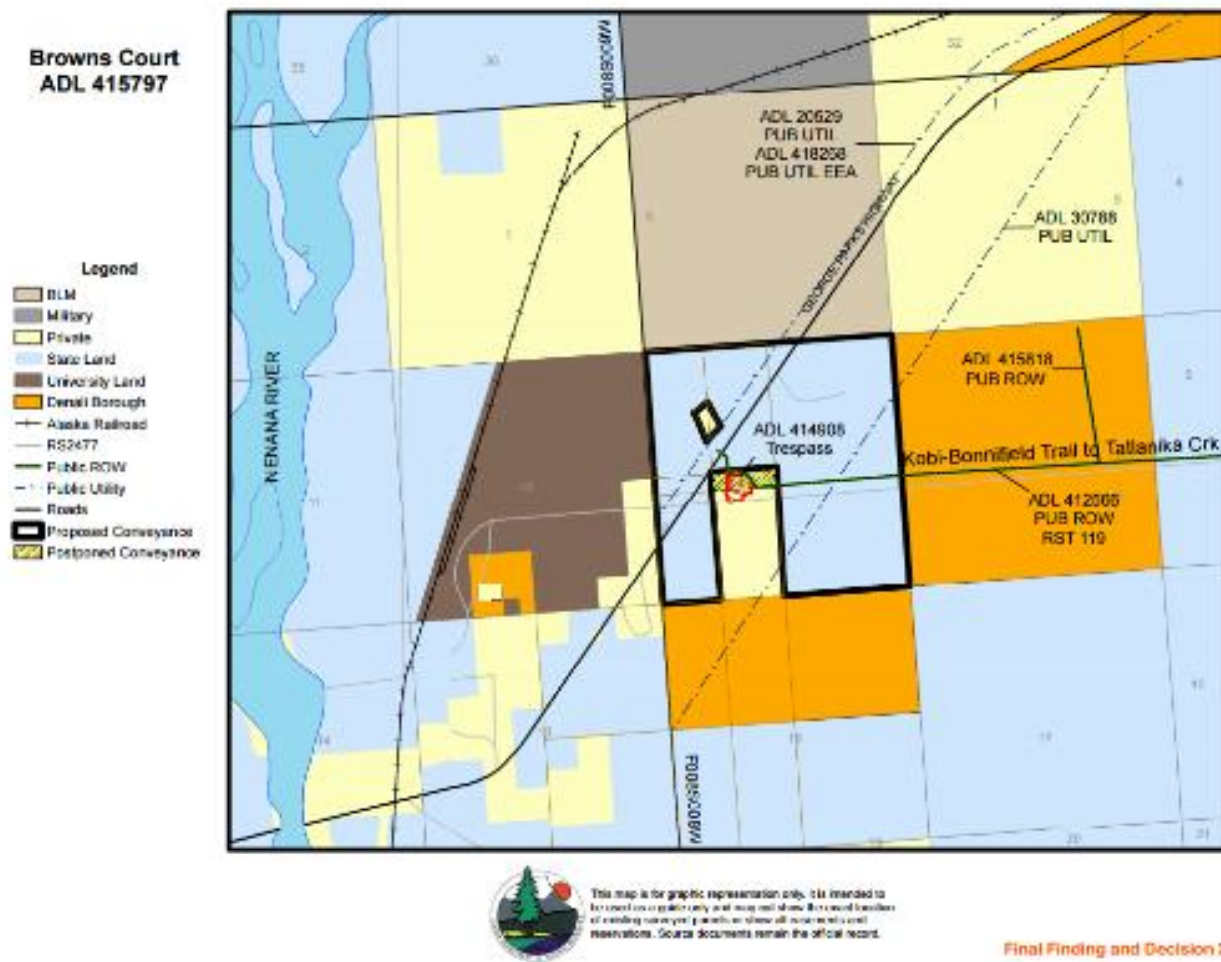
## MAP 2: EASEMENTS IN THE BROWN'S COURT MUNICIPAL LAND

This map is provided to show the location of approved easements and to provide a general context of land ownership in the area only. This map was created prior to final approval of the land transfer, and therefore, does not accurately reflect the parcels ultimately conveyed to the borough. See Map 1 for the approved disposition of borough-owned land.

The following easements are located in Subareas 4 & 5:

- Public utilities (ADL 20529, 418268 [EEA], & 30788)
  - Public Trespass (ADL 414908)
  - Public right-of-way (ADL 415818)

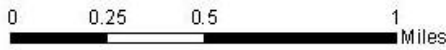
Public right-of-way (Kobi-Bonnifield Trail to Tatlanika Creek (RST 119))



## TOPOGRAPHIC MAP



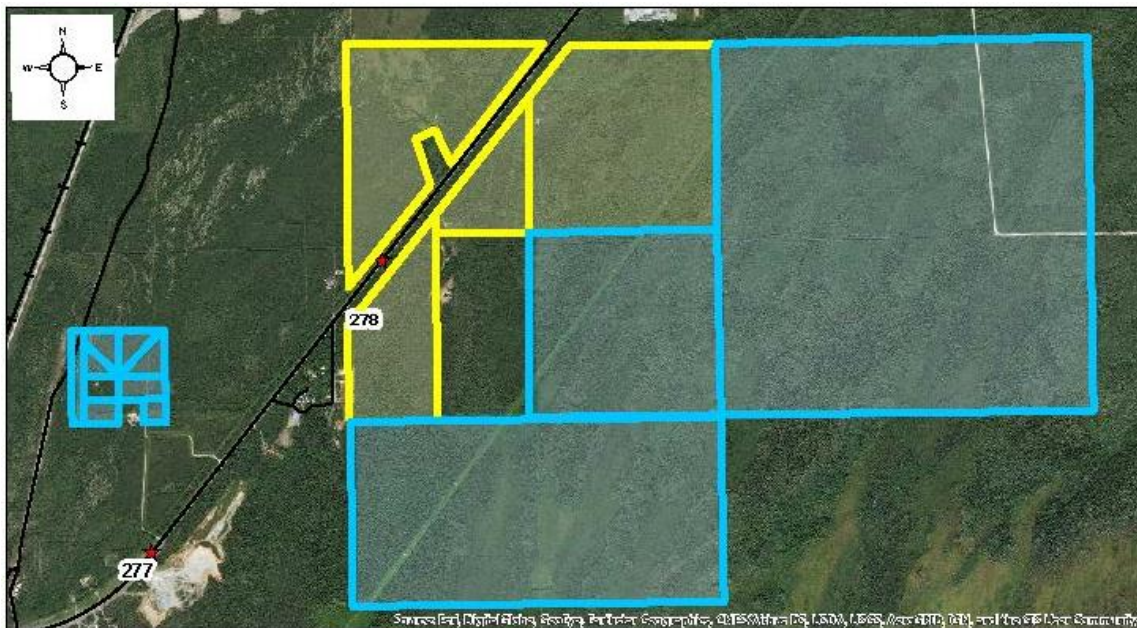
- Rail Road
- ★ Mile Posts
- Roads
- Denali Borough Patented Land
- Denali Borough Management Authority Land



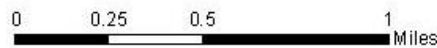
Note: This map is for graphic representation only. It is intended to be used as a guide only and may not show the exact location of existing surveyed parcels or show all easements and reservations.

7/3/19

## AERIAL PHOTOGRAPH



- Rail Road
- ★ Mile Posts
- Roads
- Denali Borough Patented Land
- Denali Borough Management Authority Land



Note: This map is for graphic representation only. It is intended to be used as a guide only and may not show the exact location of existing surveyed parcels or show all easements and reservations.

7/3/19

# WINDY HILLS

## INTRODUCTION

The Windy Hills municipal land is located in northern Denali Borough, approximately three miles south of Clear Air Force Station near the intersection of the George Parks Highway and the Nenana River. The entire municipal land is approximately 142.058 acres.

## OVERALL MUNICIPAL LAND CHARACTERISTICS

- Area is mostly flat, with elevation ranging from 750 to 800 feet
- Area predominantly covered with shrub and forest
- Nenana River traverses north-south through the municipal land area, all of the subareas are east of the river
- Good access/proximity to Parks Highway and Rexana Road

## LAND CLASSIFICATION RECOMMENDATIONS

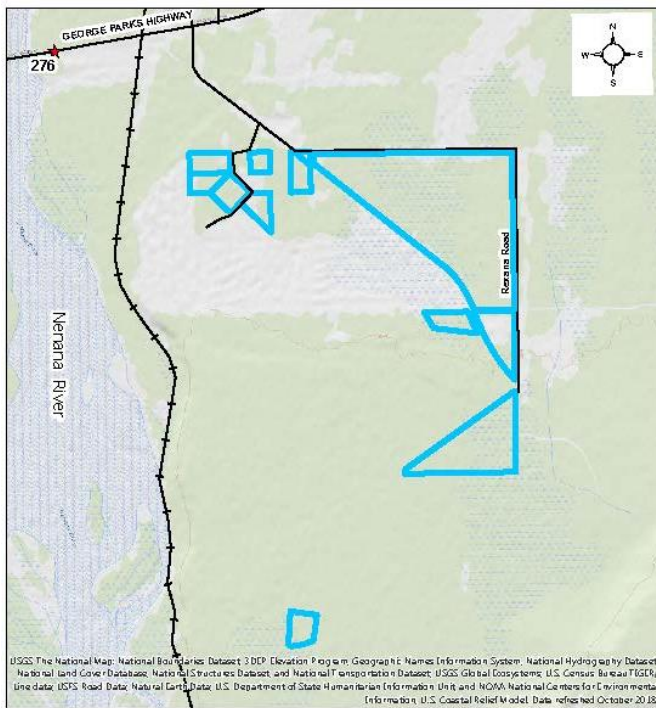
*See: Map 1 for subarea locations. Map 2 for Windy Hills municipal land Landownership & Easements and a topographic map are provided for additional information.*

Subarea	Area (approx.)	Land Classification (proposed)	Management Intent	Rationale & Other Notes
<b>1</b>	25.68 acres	Residential	To prepare a more in depth management plan that identifies specific portions of the subarea for sale for residential development	Located with already platted subdivision; good access to Parks Highway
<b>2</b>	39.15 acres	Land Bank	To retain as is until specific portions of the subarea are identified for future development	Abundance of proximate underutilized, already platted residential lots may make this subarea less marketable for residential in the short-term.
<b>3</b>	9.908 acres	Residential	To prepare a more in depth management plan that identifies specific portions of the subarea for sale for residential development	Located within the already platted University Subdivision

Subarea	Area (approx.)	Land Classification (proposed)	Management Intent	Rationale & Other Notes
4	115.8 acres	Land Bank	To retain as is until specific portions of the subarea are identified for future development	The state has sold lots in the area for agriculture purposes so selling or leasing for agricultural uses may be a possibility.

Patent #	Date	Plat	Acres	Description	ADL#	Notes
16189	12/16/1997	78-3	25.68	Lots A-1, A-2, C, F, K, J and L ASLS 77-166	415798	
		80-12	9.908	Lot 1 Block 3 & lot 28 Block 4 Windy Hills Subdivision ASLS 79-173		
		84-10	39.15	Tract A-1, B-1 ASLS 79-173 Section 24, Township 8S, Range 9W, FM.		
			115.8	Tract F ASLS 79-173 Section 24, Township 8S, Range 9W, FM.		

TOPOGRAPHIC MAP



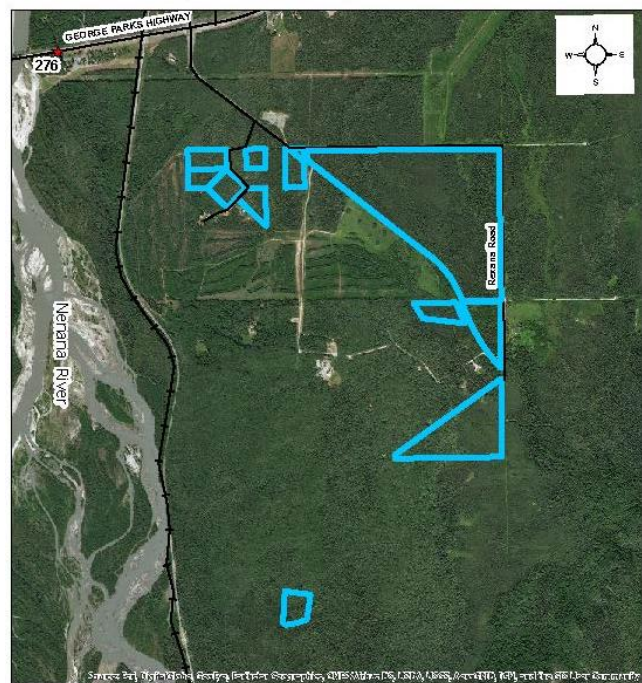
- ★ Mile Posts
- Roads
- ▭ Denali Borough Patented Land



Note: This map is for graphic representation only. It is intended to be used as a guide only and may not show the exact location of existing surveyed parcels or show all easements and reservations.

7/3/19

AERIAL PHOTOGRAPH



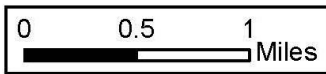
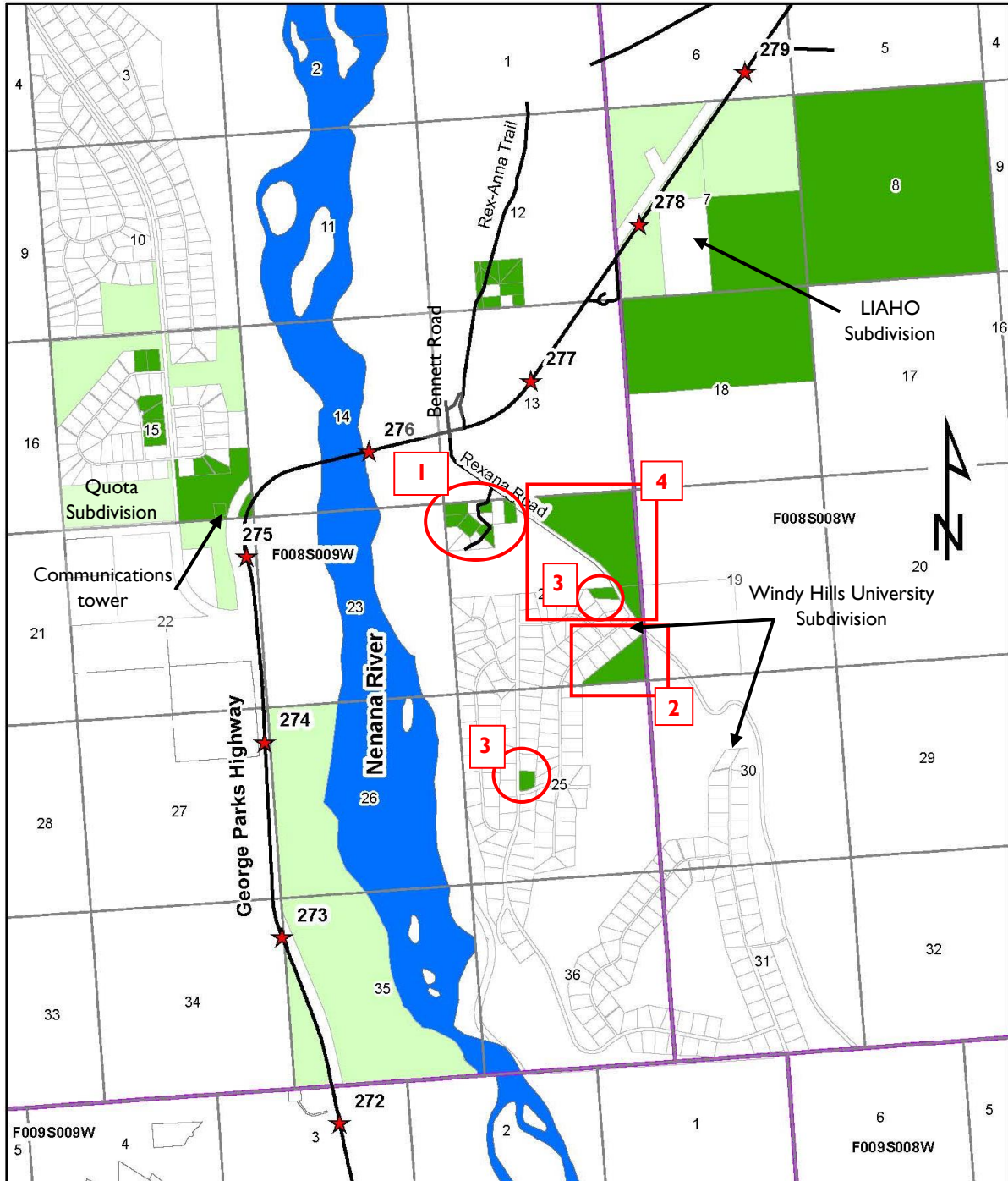
- ★ Mile Posts
- Roads
- ▭ Denali Borough Patented Land



Note: This map is for graphic representation only. It is intended to be used as a guide only and may not show the exact location of existing surveyed parcels or show all easements and reservations.

7/3/19

# MAP I: WINDY HILLS MUNICIPAL LAND SUBAREAS



- ★ Mile Posts
- Roads
- Section Lines
- Townships
- DB Patented Land
- DB Management Authority Land

Note: This map is for graphic representation only. It is intended to be used as a guide only and may not show the exact location of existing surveyed parcels or show all easements and reservations.

Created: 7/29/15

# QUOTA SUBDIVISION

## INTRODUCTION

The Quota Subdivision municipal land is located in northern Denali Borough, approximately three miles south of Clear Air Force Station near the intersection of the George Parks Highway and the Nenana River. The entire municipal land is approximately 470.768 acres.

## OVERALL MUNICIPAL LAND CHARACTERISTICS

- Area is mostly flat, with elevation ranging from 750 to 800 feet
- Area predominantly covered with shrub and forest
- Nenana River traverses north-south through the municipal land: Subareas 1, 2 & 3 are to the west of the river
- Good access/proximity to Parks Highway, Kobe Road, and Rochester Way
- Tract U-2 is currently leased to Golden Valley Electric Association for a communication tower

## LAND CLASSIFICATION RECOMMENDATIONS

*See: Map 1 for subarea locations. Map 2 for Quota Subdivision municipal land Landownership & Easements and a topographic map are provided for additional information.*

Subarea	Area (approx.)	Land Classification (proposed)	Management Intent	Rationale & Other Notes
1	Tract J 50.130 acres	Multiple Use - Residential - Public Facility - Material Site - Amenity Value	To prepare a more in depth management plan that identifies specific portions of the subarea for future development	<ul style="list-style-type: none"> <li>• Within the already platted Quota Subdivision. Subdivision is largely vacant.</li> <li>• Rochester Way is one of very few roads constructed.</li> <li>• Second unofficial entry into the subdivision added since the original entry point is located on a curve and poses a safety hazard</li> <li>• Tract H has been identified by AGDC as a work camp</li> </ul>
2	Tract I 77.34 acres			
3	Tract B 58.71 acres			
4	Tract H 85.11 acres			



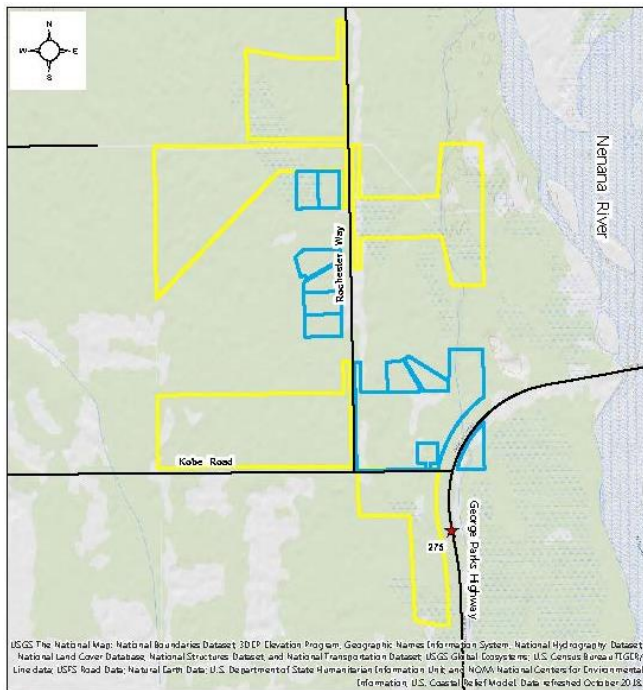
Subarea	Area (approx.)	Land Classification (proposed)	Management Intent	Rationale & Other Notes
5	a: 43.00820 acres	Residential	To retain the land as-is until market demand more clearly identifies highest and best use	Development may be constrained on these parcel given its physical characteristics
6	Tract U-1 54.32 acres	Multiple Use - Public Facility - Material Site - Amenity Value	To prepare a more in depth management plan that identifies specific portions of the subarea for future development	<ul style="list-style-type: none"> <li>• Within the already platted Quota Subdivision.</li> <li>• Access by Kobe Road</li> </ul>
7	Tract U-2 2.50 acres	Commercial	Tract U-2 is leased to GVEA	<ul style="list-style-type: none"> <li>• Within the already platted Quota Subdivision.</li> <li>• Access by Kobe Road</li> </ul>
8	Tract C 99.65 acres	Multiple Use - Public Facility - Material Site - Amenity Value	To prepare a more in depth management plan that identifies specific portions of the subarea for future development	<ul style="list-style-type: none"> <li>• Within the already platted Quota Subdivision.</li> <li>• Access by Kobe Road</li> </ul>

Patent #	Date	Plat	Acres	Description	ADL#	Notes
16189	12/16/1997	86-3	43.008	Lots 18 & 19 Block 12, Lots 2, 3, 4, & 5 Block 13, Lots 3 & 4 Block 16, and Tract T ASLS 80-120	415798	
		85-3	56.82	Tract U1 & U2 ASLS 84-25		

## Management Authority Lands Quota

ADL #	DESCRIPTION	ACRES
417990	F008S009W Section 10: Tract J of ASLS No. 80-120, Amended Plat No. 86-3	50.13
417990	Sec. 15: Tracts I, B, and H of ASLS No. 80-120, Plat No. 81-5, and Amended Plat No. 86-3	221.16
417990	Sec. 22: Tract C of ASLS No. 80-120 Plat No. 81-5, and Amended as Plat No. 86-3	99.65

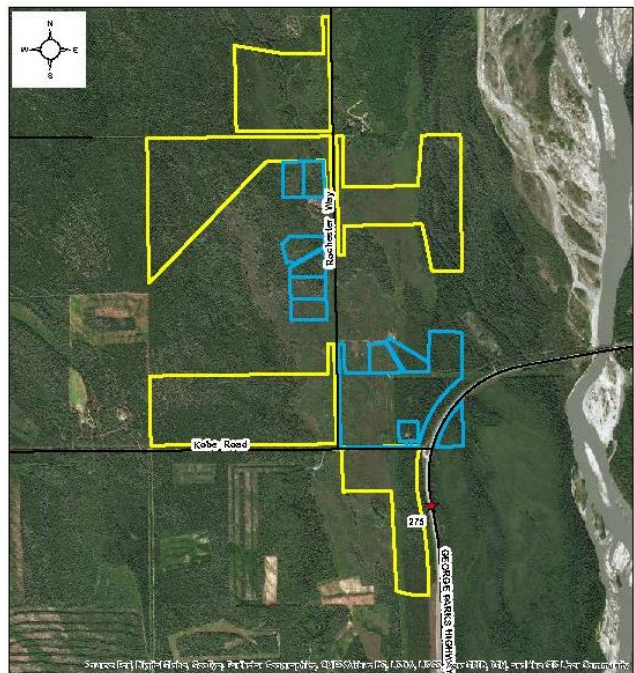
### TOPOGRAPHIC MAP



- ★ Mile Posts
  - Roads
  - ▭ Denali Borough Patented Land
  - ▭ Denali Borough Management Authority Land
- 0 500 1,000 2,000 US Feet

Note: This map is for graphic representation only. It is intended to be used as a guide only and may not show the exact location of existing surveyed parcels or show all easements and reservations.  
7/8/19

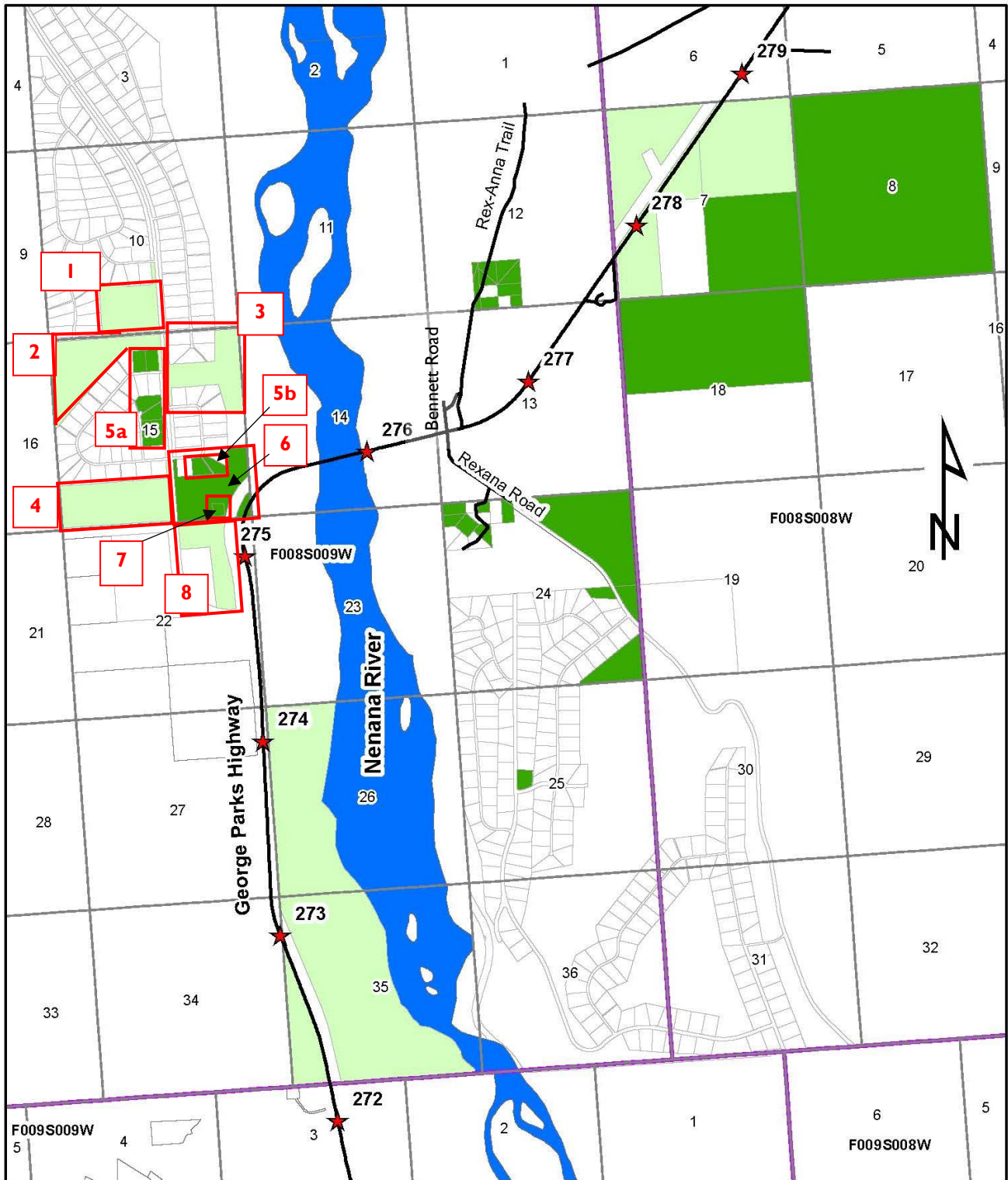
### AERIAL PHOTOGRAPH



- ★ Mile Posts
  - Roads
  - ▭ Denali Borough Patented Land
  - ▭ Denali Borough Management Authority Land
- 0 1,000 2,000 4,000 US Feet

Note: This map is for graphic representation only. It is intended to be used as a guide only and may not show the exact location of existing surveyed parcels or show all easements and reservations.  
7/8/19

# MAP I: QUOTA SUBDIVISION MUNICIPAL LAND SUBAREAS



- ★ Mile Posts
- Roads
- Section Lines
- Townships
- DB Patented Land
- DB Management Authority Land

Note: This map is for graphic representation only. It is intended to be used as a guide only and may not show the exact location of existing surveyed parcels or show all easements and reservations.

Created: 7/29/15

# REX BRIDGE

## INTRODUCTION

The Rex Bridge municipal land is located in northern Denali Borough, approximately three miles south of Clear Air Force Station near the intersection of the George Parks Highway and the Nenana River. The entire MUNICIPAL LAND is approximately 559 acres.

## OVERALL MUNICIPAL LAND CHARACTERISTICS

- Area is mostly flat, with elevation ranging from 750 to 800 feet
- Area predominantly covered with shrub and forest
- Nenana River traverses north-south through the municipal land: Subareas are to the west of the river
- Good access/proximity to Parks Highway and the City of Anderson

## LAND CLASSIFICATION RECOMMENDATIONS

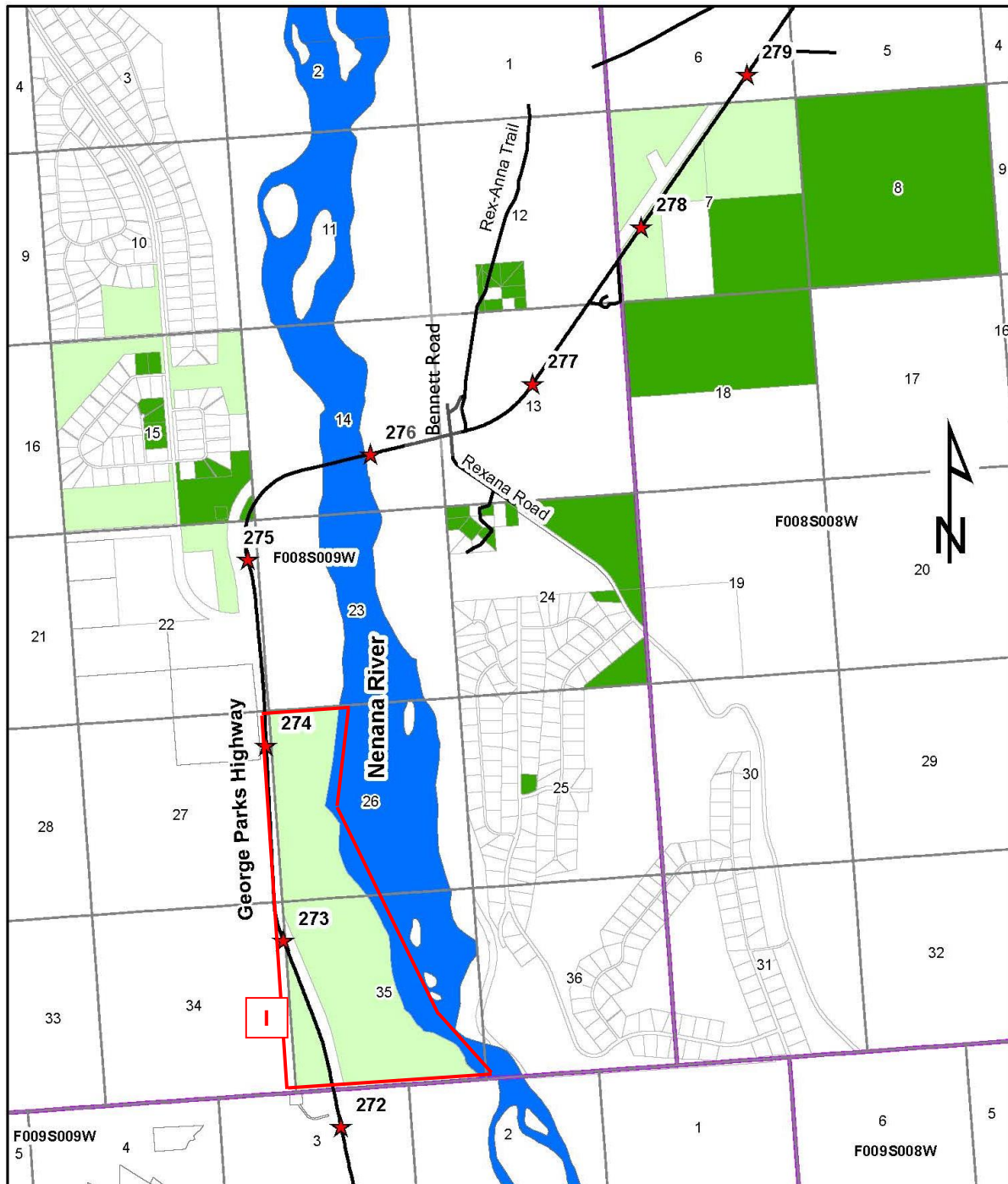
*See Map 1 for subarea locations.*

Subarea	Area (approx.)	Land Classification (proposed)	Management Intent	Rationale & Other Notes
I	559 acres	Land Bank	To prepare a more in depth management plan that identifies specific portions of the subarea for future development	Adjacency to Parks Highway  This parcel has the proposed pipeline going through it.

### Management Authority Lands Rex Bridge

ADL #	DESCRIPTION	ACRES
417991	F008S009W Section 26: Lots 2, 3, 6 and 7.	202
	F008S009W Section 35: Lots 2, 3, 4, 5, W2W2, SE4SW4, SW4SE4 excluding the Parks Highway ROW.	357

# MAP I: REX BRIDGE MUNICIPAL LAND SUBAREAS

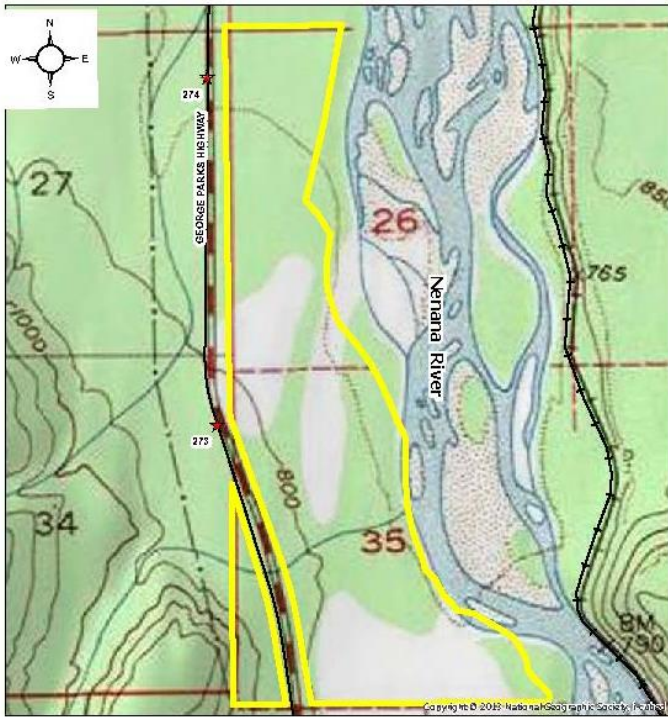


- ★ Mile Posts
- Roads
- Section Lines
- ▭ Townships
- DB Patented Land
- DB Management Authority Land

Note: This map is for graphic representation only. It is intended to be used as a guide only and may not show the exact location of existing surveyed parcels or show all easements and reservations.

Created: 7/29/15

# TOPOGRAPHIC MAP

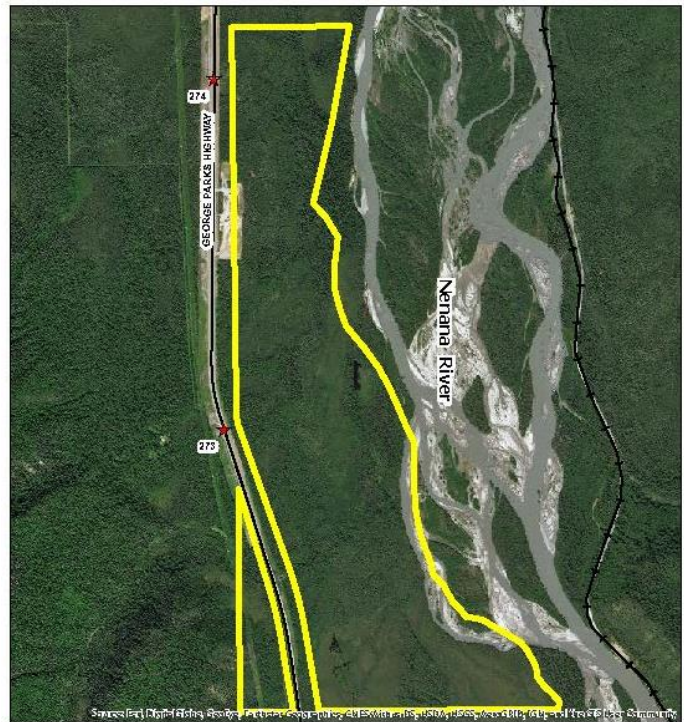


- ★ Mile Posts
  - Rail Road
  - Roads
  - Denali Borough Management Authority Land
- 0 500 1,000 2,000 US Feet

Note: This map is for graphic representation only. It is intended to be used as a guide only and may not show the exact location of existing surveyed parcels or show all easements and reservations.

7/2/19

# AERIAL PHOTOGRAPH



- ★ Mile Posts
- Rail Road
- Roads
- Denali Borough Management Authority Land

0 500 1,000 2,000 US Feet

Note: This map is for graphic representation only. It is intended to be used as a guide only and may not show the exact location of existing surveyed parcels or show all easements and reservations.

7/2/19

# EAST

## INTRODUCTION

Subareas 1 & 2 of the East municipal land are approximately 24 & 36 miles, respectively, east-southeast of Anderson. Parcel 3 is approximately 18 miles northeast of Healy. The entire conveyed municipal land is 5,760 acres and 1,920 is conditionally approved. Conditionally approved land is reserved for when the borough completes all of the boundary surveys to make up any acreage to complete the municipal entitlement land allocated.

## OVERALL MUNICIPAL LAND CHARACTERISTICS

- Mostly flat, with elevations of 700’ at Subareas 1 & 2 and 1,100’ at Subarea 3
- The area is traversed by the following river and numerous creeks and their tributaries: Fish Creek, Gold King Creek, St. George Creek, Tatlanika Creek, and the Wood River
- There is a mountain range to the south that serves as a source for these creeks
- Subarea 1 is accessible from the Kobi-Bonnifield Trail (RST 119). Bonnifield Trail (RST 462) runs north-south along Gold King Creek between Subareas 2 & 3, but does not provide direct access to the parcels. The Kobi-Bonnifield and Bonnifield Trails intersect
- The Kobi-Bonnifield Trail (also known as Rex Trail) is now managed by the State’s Department of Natural Resources due to the impacts of off-road vehicle use
- Subarea 1: The southwest third of the subarea is surrounded by State land; the balance of the property is within an unspecified permitted area (LAS 24686)
- Subareas 2 & 3 are surrounded by State land

## LAND CLASSIFICATION RECOMMENDATIONS

*See: Map 1 for subarea locations. Map 2 for East municipal land Landownership & Easements and a topographic map are also provided for additional information purposes.*

Subarea	Area	Land Classification (proposed)	Management Intent	Rationale & Other Notes
<b>1</b>	2,560 acres each	Land Bank	To retain the land as-is until market demand more clearly identifies highest and best use	The properties are remotely located without roadway access.
<b>2</b>				
<b>3</b>	640 acres 1,920 conditionally approved	Land Bank	Investigate the potential of classifying the subarea to allow mineral or materials extraction.	There are nearby mining operations, which could mean there is potential for similar operations here.

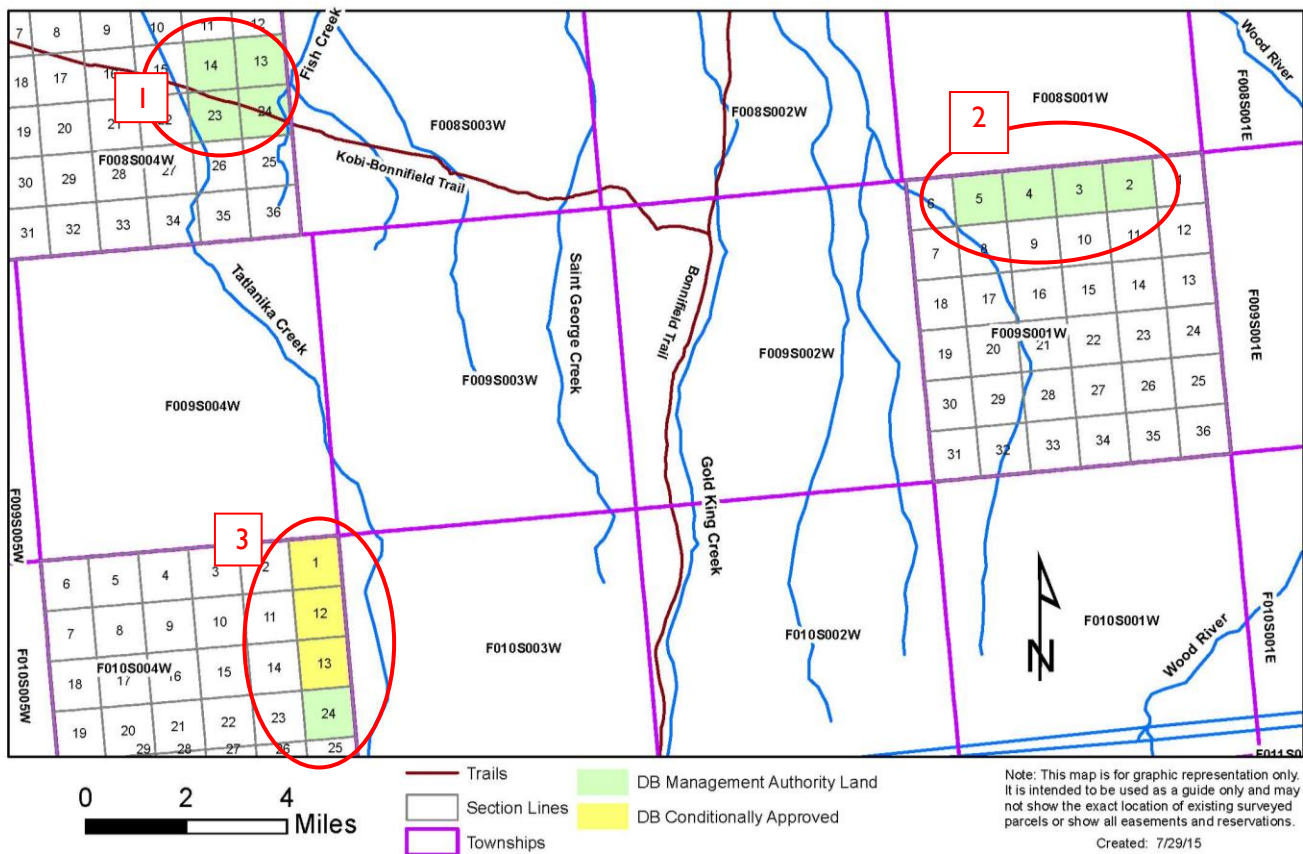
**SELECTION CONDITIONALLY APPROVED - East Selection**

	F010S004W Section 01: All	640
	F010S004W Section 12: All	640
	F010S004W Section 13: All	640

**Management Authority Lands  
East**

ADL #	DESCRIPTION	ACRES
415805	F008S004W Sections 13, 14, 23 and 24: All.	2,560
415805	F009S001W Sections 2, 3, 4 and 5: All.	2,560
	F010S004W Section 24: All	640

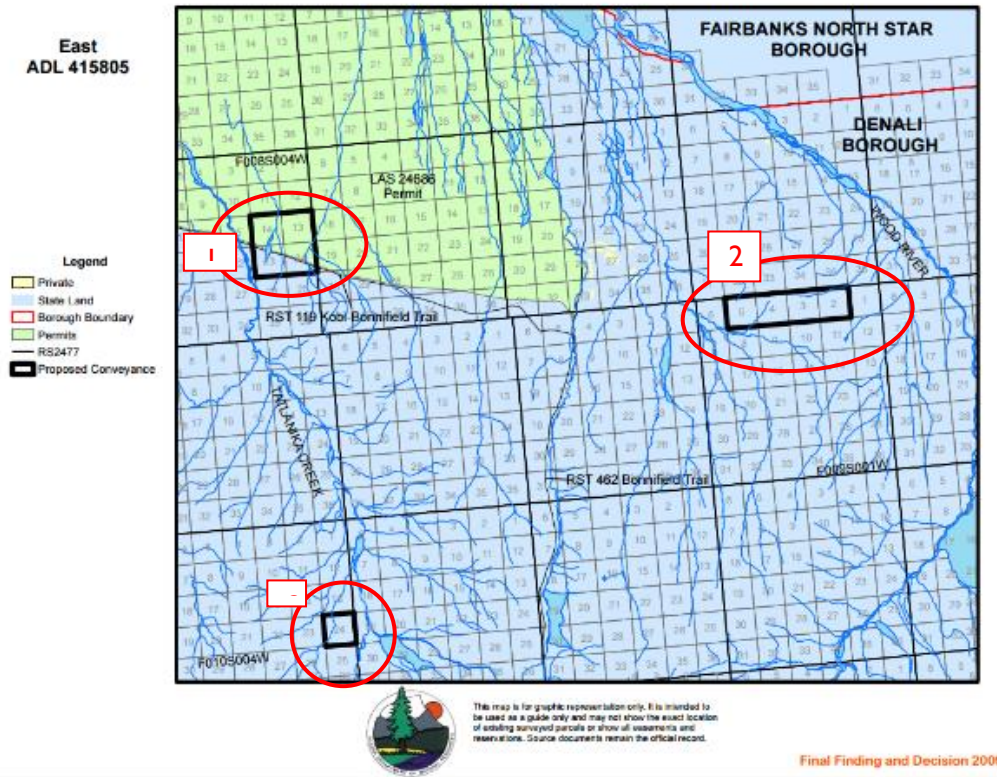
**MAP I: EAST MUNICIPAL LAND SUBAREAS**



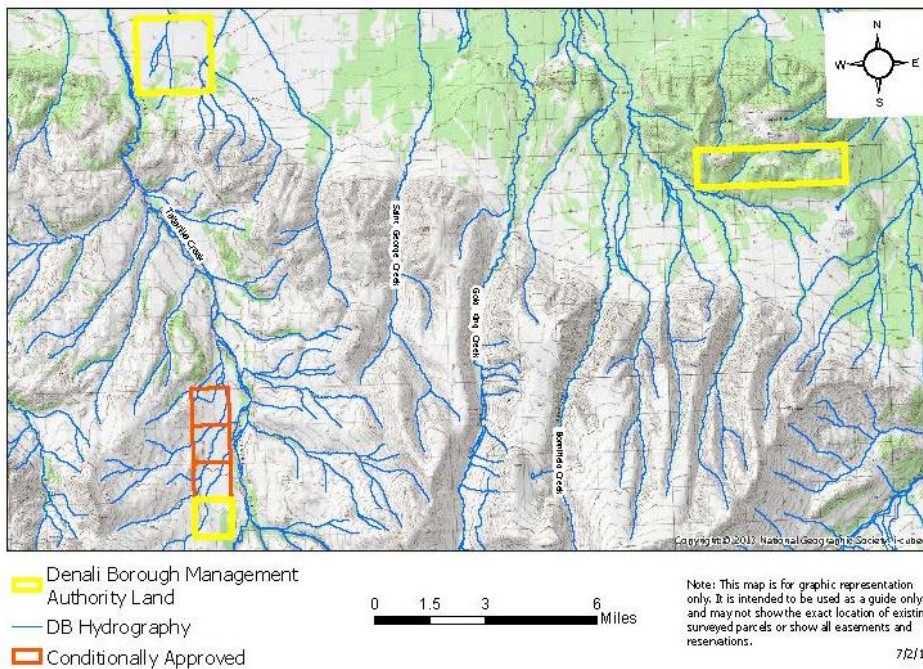


## MAP 2: EASEMENTS IN THE EAST MUNICIPAL LAND

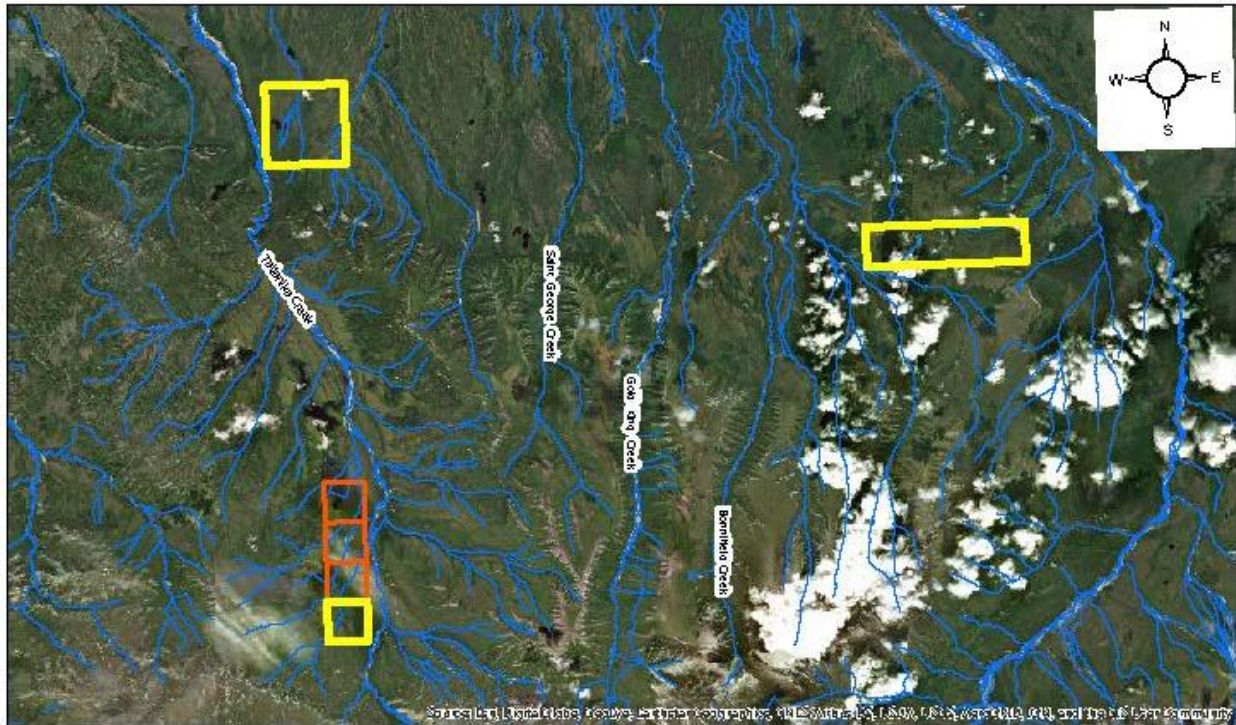
This map is provided to show the location of approved easements and to provide a general context of land ownership in the area only. This map was created prior to final approval of the land transfer, and therefore, does not accurately reflect the parcels ultimately conveyed to the borough. See Map 1 for the approved disposition of borough-owned land.



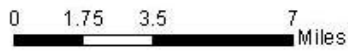
## TOPOGRAPHIC MAP



# AERIAL PHOTOGRAPH



- Denali Borough Management Authority Land
- DB Hydrography
- Conditionally Approved



Note: This map is for graphic representation only. It is intended to be used as a guide only and may not show the exact location of existing surveyed parcels or show all easements and reservations.

7/2/19

# WEST

## INTRODUCTION

Approximately 20 miles south of Anderson, 9 miles west of the George Parks Highway, and just north of the Denali National Park.

## OVERALL MUNICIPAL LAND CHARACTERISTICS

- Surrounded by State land. Denali National Park and Native land are located within 1,000 feet to the south and east, respectively
- This parcel is located at the base of the mountains in Denali National Park
- Teklanika River is approximately 2 miles to the west. At least two tributaries traverse the parcel

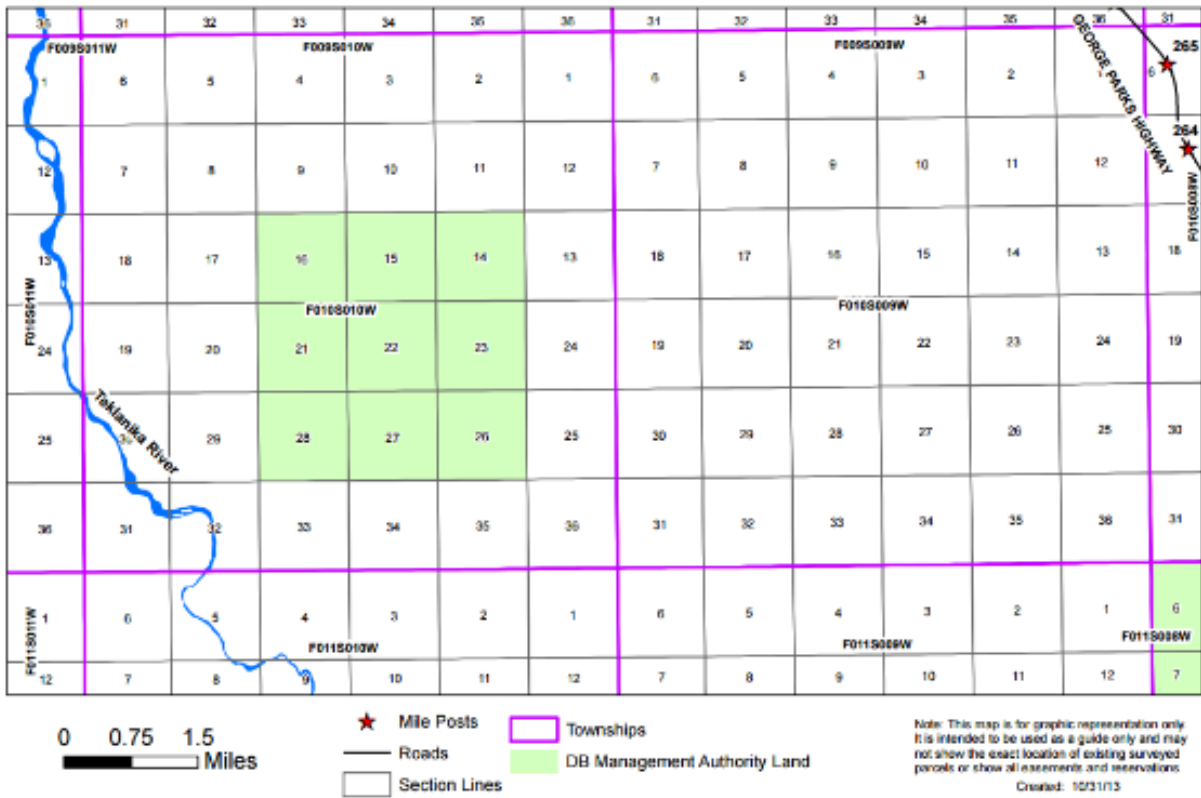
## LAND CLASSIFICATION RECOMMENDATIONS

*See: Map 1 for subarea locations. Map 2 for Easements in the West municipal land and topographic map are also provided below for additional information. Note: an aerial photograph is not provided because clouds obscured a view of the municipal land.*

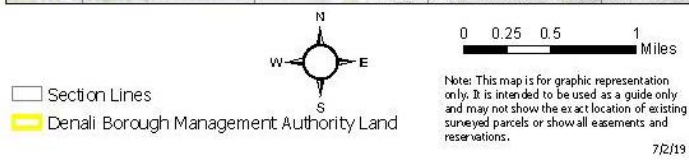
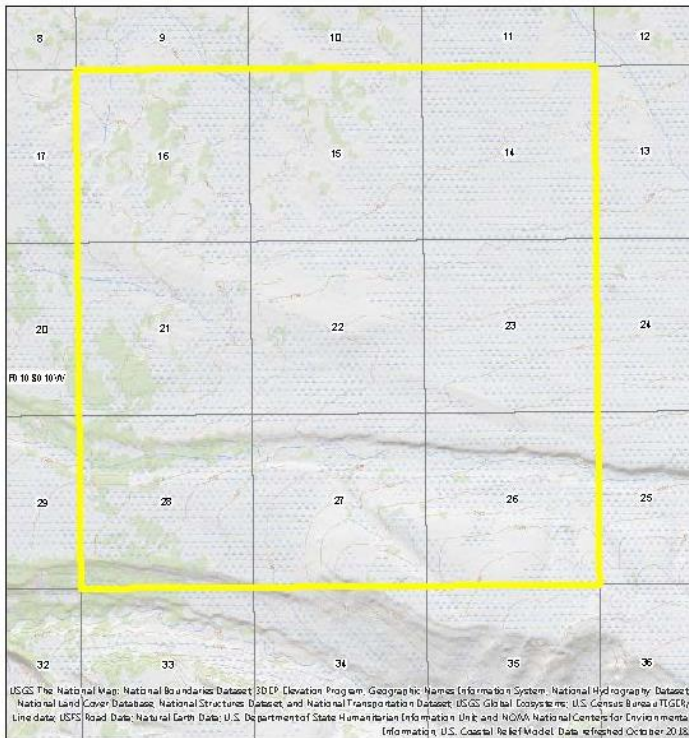
Subarea	Area (approx.)	Land Classification (proposed)	Management Intent	Rationale & Other Notes
-	5,760 acres	Land Bank	To retain the land as-is until market demand more clearly identifies its highest and best use	The municipal land is approximately 7 miles west of Parks Highway with no apparent existing access and is traversed at one point by a tributary to the Teklanika River.

Management Authority Lands West		
ADL #	DESCRIPTION	ACRES
417601	F010S010W Sections 14-16, 21-23, 26-28: All.	5,760

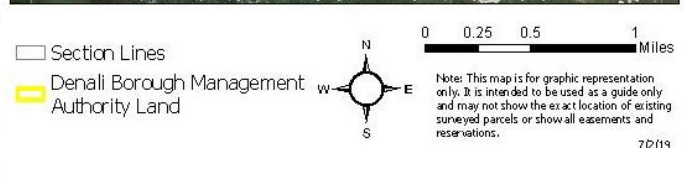
# MAP I: WEST MUNICIPAL LAND



## TOPOGRAPHIC MAP

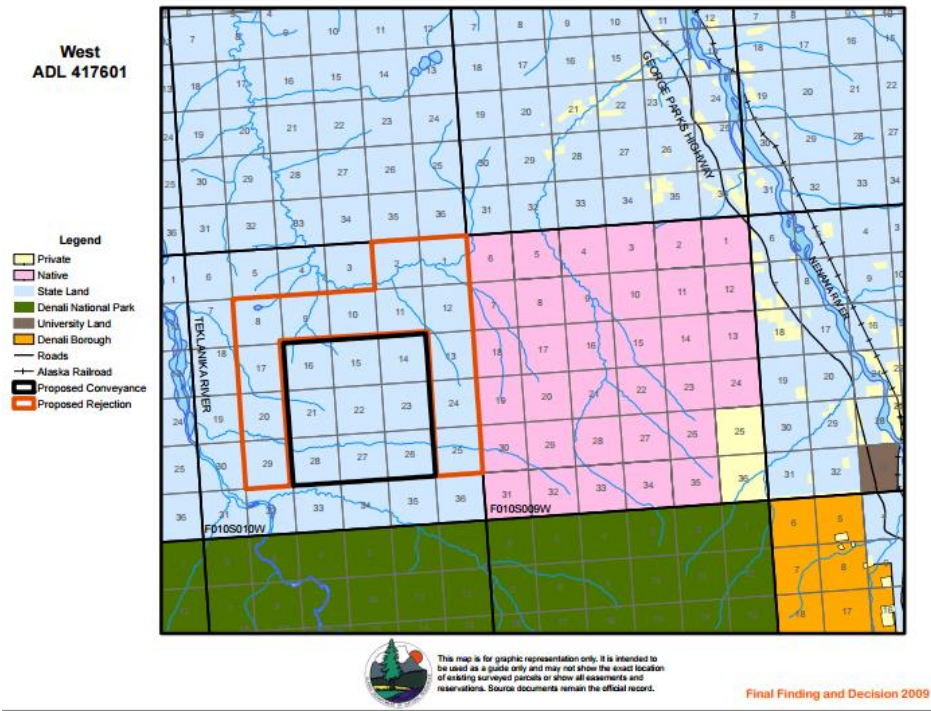


## AERIAL PHOTOGRAPH



## MAP 2: EASEMENTS IN THE WEST MUNICIPAL LAND

*This map is provided to show the location of approved easements and to provide a general context of land ownership in the area only. This map was created prior to final approval of the land transfer, and therefore, does not show the parcels has having been conveyed to the borough. See Map 1 for the approved disposition of borough-owned land.*



# FERRY

## INTRODUCTION

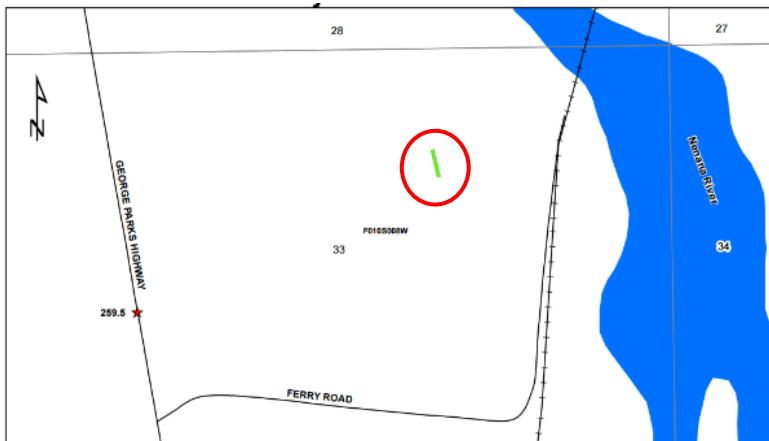
The Ferry municipal land is located approximately one mile north of Healy between the Parks Highway and the railroad; one-half mile northeast of the George Parks Highway/Ferry Road intersection. There is a gravesite located within the property. The University of Alaska granted the land to the borough to retain as municipal in perpetuity.

## OVERALL MUNICIPAL LAND CHARACTERISTICS

- Relatively flat with elevations approximately 1,000 feet
- Nenana River is less than one-quarter mile to the east

Subarea	Area (approx.)	Land Classification(proposed)	Management Intent	Rationale & Other Notes
-	2 acres	Land Bank	To retain the land as-is.	There is a gravesite located on-site.

FERRY MUNICIPAL LAND



Note: This map is for graphic representation only. It is intended to be used as a guide only and may not show the exact location of existing surveyed parcels or show all easements and reservations. Created: 11/5/13

0 400 800 Feet

★ Mile Posts  
 — Roads  
 —+— Railroad  
 □ Section Lines  
 ■ DB Patented Land

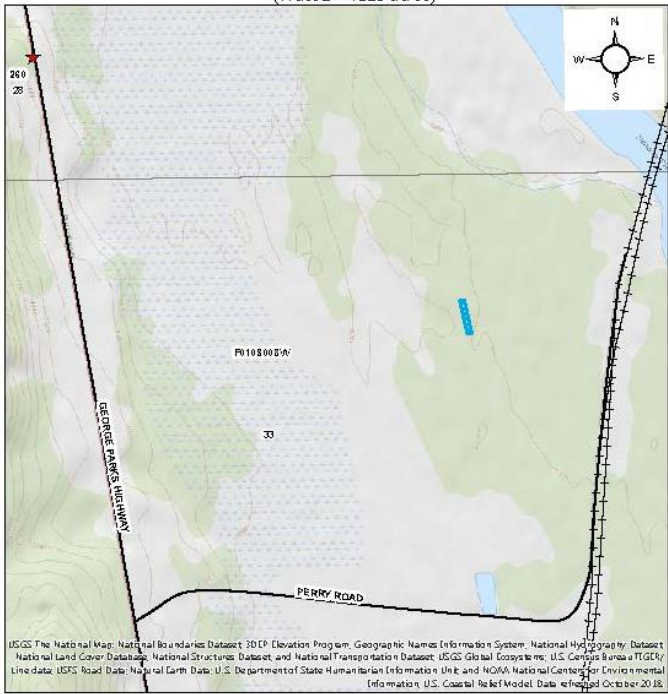
TOPOGRAPHIC MAP



Patent #	Date	Plat	Acres	Description	ADL#	Notes
Quitclaim Deed	2/2/1998	93-37	0.125	Tract D, Subdivision of Government Lot 1 and NW1/4 NE1/4, Section 33, Township 10S, Range 8W, FM.	Document# 1998-000066-0	Grave site

# TOPOGRAPHIC MAP

**Ferry ( Gravesite located within this parcel)**  
(Tract D - .125 acres)



- ★ Mile Posts
- Roads
- + Railroad
- Section Lines
- ▭ Denali Borough Patented Land

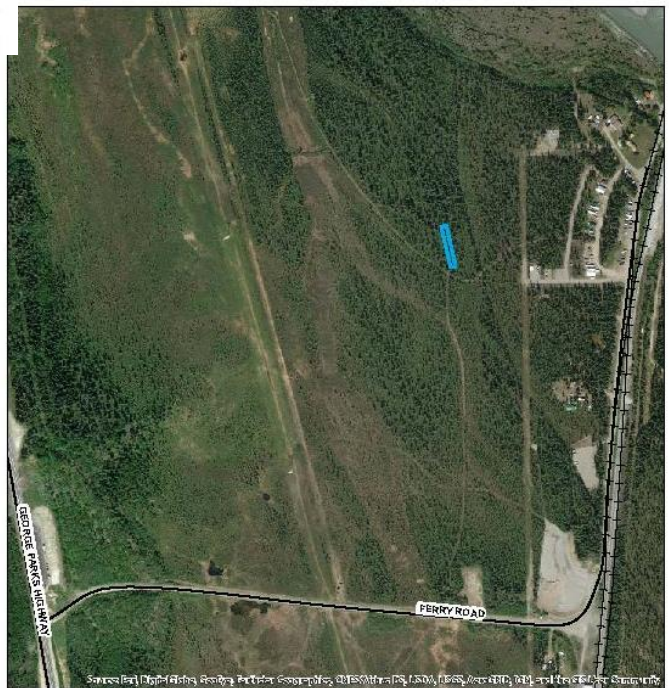


Note: This map is for graphic representation only. It is intended to be used as a guide only and may not show the exact location of existing surveyed parcels or show all easements and reservations.

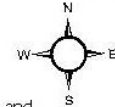
7/2/19

# AERIAL PHOTOGRAPH

**Ferry ( Gravesite located within this parcel)**  
(Tract D - .125 acres)



- ★ Mile Posts
- Roads
- + Railroad
- ▭ Denali Borough Patented Land



Note: This map is for graphic representation only. It is intended to be used as a guide only and may not show the exact location of existing surveyed parcels or show all easements and reservations.

7/2/19

# SLATE CREEK

## INTRODUCTION

The entire Slate Creek municipal land is approximately 10,152.96 acres. The southern border begins approximately five miles north of Healy on Parks Highway. Nearly all of the area is to the west of Parks Highway. The property currently has a mix of residences and commercial travelers accommodation uses.

## OVERALL MUNICIPAL LAND CHARACTERISTICS

- Borough land is surrounded by State-owned land to the north, east and south. Denali National Park creates the west border. Near the Parks Highway and scattered within the borough land is a number of privately-owned parcels, many with cabins, and material sale sites along the highway.
- The Parks Highway runs just east of the parcel’s eastern boundary. Four public easements were granted to the private property owners by DNR off of the Parks Highway. All of the driveways within these public easements predated borough ownership. Ten private properties can use access along streams or creeks. However, there are a couple parcels with access easements granted by the borough within the last ten years.
- Parcel has moderate slopes, climbing west from the Parks Highway, with steeper terrain along lower Slate Creek and in the western portions of the parcel. Elevation increases from 1,500 to approx. 3,000 ft. over three miles.
- Private parcels are setback off the Parks Highway because of the big hillside making development difficult.
- Forested
- Creeks run through the parcel, including Slate Creek and Little Panguingue Creek. A small lake is located in the southern portion of the parcel, draining into Slate Creek.
- Varied terrain, possibilities for trail based recreation; option for additional land sales

## LAND CLASSIFICATION RECOMMENDATIONS

*See: Map 1 for subarea locations. Map 2 for Easements in the Slate Creek municipal land and topographic map are also provided below for additional information.*

Subarea	Area (approx.)	Land Classification(proposed)	Management Intent	Rationale & Other Notes
I	10,112.96 acres	Multiple Use	To conduct a more detailed study of the area for future potential sale for residential uses and lease for commercial uses.	There are numerous residences and travelers’ accommodations held in private ownership located with the municipal land. Most the development is located on the eastern half of the municipal land near the Parks Highway where the slopes are not prohibitive. The western half of



Subarea	Area (approx.)	Land Classification(proposed)	Management Intent	Rationale & Other Notes
				the slope does have steep slopes and will cause future potential development difficulties.
2	40 acres	Industrial, Heavy	Future development	<ul style="list-style-type: none"> <li>• Adjacency to Parks Highway</li> <li>• Transfer Station to the south</li> <li>• This parcel has the proposed pipeline going through the east side of it.</li> </ul>
	25 acres	Already classified Industrial/Commercial	Healy Transfer Station	Site of existing public facility and has room for future expansion

## LAND USE AUTHORIZATIONS:

The borough has granted a 4 year temporary land use permit to Texas A&M University partnering with Archaeology of the Americas Laboratory for archaeological purposes. The permitted area is by Little Panguingue Creek (Mile Post 255 Parks Highway) in Section 27, T11S, R8W Fairbanks Meridian. Multiple one square meter plots are dug with hand trowels to a depth of 1.5 meters below the current surface. All the sediment is screened and once they are finished documenting their work the one square meter plots are refilled by hand with shovels. They had been getting permits from the borough every year since 2015 but with the adoption of the new code language in Title 4 of borough code the borough was able to offer a 4 year permit. In 2018, they used geophysical surveying to help them detect potential prehistoric activity areas worth excavating (possible hearths and artifact concentrations). Their first article on this site was accepted for publication in the peer-reviewed journal Paleo America titled “Little Panguingue Creek: A c. 9600-Year-Old Prehistoric Knapping Workshop in the Nenana Valley, Central Alaska” on March 7, 2019.

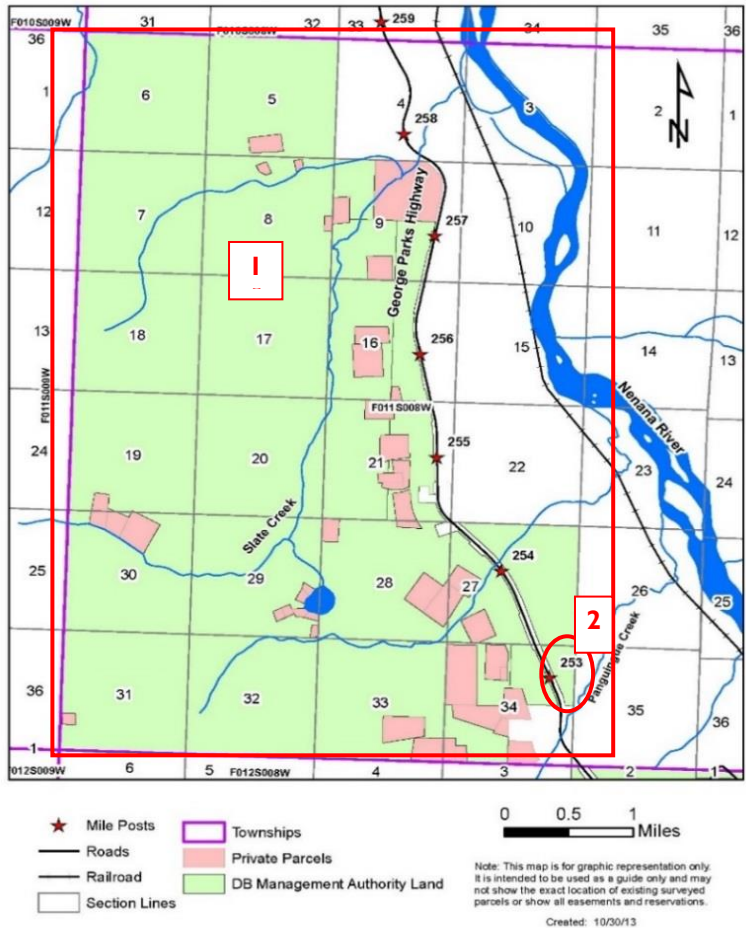
Currently they have a curation agreement with the University of Alaska Fairbanks Museum of the North. During the study the artifacts resulting from the excavations will be will be temporarily stored in fire-proof cabinets in the archaeology laboratory at Texas A&M University. Upon completion of study, all of the artifacts will be permanently curated with the museum in Fairbanks.

### Management Authority Lands Slate Creek

ADL #	DESCRIPTION	ACRES
	F011S008W Section 05 All Excluding ADL 409563.	617.13
415800	F011S008W Section 06 Entire Section.	617
415800	F011S008W Section 07 Entire Section.	619
415800	F011S008W Section 08 All Excluding ADL's 61542, 61260, and 60275.	626.48
415800	F011S008W Section 09 SW4 Excluding ADL's 409505 and 411415.	125

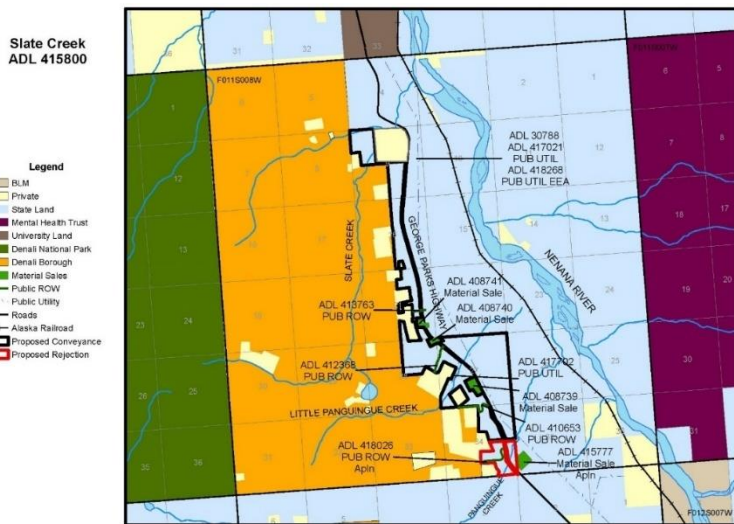
415800	F011S008W Section 09 Portion of the N2 lying west of the Parks Highway ROW excluding ADL 49350, USS 5866 and Tract B of ASLS 85-122; and that portion of the SE4 lying west of the Parks Highway ROW excluding ADL 49350 and USS 5866.	200.34
415800	F011S008W Section 16 W2 Excluding ADL's 403829 and 409564.	256.18
415800	F011S008W Section 16 Portion of the E2 lying west of the Parks Highway ROW excluding ADL 49350 and Tracts A and B of ASLS 85-121.	139.87
415800	F011S008W Section 17 Entire Section.	640
415800	F011S008W Section 18 Entire Section.	621
415800	F011S008W Section 19 All Excluding ADL 409514.	613
415800	F011S008W Section 20 Entire Section.	640
415800	F011S008W Section 21 W2 Excluding ADL's 412415, 410441, 409542, and 411571.	288
415800	F011S008W Section 21 That portion of the E2 lying west of the Parks Highway ROW excluding ADL 49350, ASLS 86-56, ASLS 85-120, ASLS 88-164, ASLS 87-367, ASLS 89-130, ADL 408740 and ADL 408741.	149.78
415800	F011S008W Section 27 All excluding the Parks Highway ROW, ADL 49350, ASLS 91-97, ASLS 87-327, ASLS 90-135, ADL 408739 and ADL 408740.	160.79
415800	F011S008W Section 28 W2, W2SE4, SE4SE4, and S2NE4SE4, Excluding ASLS 91-211, ASLS 85-118 and ASLS 87-237.	400
415800	F011S008W Section 28 That portion of the NE4 lying west of the Parks Highway ROW excluding ASLS 89-130, ASLS 85-118, ASLS 87-327, ASLS 91-97 and ADL 408740.	142.89
415800	F011S008W Section 29 All Excluding ADL's 51125, 51124, 51248, 51761, 60812, 62139, and 61182.	602.4
415800	F011S008W Section 30 All Excluding ADL's 409519, 409518, and 409514.	556
415800	F011S008W Section 31 All Excluding ADL 409513.	620.68
415800	F011S008W Section 32 Entire Section.	640
415800	F011S008W Section 33 All Excluding ADL's 410863 and 410456.	570
415800	F011S008W Section 34 N2W2 Excluding ADL's 409509, 410826, 409510, 409504, 410743, 410067, 410876, 410456, and 403768.	45
415800	F011S008W Section 34 S2W2 Excluding ADL's 409509, 410826, 409510, 409504, 410743, 410067, 410876, 410456, and 403768.	92
415800	F011S008W Section 34 NE4 excluding the Parks Highway ROW, ADL 49350, Tract A of ASLS 83-168 and ASLS 92-69.	170.42

# MAP I: SLATE CREEK MUNICIPAL LAND SUBAREAS



# MAP 2: EASEMENTS IN THE SLATE CREEK MUNICIPAL LAND

*This map is provided to show the location of approved easements and to provide a general context of land ownership in the area only. This map was created prior to final approval of the land transfer, and therefore, does not accurately reflect the parcels ultimately conveyed to the borough. See Map 1 for the approved disposition of borough-owned land.*



The State of Alaska has the following easements in this MUNICIPAL LAND:

- George Parks Highway Corridor
- State Pipeline LLO32, ADL's 30788, 417021 and 418268
- Material Sale Sites ADL 408741, 408740, 408739, 41577
- Public ROW's 413763, 412368, 410653, 418026
- Public Utility ADL 417702



This map is for graphic representation only. It is intended to be used as a guide only and may not show the exact location of existing surveyed parcels or show all easements and reservations. Source documents remain the official record.

Final Finding and Decision 204



# PANGUINGUE

## INTRODUCTION

The Panguingue municipal land is approximately 4,324.14 acres.

## OVERALL MUNICIPAL LAND CHARACTERISTICS

- Parcels are mostly flat, with elevation ranging from 1,350’ at the northeast to approximately 1,600’ at the southwest. No steep riparian slope along Dry Creek.
- Creek flanked by forest, uplands shrub tundra
- Most of the Tracts in the Panguingue Creek Subdivision are relatively wet, poorly drained
- Good access to Parks Highway off of Stampede Road or Lignite Road
- Good proximity to Healy
- Borough land is mostly between State-owned lands (west and north) and private lands to the southeast in Healy, plus two small subdivisions.
- The borough has 1 material sale site at 1.7 mile Stampede Road and the state has 2 material sites adjacent to borough property, 5 mile Stamped Road and mile post 252 Parks Highway .

## LAND CLASSIFICATION RECOMMENDATIONS

*See: Map 1 for subarea locations. Map 2 for Panguingue municipal land Landownership & Easements and a topographic map are also provided for additional information purposes.*

Subarea	Area (approx.)	Land Classification( proposed)	Management Intent	Rationale & Other Notes
<b>1</b>	A: 225 acres	Amenity Value	To maintain the property as-is	Access is difficult, retain for public use
	B: 14.99 acres	Residential	Lots 2 & 3 Block 16, Lot 7 Block 18 Panguingue Creek Subdivision	These lots are currently for sale. Each lot is about 5 acres No constructed access from Stampede Road
<b>2</b>	3439.28 acres	Multiple Use -Residential -Commercial -Grazing -Recreational	Further planning for residential, commercial, recreation, and potential grazing lease Taking into account the desire for a buffer to residential areas and protection for recreational trails	An area in the southwest portion of subarea is currently leased for agricultural purposes (i.e. range land for horses). Site is relatively flat Good access to Stampede Road and Parks Highway

Subarea	Area (approx.)	Land Classification( proposed)	Management Intent	Rationale & Other Notes
3	520 acres	Amenity Value	To retain as an amenity value	This area has poor subsurface conditions due to permafrost, which would make development problematic. It has already been classified amenity value.
4	120 acres	Amenity Value	To retain as an amenity value	This area has poor subsurface conditions due to permafrost, which would make development problematic. It has already been classified amenity value.

### LAND ACTION:

A long-term grazing lease request has been put on hold since 2011 so the parcel could be classified and a management plan could be written for the area. The lease was acquired from the State when the borough received the land as part of the municipal land entitlement. The state lease expired in 2011 and lessee has been granted a temporary use permit every year since. The lease request is for about 210 acres in Section 10, T12S, R8W F.M. south of Stampede Road.

One of the private parcels on the west side of the Parks Highway and north side of Stampede Road has an encroachment on borough land. The encroachment is because the original private parcel owner had a lease with the state for about 60 acres in the W1/2SE1/4 of Section 2 T12SR8W abutting their parcel so they built out crop buildings and the house deck is inches from the property line. In 2003 the original property owner applied to the state, ADL 417023, to purchase approximately 3 acres of land the encroachments were on but in 2009 the state conveyed this land to the borough as part of the municipal land entitlement process. In 2014 the lease was terminated, and the private property has sold a couple times. Each new owner has approached the borough to see if they can purchase the property with the encroachments through the negotiated disposal or direct disposal process.

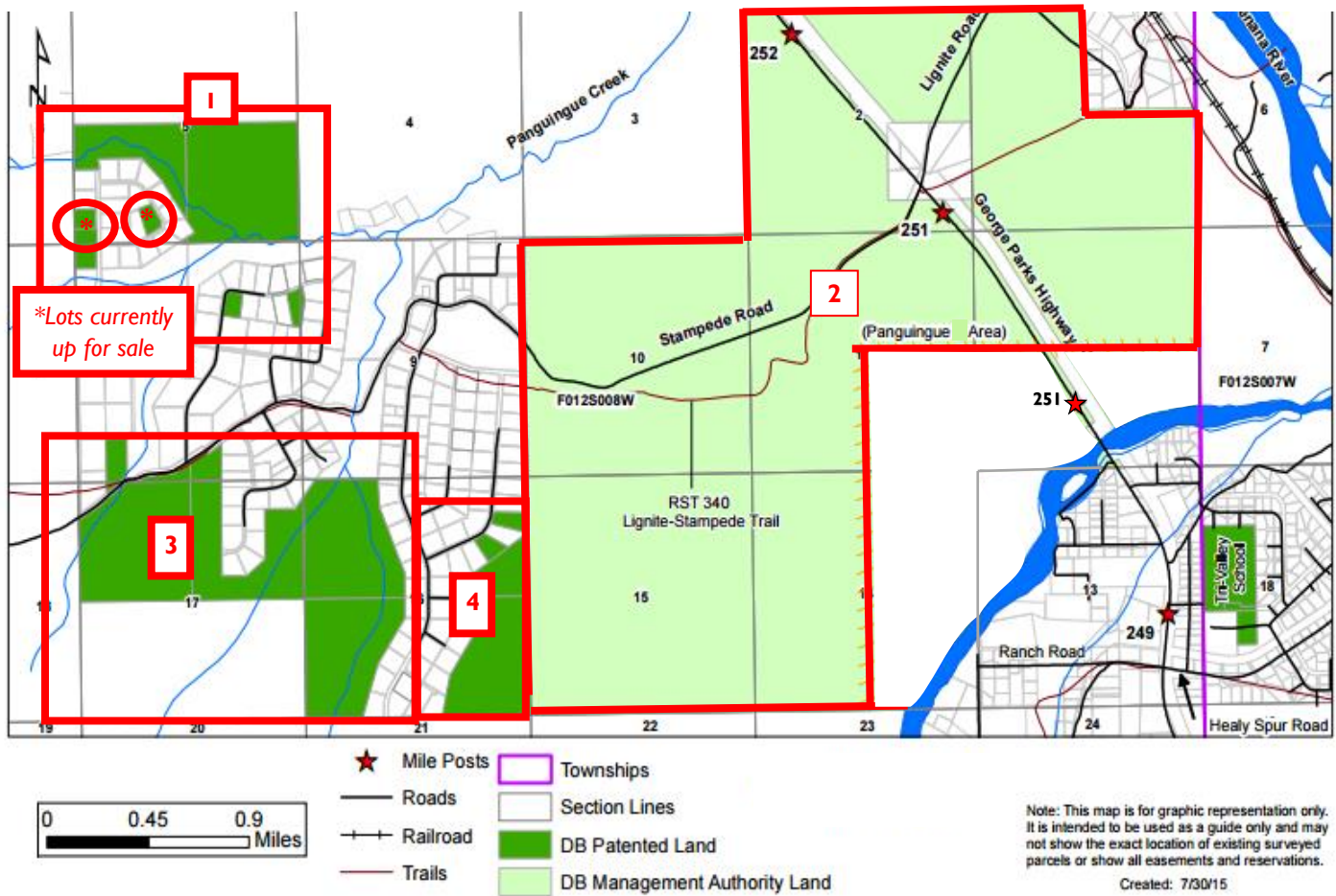
Patent #	Date	Plat	Acres	Description	ADL#	Notes
16186	12/16/1997	80-1	14.99	Lots 2 & 3 Block 16, Lot 7 Block 18 Panguingue Creek Subdivision	415645	Classified Settlement
16185	12/16/1997	80-1	21.49	Lot 9 Block 8; Lot 3 Block 13; Lot 1 Block 16 Panguingue Creek Subdivision	415643	Classified for Amenity Value
16186	12/16/1997	80-1	223.58	Tract K, L & L-1 Panguingue Creek Subdivision	415645	Classified for Amenity Value
16187	12/16/1997	80-1	263.94	Tract A, B, and D; Lots 9 & 11 Block 1; Panguingue Creek Subdivision	415646	Classified for Amenity Value

Patent #	Date	Plat	Acres	Description	ADL#	Notes
18479	6/19/2002	80-1	360.86	Tract C, H, O Panguingue Creek Subdivision	415646	re-recorded 7/19/2007  Classified for Amenity Value

**Management Authority Lands  
Panguingue**

ADL #	DESCRIPTION	ACRES
415809	F012S008W Section 01 W2 and SE4 excluding USS 5600.	475
415809	F012S008W Section 12 N2.	320
415809	F012S008W Section 11 N2 and SW4.	476.3
415809	F012S008W Section 14 W2.	317.9
415809	F012S008W Section 10 Entire Section.	640
415809	F012S008W Section 15 Entire Section.	640.08
415809	F012S008W Section 04 Entire Section Excluding ASLS's 78-145, 78-138, 74-48, 78-22, and 77-107.	590
415809	F012S008W Section 02 Entire section excluding USS 5600.	570

**MAP I: PANGUINGUE MUNICIPAL LAND SUBAREAS**

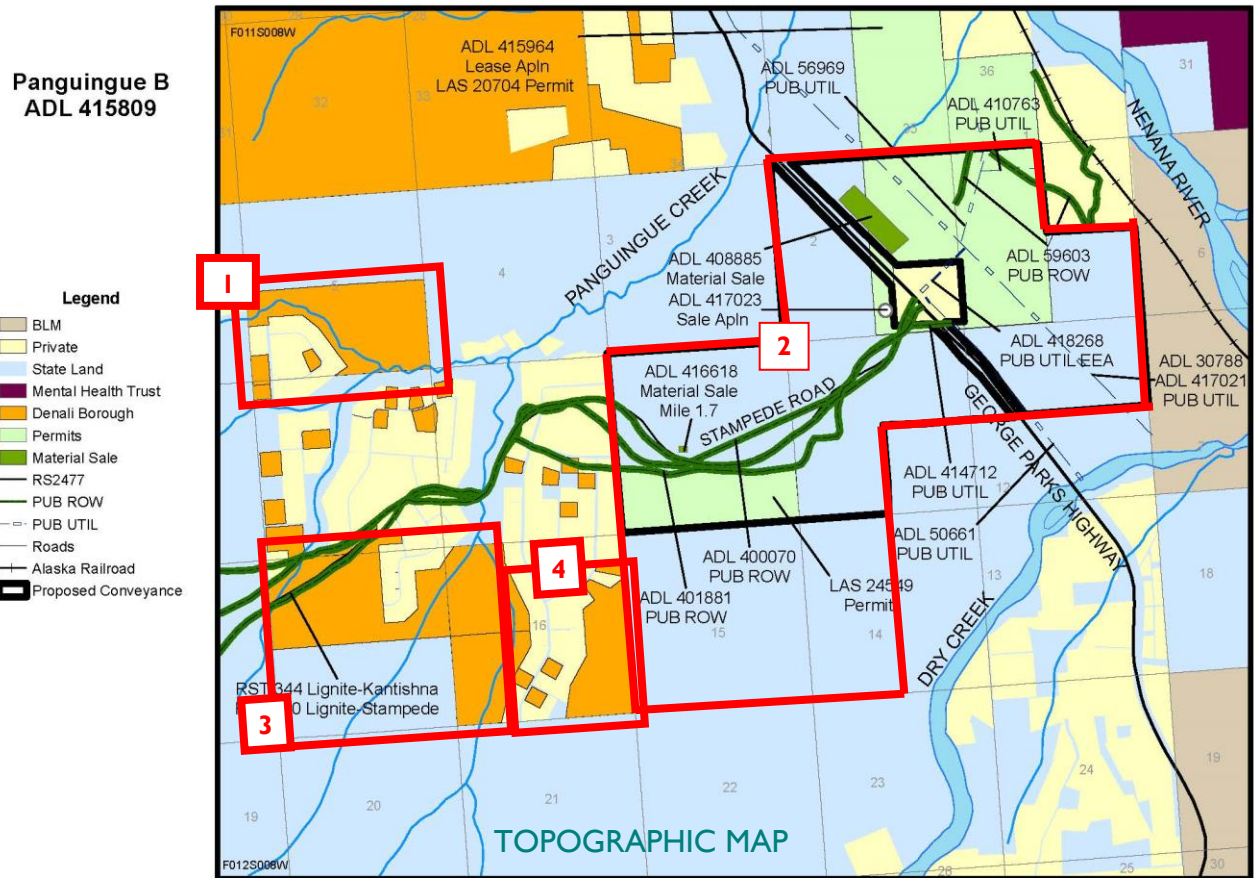


## MAP 2: EASEMENTS IN THE PANGUINGUE MUNICIPAL LAND

This map is provided to show the location of approved easements and to provide a general context of land ownership in the area only. This map was created prior to final approval of the land transfer, and therefore, does not accurately reflect the parcels ultimately conveyed to the borough. See Map 1 for the approved disposition of borough-owned land.

The following easements are located within Subarea 2:

- George Parks Highway Corridor
- State Pipeline LLO32 ADL's 30788, 417021 and 418268

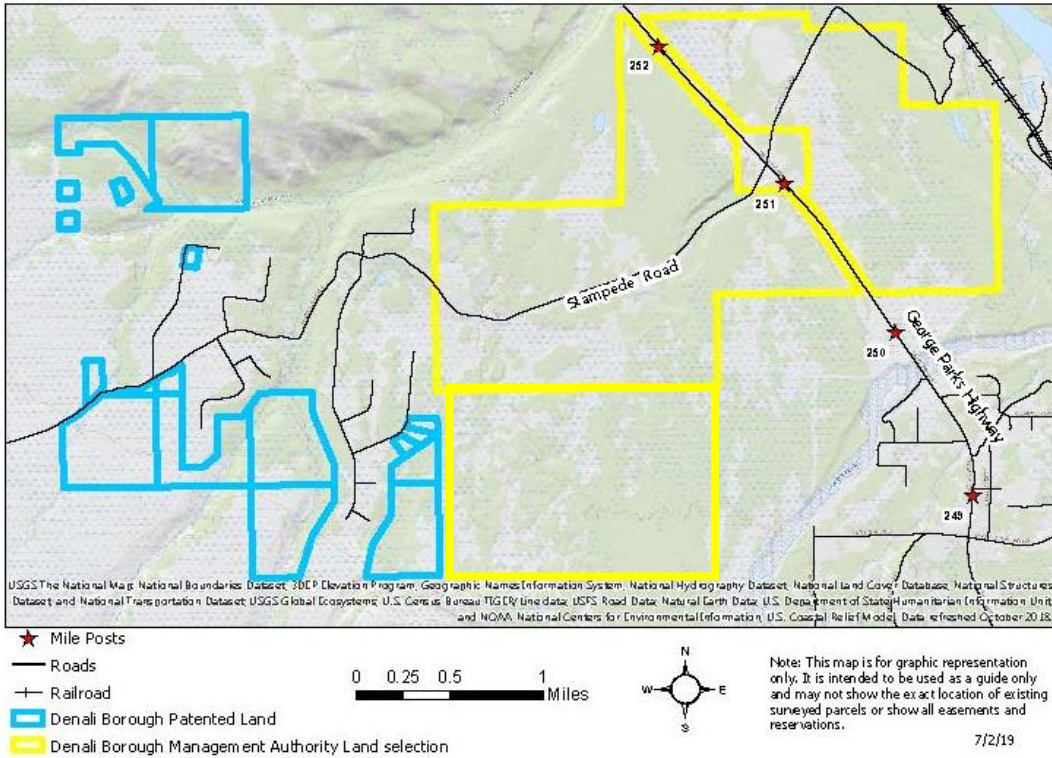


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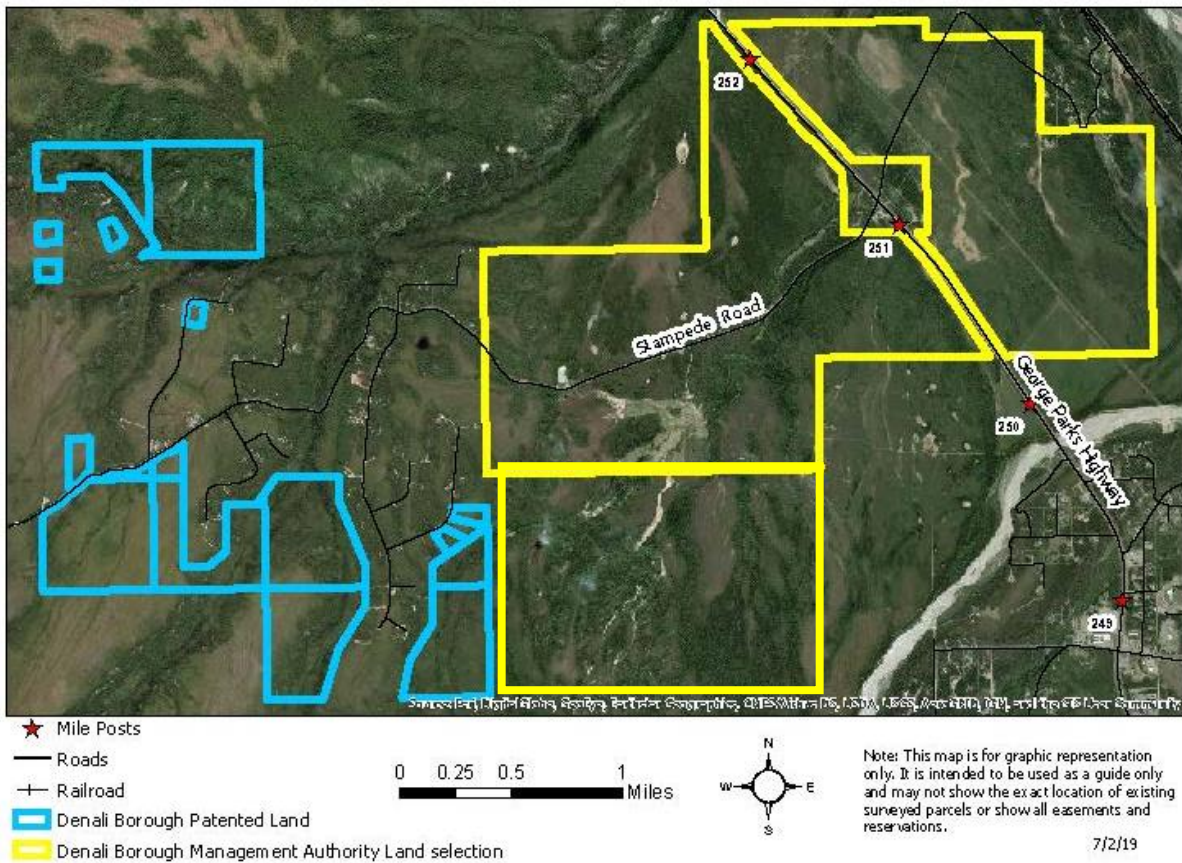
Final Finding and Decision 2009



## TOPOGRAPHIC MAP



## AERIAL PHOTOGRAPHS



# HEALY

## INTRODUCTION

The Healy municipal land is approximately 731 acres.

## OVERALL MUNICIPAL LAND CHARACTERISTICS

- Parcels are mostly flat, with elevation ranging from 1,350’ at the northeast to approximately 1,600’ at the southwest. No steep riparian slope along Dry Creek.
- Creek flanked by forest, uplands shrub tundra.
- Dry Creek forms the southern boundary for much of the Healy Parcel area.
- Good access/proximity to Parks Highway and Healy.
- Borough land is mostly between State-owned lands (west and north) and private lands to the southeast in Healy, plus two small subdivisions. Material sale sites are adjacent but not in the borough parcel.

## LAND CLASSIFICATION RECOMMENDATIONS

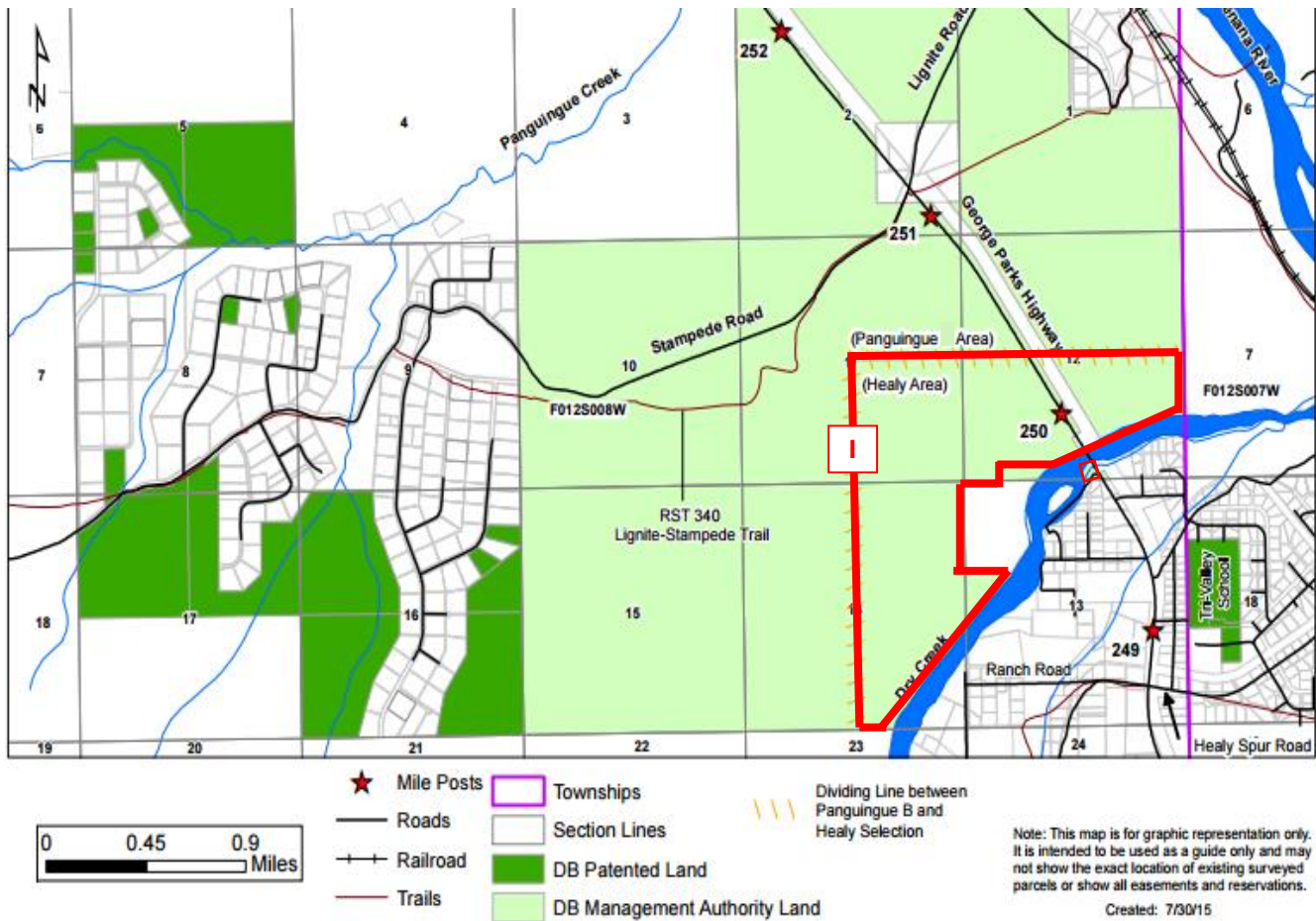
*See: Map 1 for subarea locations. Map 2 for Healy municipal land Landownership & Easements and a topographic map are also provided for additional information purposes.*

Subarea	Area (approx.)	Land Classification( proposed)	Management Intent	Rationale & Other Notes
<b>I</b>	731 acres	Multiple Use	<p><b>High priority</b> for a more detailed study using previous proposals as a basis. In the meantime, maintain the subarea as-is.</p>	<p>Site is relatively flat. Good access to Stampede Road and Parks Highway</p>

### Management Authority Lands Healy

ADL #	DESCRIPTION	ACRES
417602	F012S008W Section 11 Tract D.	159
417602	F012S008W Section 12 S2 excluding the Parks Highway, ADL 65667, ASLS 86-135, and Tracts F3 and F4 of EPF 22-21.	250
417602	F012S008W Section 13 NW4NW4NW4, and those portions of the S2SW4NW4 and NW4SW4 lying west of the right bank of Dry Creek.	30
417602	F012S008W Section 14 Tract B and Tract D excluding ASLS 91-138 and Tracts A and B of ASLS 86-225.	292

## MAP 1: HEALY MUNICIPAL LAND SUBAREAS



## MAP 2: EASEMENTS IN THE HEALY MUNICIPAL LAND

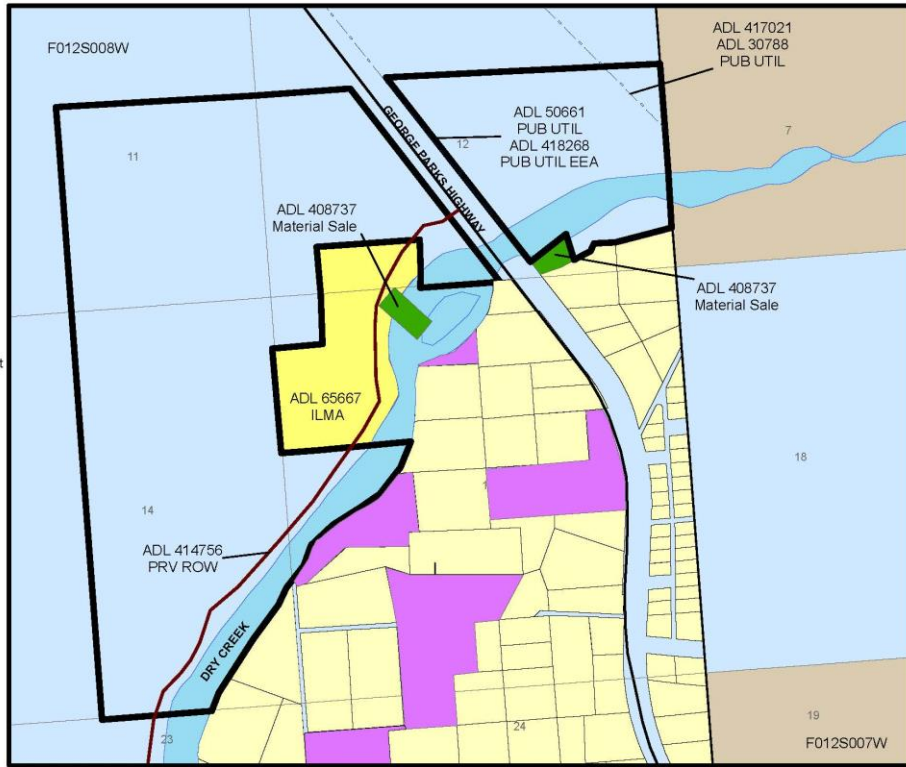
This map is provided to show the location of approved easements and to provide a general context of land ownership in the area only. This map was created prior to final approval of the land transfer, and therefore, does not accurately reflect the parcels ultimately conveyed to the borough. See Map 1 for the approved disposition of borough-owned land.

The following easements are located within Subarea 1:

- George Parks Highway Corridor
- State Pipeline LLO32 ADL's 30788, 417021 and 418268
  - State Material Sale Sites: ADL 408737
  - Private access easement, ADL 414756

Healy  
ADL 417602

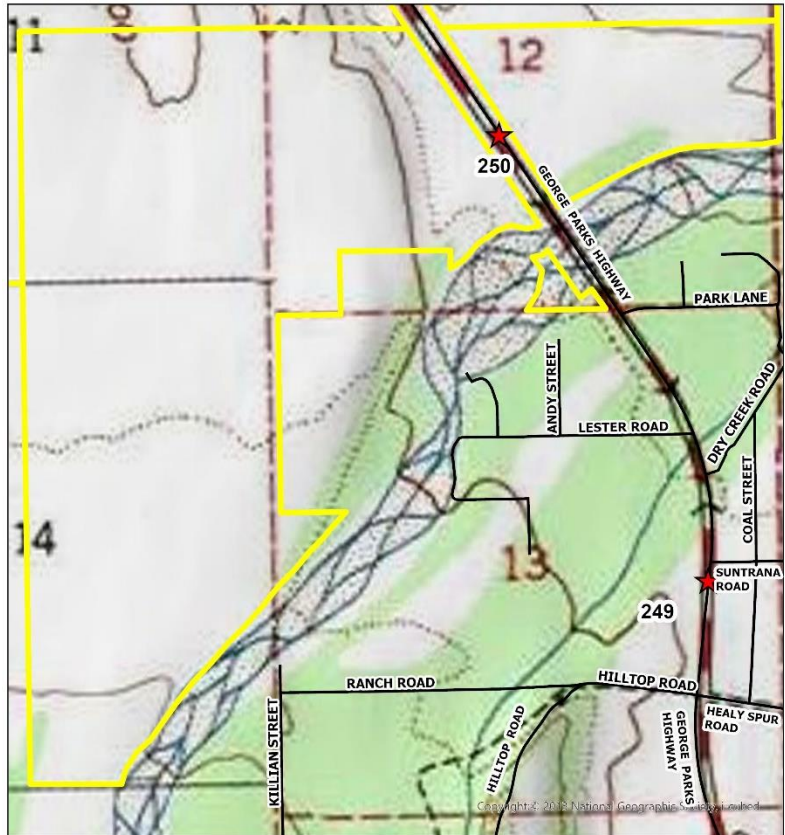
- Legend**
- BLM
  - Private
  - State Land
  - MHT- reserved
  - Management Agreement
  - Material Sales
  - Private ROW
  - Public Utility
  - Roads
  - Proposed Conveyance



This map is for graphic representation only. It is intended to be used as a guide only and may not show the exact location of existing surveyed parcels or show all easements and reservations. Source documents remain the official record.

Final Finding and Decision 2009

TOPOGRAPHIC MAP



- Roads
- Mile Posts
- Denali Borough Management Authority Land

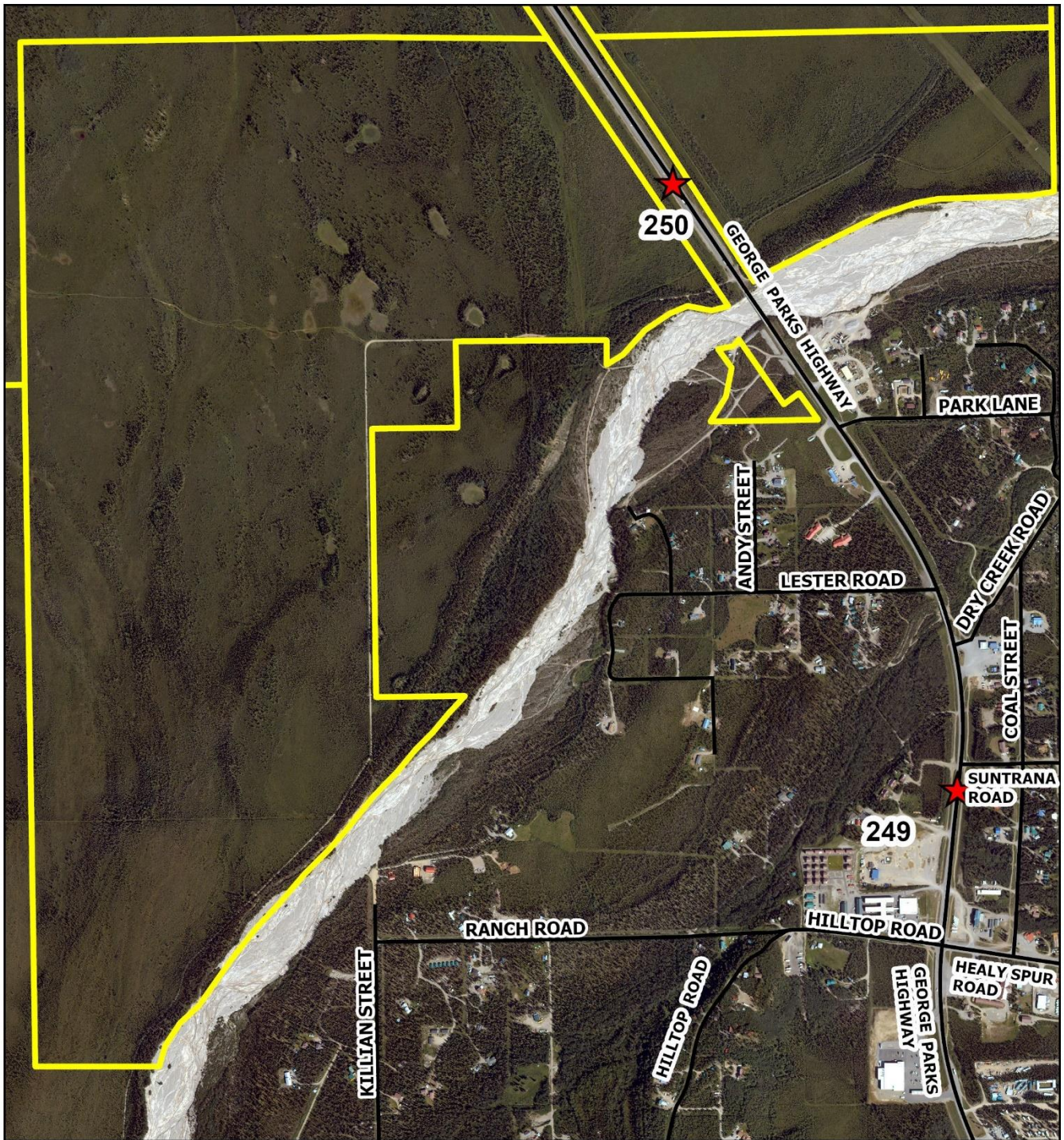


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US Feet

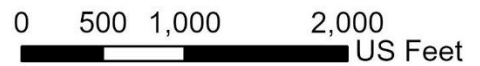
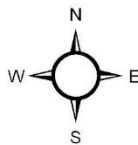
Note: This map is for graphic representation only. It is intended to be used as a guide only and may not show the exact location of existing surveyed parcels or show all easements and reservations.

6/22/20

# AERIAL PHOTOGRAPHS



-  Roads
-  Mile Posts
-  Denali Borough Management Authority Land



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6/22/20

# TRI-VALLEY SCHOOL

## INTRODUCTION

The Tri-Valley School municipal land is approximately 63.44 acres.

## OVERALL MUNICIPAL LAND CHARACTERISTICS

Subarea	Area (approx.)	Land Classification( proposed)	Management Intent	Rationale & Other Notes
<b>5</b> Tri-Valley School	63.44 acres	Public Facility	To maintain the school use indefinitely	The school serves a vital service to the citizens of Denali Borough

Patent #	Date	Plat	Acres	Description	ADL#	Notes
Quitclaim Deed	2/25/1993	78-9	63.44	Tract E & I of the Tri-Valley Subdivision	Document# 1993-000065-0	Tri-Valley School Property

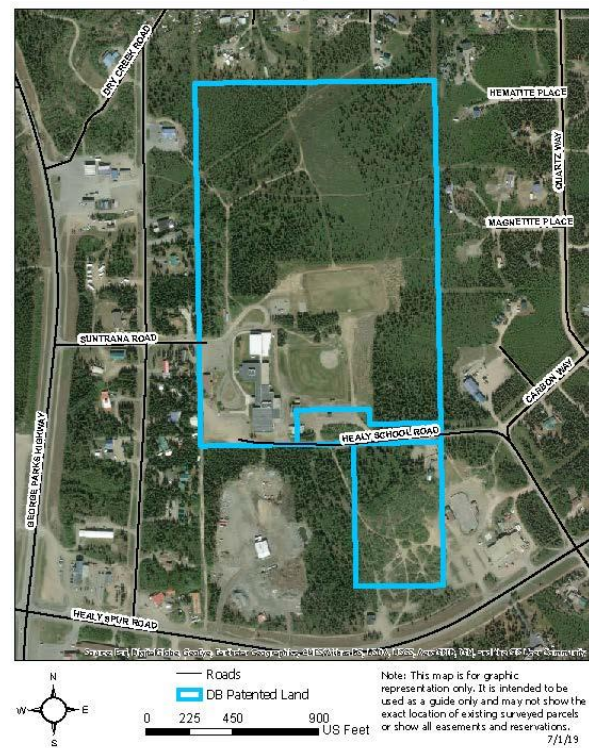
### TOPOGRAPHIC MAP

Tri-Valley School



### AERIAL PHOTOGRAPHS

Tri-Valley School



# OTTO LAKE

## INTRODUCTION

This municipal land offers the potential for a wide array of residential, recreational (commercial and otherwise), retail, restaurants, and travelers accommodations because of its proximity to Otto Lake.

## OVERALL MUNICIPAL LAND CHARACTERISTICS

- Bordered by State-owned land to the west, south, and southeast, Alaska Railroad land to the east, and private property to the north and east. The private property to the east includes residences and businesses like Denali ATV, Denali Lakeview Inn, and Premier Alaska Tours. There are also railroad leases like the Black Diamond Golf Course and the Otto Lake Lions Club Park. Private residences are located in the northwest portion of the borough-owned parcel.
- Accessible from George Parks Highway via Otto Lake Road
- Mostly flat, with the elevation ranging from 1,800’ in the north to 2,000’ in the south. No steep riparian slope along Dry Creek
- Dry Creek forms the northwestern boundary

## LAND CLASSIFICATION RECOMMENDATIONS

*See: Map 1 for subarea locations. Map 2 for Easements in the Otto Lake municipal land, topographic maps, and aerial photographs are also provided below for additional information.*

Subarea	Area (approx.)	Land Classification( proposed)	Management Intent	Rationale & Other Notes
<b>1</b>	644 acres	Multiple Uses -Recreation -Residential -Material Site	To conduct a more detailed study of the area to identify ways of maximizing values for residents and commercial recreation operations in the area	There are several commercial recreation uses operating within or near this area, including a golf course, guided ATV tours, and a chuck wagon tour. There are also residents that live in the area.
<b>2</b>	280	Recreation	Possibly leasing it to Black Diamond Golf Course	Black Diamond applied for a lease in 2005
<b>3</b>	1.09	Amenity Value	Retain as a Public Park	GVEA donated this land for a public park

Patent #	Date	Plat	Acres	Description	ADL#	Notes
20149	4/10/2006	n/a	280	NE1/4, NE1/4SE1/4, W1/2SE1/4, Section 26, Township 12S, Range 8W, FM.	415801	
Quitclaim Deed	11/16/2017	68-306	1.09	Lot 7 Otto Lake Alaska, Subdivison (Section 25,T12S, R8W, F.M.) (Land Donation by GVEA)	Document# 2017-000773-0	Land Donation by GVEA

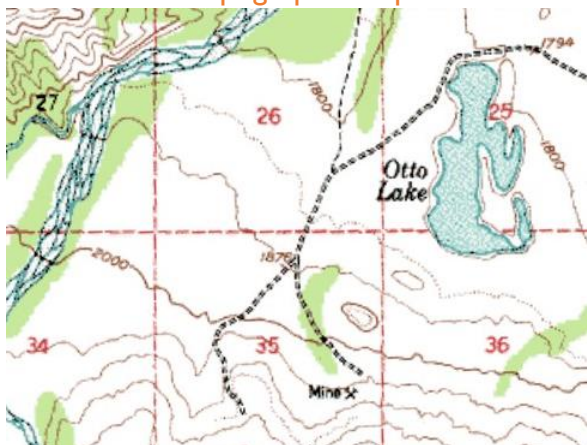
**Management Authority Lands  
Otto Lake**

ADL #	DESCRIPTION	ACRES
415801	F012S008W Section 26 That portion of the W2 lying south of Dry Creek excluding ASLS 72-79.	251
415801	F012S008W Section 27 That portion of Tracts B and D lying east of Dry Creek excluding ASLS 72-79.	113
415801	F012S008W Section 35 N2 excluding NE4NE4.	280

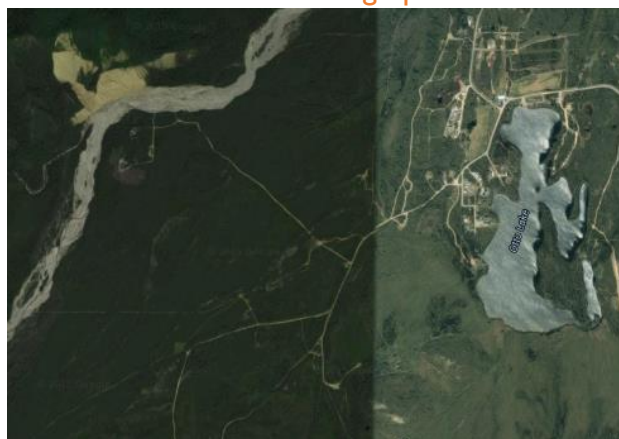
**POTENTIAL LAND USE ACTION RECOMMENDATIONS:**

- Commercial Use Permit system
- Identify a trail system for the commercial use permit system
- Road easement never finally approved by DNR before land was transferred to the borough (Carpet Road)
- Cabin built in trespass on DNR land before the land was transferred to the borough
- Black Diamond Golf Course Lease Request put on hold since 2005
- Need for a borough gravel pit in the area

Topographic Map

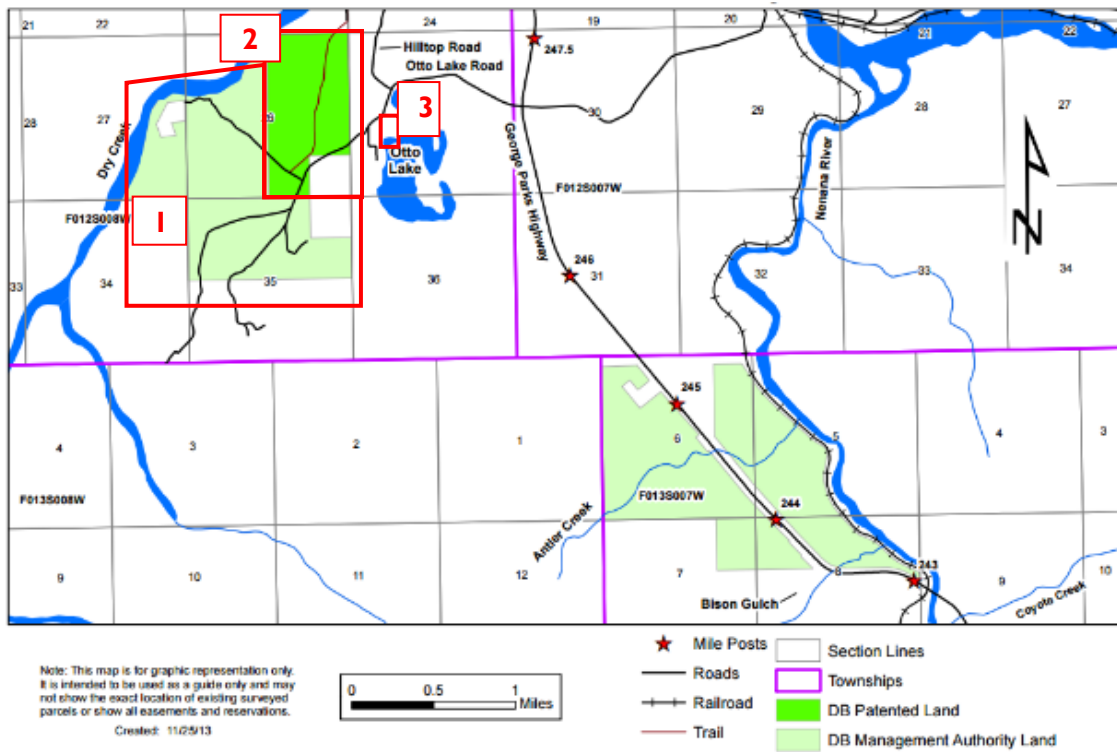


Aerial Photograph



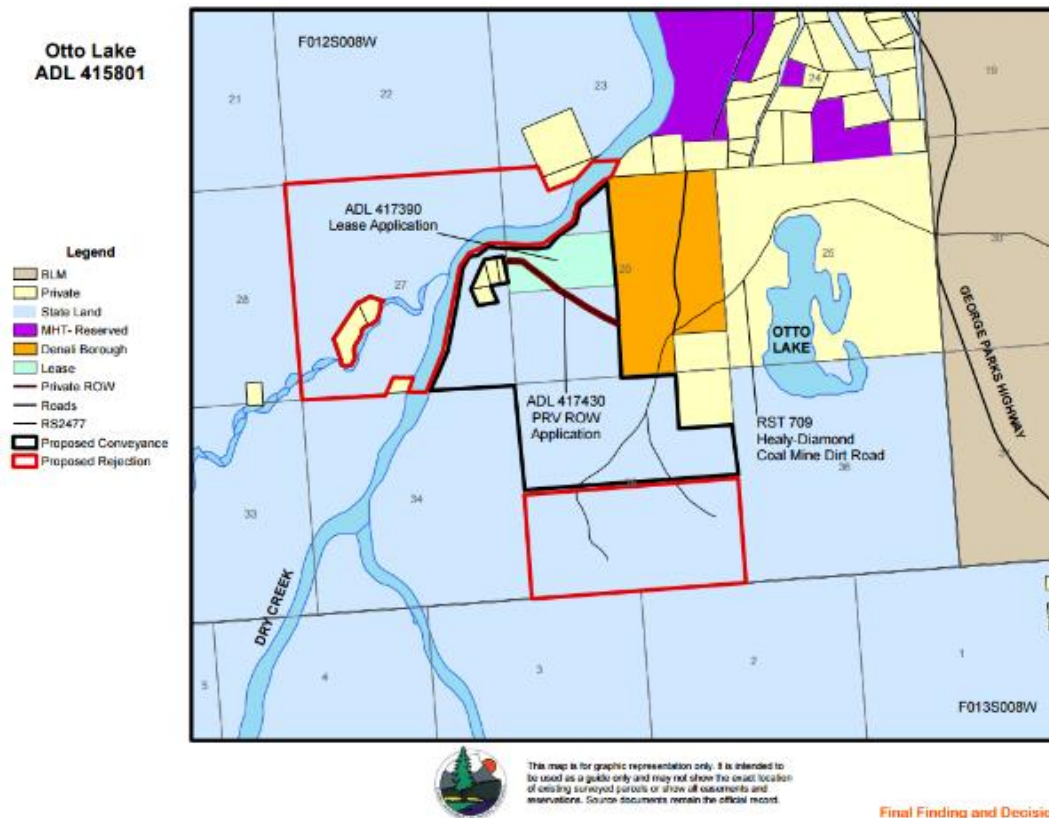


## MAP 1: OTTO LAKE MUNICIPAL LAND SUBAREAS

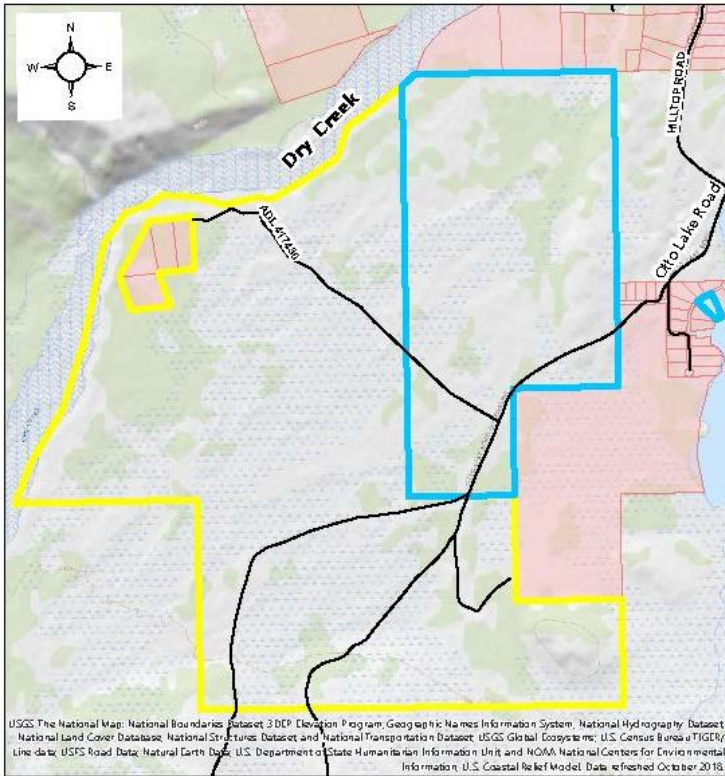


## MAP 2: EASEMENTS IN THE OTTO LAKE MUNICIPAL LAND

*This map is provided to show the location of approved easements and to provide a general context of land ownership in the area only. This map was created prior to final approval of the land transfer, and therefore, does not accurately reflect the parcels ultimately conveyed to the borough. See Map 1 for the approved disposition of borough-owned land.*



# TOPOGRAPHIC MAP

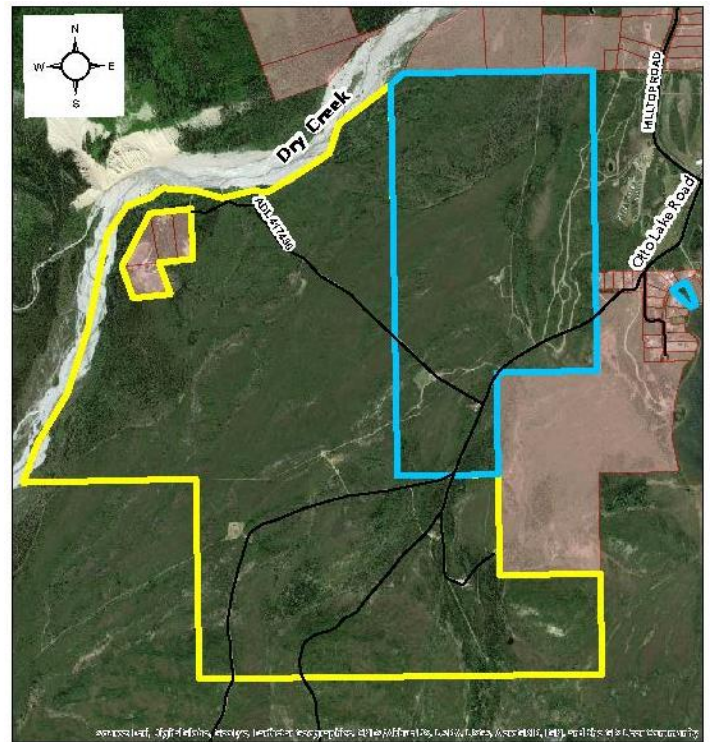


— Roads  
 ■ DB Patented Land  
 ■ Private Parcels  
 ■ Denali Borough Management Authority Land

0 500 1,000 2,000  
 US Feet

Note: This map is for graphic representation only. It is intended to be used as a guide only and may not show the exact location of existing surveyed parcels or show all easements and reservations.  
 6/27/19

# AERIAL PHOTOGRAPHS



— Roads  
 ■ DB Patented Land  
 ■ Private Parcels  
 ■ Denali Borough Management Authority Land

0 500 1,000 2,000  
 US Feet

Note: This map is for graphic representation only. It is intended to be used as a guide only and may not show the exact location of existing surveyed parcels or show all easements and reservations.  
 6/27/19

# ANTLER CREEK

## INTRODUCTION

This municipal land offers the potential for a wide array of recreation (commercial and otherwise), retail, restaurants, and travelers’ accommodations because of its proximity to Healy and a section of rail line that offers spectacular views of Denali and the Nenana River.

## OVERALL MUNICIPAL LAND CHARACTERISTICS

- Bisected by the George Park Highway. Denali National Park on the south. Bordered by Nenana River and the railroad on the east. Private property and State-owned property to the north and west. Denali National Park to the south.
- West of George Parks Highway is steep with the elevation ranging from 1,700 at the highway to 3,000+ at the southwest portion of parcel. The parcel between the highway and Nenana River is relatively flat.
- Nenana River forms eastern boundary and traversed by Antler Creek and Bison Gulch
- “Gorgeous section of rail” that runs next to this property
- Gateway to the *Nenana Canyon Scenic Corridor*, which leads into Denali National Park

## LAND CLASSIFICATION RECOMMENDATIONS

*See: Map 1 for subarea locations. Map 2 for Easements in the Antler Creek municipal land, topographic maps, and aerial photographs are also provided below for additional information.*

Subarea	Area (approx.)	Land Classification (proposed)	Management Intent	Rationale & Other Notes
<b>1</b>	584 acres	Multiple Use -Public Facilities -Recreation	To develop for recreational purposes, make a plan for potential hiking trails	The subarea has steep slopes, which will make development difficult
<b>2</b>	253 acres	Land Bank	To study the subarea for a mix of commercial leases or recreational uses	<ul style="list-style-type: none"> <li>• Borough acquired the property with thoughts of developing.</li> <li>• Subarea has direct access to/from Parks Highway</li> <li>• Adjacent to the gateway into the <i>Nenana Canyon Scenic Corridor</i></li> <li>• Along a section of rail line described as “gorgeous”</li> </ul>

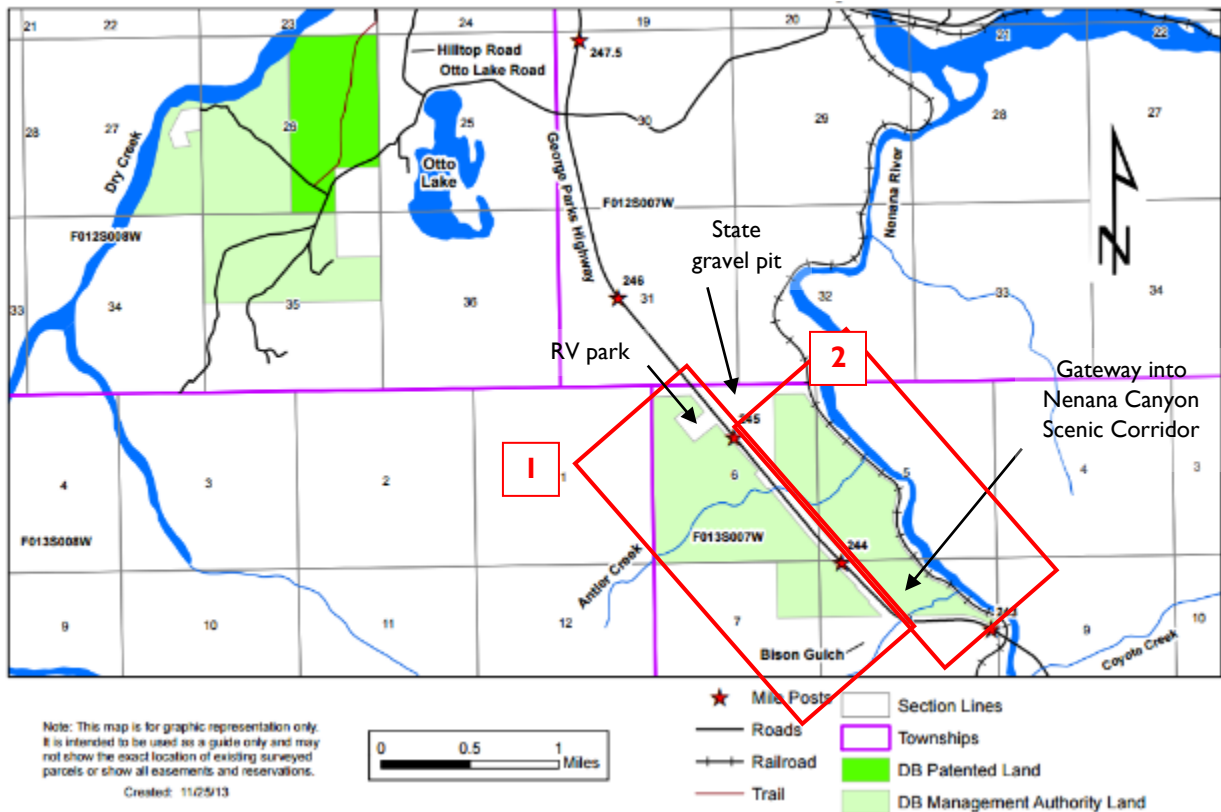
**Management Authority Lands  
Antler Creek**

ADL #	DESCRIPTION	ACRES
415636	F013S007W Section 05 That portion of Lot 4, S2NW4 and the S2 lying west of ARR (USS 9052) excluding the Parks Highway ROW.	153
415636	F013S007W Section 06: That portion of Lot 1 lying west of ARR (USS 9052), Lots 3, 4, and 7 lying west of the Parks Highway ROW excluding USS 5605, Lots 5, 6, 8, and 9, NW4SE4NW4, S2SE4NW4 excluding the Parks Highway ROW, SE4SE4 excluding the Parks Highway ROW and the SW4NE4 lying west of the Parks Highway ROW, E2SW4 and SE4 excluding the Parks Highway ROW.	544
415636	F013S007W Section 07 NE4NE4.	40
415636	F013S007W Section 08 That portion of the N2N2 lying west of ARR (USS 9052) excluding the Parks Highway ROW.	100

**POTENTIAL LAND ACTIONS:**

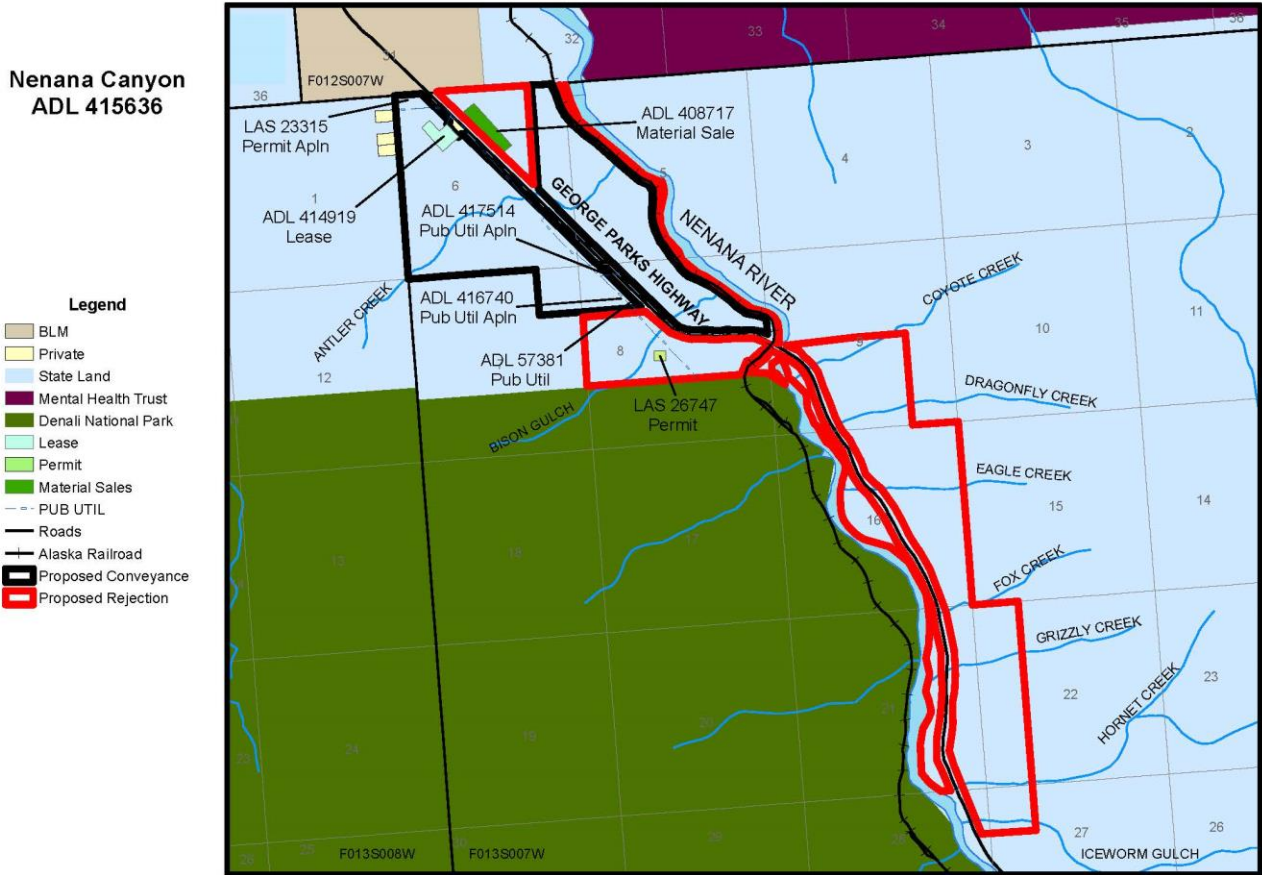
- Potential trail improvements in the Bison Gulch & Antler Creek Drainages
- Relocation of the DOT parking lot from the east side of highway to the west side for safety of people using the Mount Healy Trailhead
- 10 acre lease acquired from the state by the RV Park

**MAP I: ANTLER CREEK MUNICIPAL LAND SUBAREAS**



## MAP 2: EASEMENTS IN THE ANTLER CREEK MUNICIPAL LAND

*This map is provided to show the location of approved easements and to provide a general context of land ownership in the area only. This map was created prior to final approval of the land transfer, and therefore, does not accurately reflect the parcels ultimately conveyed to the borough. See Map 1 for the approved disposition of borough-owned land.*

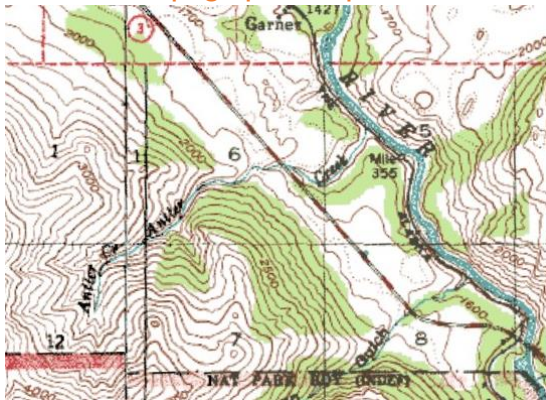


This map is for graphic representation only. It is intended to be used as a guide only and may not show the exact location of existing surveyed parcels or show all easements and reservations. Source documents remain the official record.

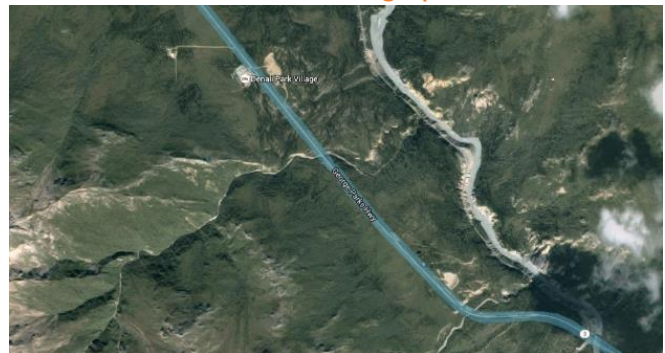
Final Finding and Decision 2009

## SUBAREA I & 2

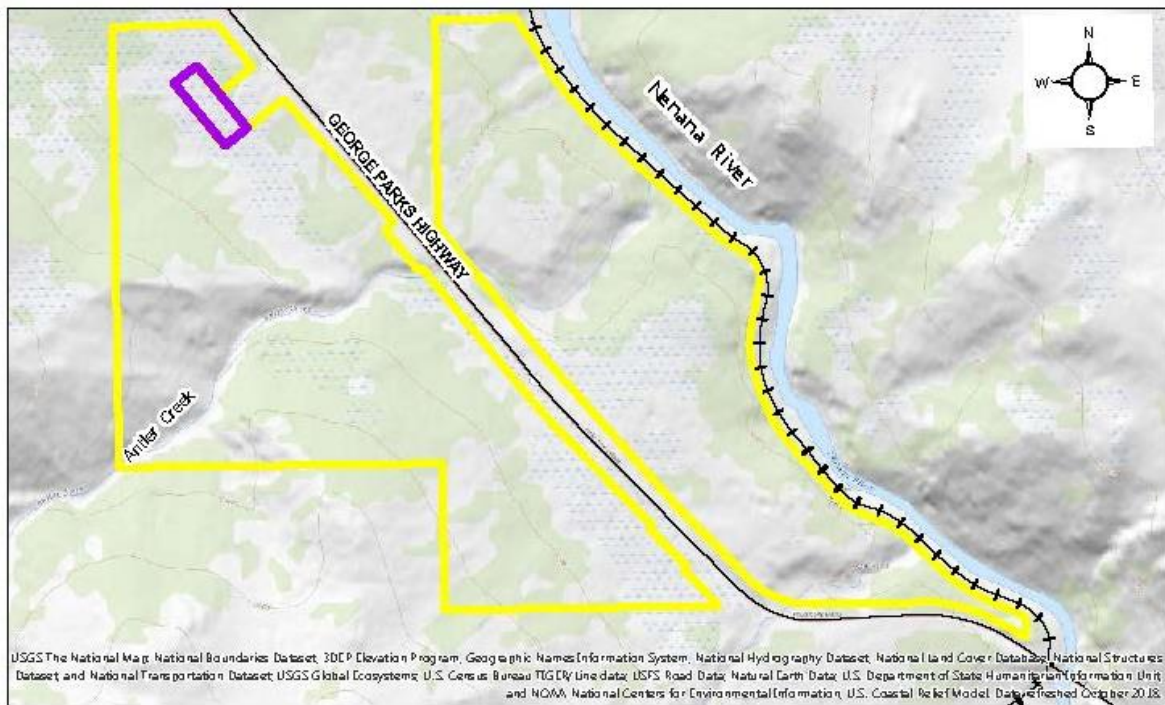
Topographic Map



Aerial Photograph



## TOPOGRAPHIC MAP



0 1,250 2,500 US Feet

- Roads
- + Railroad
- ▭ DB Management Authority Land
- ▭ Leased Area

Note: This map is for graphic representation only. It is intended to be used as a guide only and may not show the exact location of existing surveyed parcels or show all easements and reservations.

6/27/19

## AERIAL PHOTOGRAPHS



0 1,250 2,500 US Feet

- Roads
- + Railroad
- ▭ DB Management Authority Land
- ▭ Leased Area

Note: This map is for graphic representation only. It is intended to be used as a guide only and may not show the exact location of existing surveyed parcels or show all easements and reservations.

6/27/19

# MONTANA CREEK

## INTRODUCTION

Located east – northeast of George Parks Highway between mile markers 234 and 238; east and across the river from the Denali National Park entry and associated commercial and NPS facilities.

## OVERALL MUNICIPAL LAND CHARACTERISTICS

- Trailhead at mile 34 marker, trails goes to Montana Creek. This access and route are the most frequently used in the area. Some commercial hiking guiding going on at the trail, but apparently not much motorized use. There is also non-motorized hunting taking place.
- A hotel located in Section 34 from which the borough receives lease payments for an non-exclusive private access easement.
- Ranges from approximately 2,000 feet to over 4,300 feet in elevation. The parcel’s western third is gently sloping; however, slopes increase considerably in the eastern portion of the parcel.
- Stream valleys forested, primarily on south facing slopes; uplands shrub tundra
- Montana Creek bisects the parcel. Lynx Creek cuts through the northwest portion of the parcel.
- Borough owns the entire parcel with the exception of those portions within F013S007W, Sections 34 & 35, which are proposed for conveyance. State land surrounds the parcel.
- There are three easements located with this municipal land: 1) public right-of-way ADL213063; owned by the State of Alaska; and, 2 & 3) private rights-of-way ADL416400 & 415618.

## LAND CLASSIFICATION RECOMMENDATIONS

*See: Map 1 for municipal land location. Map 2 for Montana Creek municipal land Landownership & Easements, topographic map, and aerial photograph are also provided for additional information.*

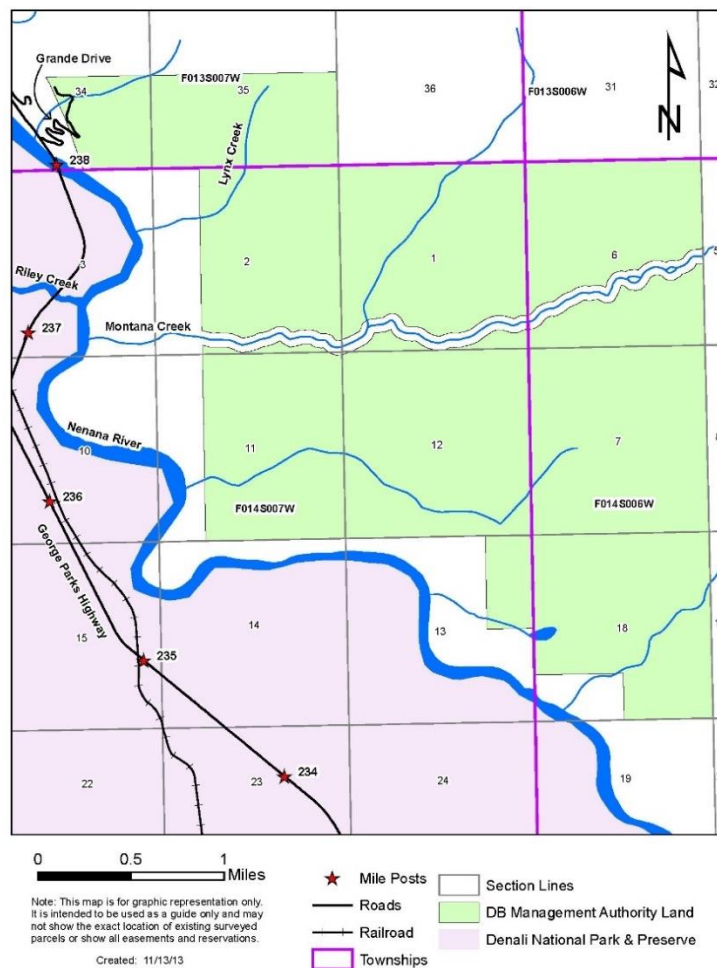
Subarea	Area (approx.)	Land Classification (proposed)	Management Intent	Rationale & Other Notes
-	4,482 acres	Land Bank	To retain as open space for recreation purposes.	Access to the site is difficult; historically been used for recreational uses

### Management Authority Lands Montana Creek

415804	F014S007W Section 01 All, excluding the bed of Montana Creek and a 100-foot wide setback upland of and along the ordinary high water mark of both banks of Montana Creek.	614
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415804	F014S007W Section 02 E2W2, E2 excluding the bed of Montana Creek and a 100-foot wide setback upland of and along the ordinary high water mark of both banks of Montana Creek.	460
415804	F014S007W Section 11 E2W2, E2 excluding the bed of Montana Creek and a 100-foot wide setback upland of and along the ordinary high water mark of both banks of Montana Creek.	480
415804	F014S007W Section 12 All excluding the bed of Montana Creek and a 100-foot wide setback upland of and along the ordinary high water mark of both banks of Montana Creek.	640
415804	F014S007W Section 13: E2NE4.	80
415804	F013S007W Section 34: S2 east of USS 5545.	140
415804	F013S007W Section 35: S2.	320
415802	F014S006W Section 6 All, excluding the bed of Montana Creek and a 100-foot wide setback upland of and along the ordinary high water mark of both banks Montana Creek.	580
415802	F014S006W Section 7 All.	608
415802	F014S006W Section 18 N2, SE4, N2SW4.	560

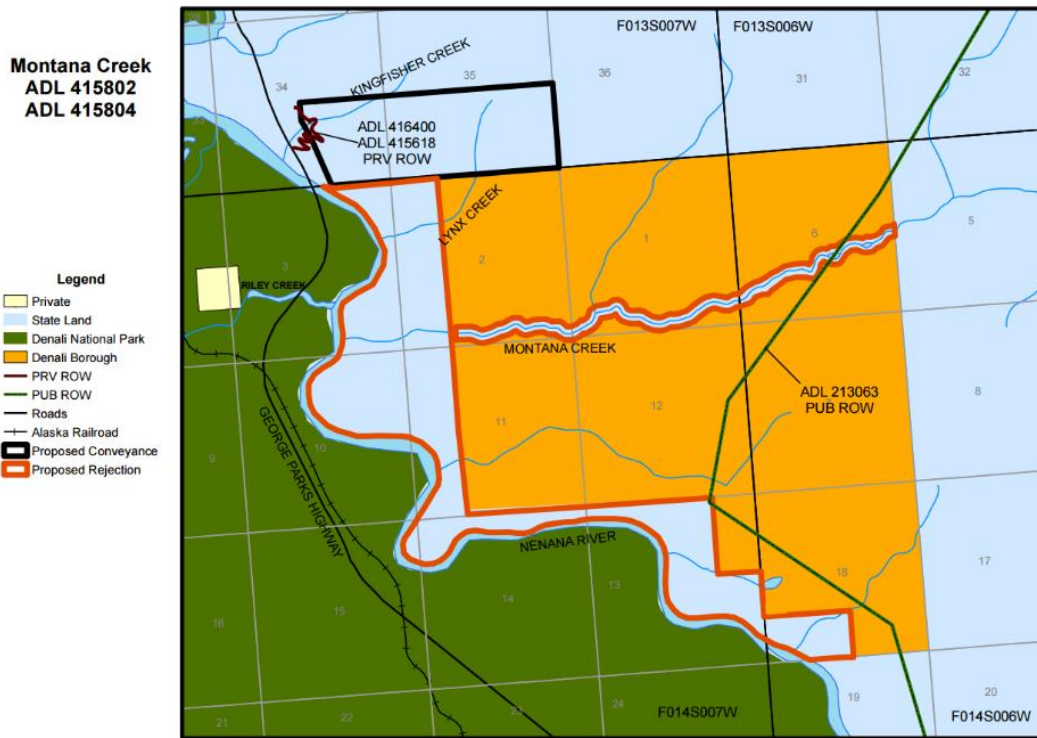
MAP I: MONTANA CREEK MUNICIPAL LAND



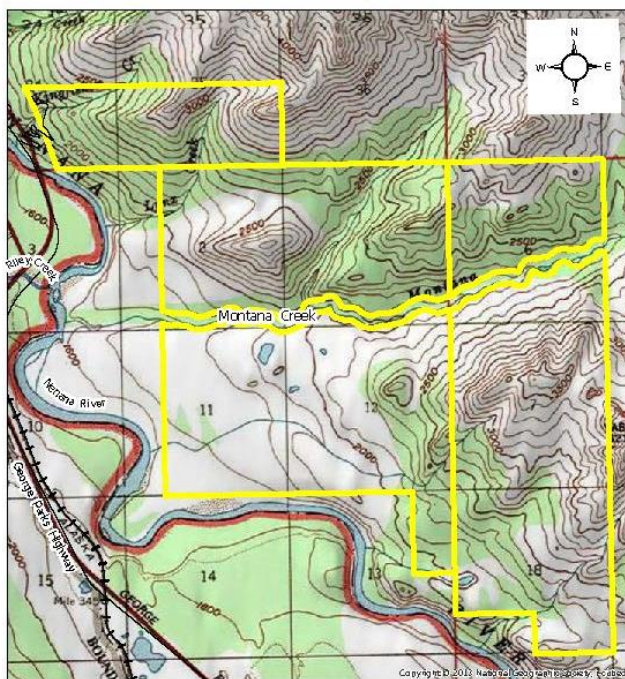


## MAP 2: EASEMENTS IN THE MONTANA CREEK'S MUNICIPAL LAND

*This map is provided to show the location of approved easements and to provide a general context of land ownership in the area only. This map was created prior to final approval of the land transfer, and therefore, does not accurately reflect the parcels ultimately conveyed to the borough. See Map 1 for the approved disposition of borough-owned land.*



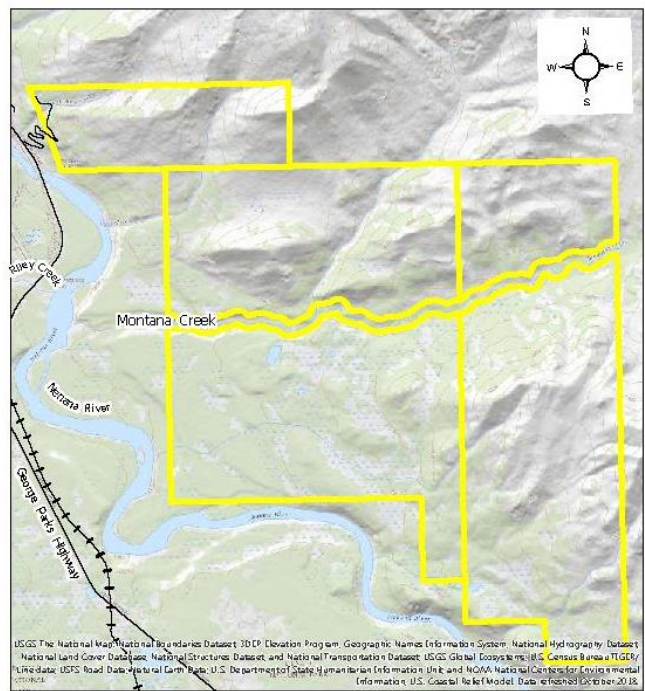
## TOPOGRAPHIC MAP



- Roads
- Railroad
- DB Management Authority Land

Note: This map is for graphic representation only. It is intended to be used as a guide only and may not show the exact location of existing surveyed parcels or show all easements and reservations.

6/27/19

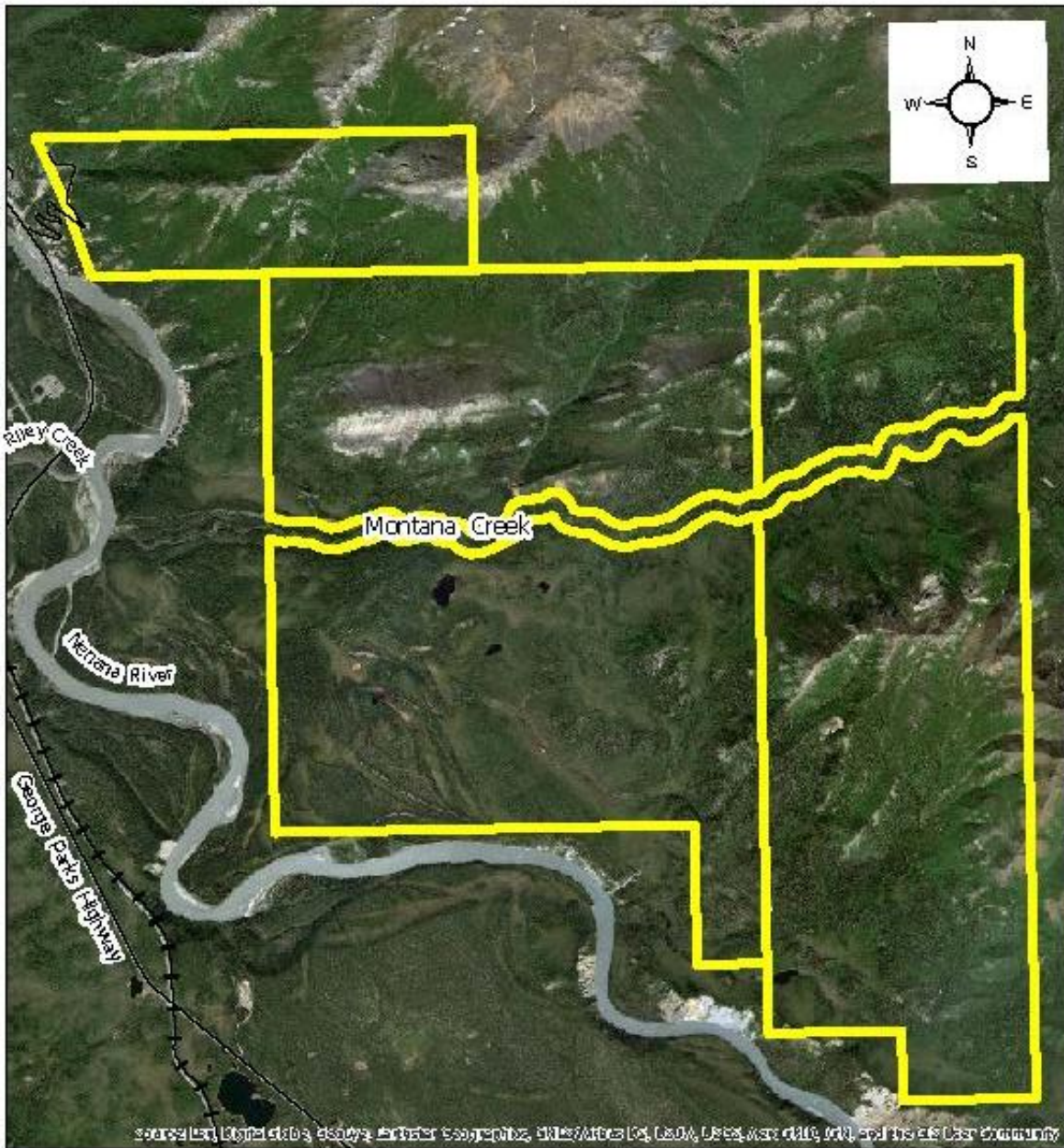


- Roads
- Railroad
- DB Management Authority Land

Note: This map is for graphic representation only. It is intended to be used as a guide only and may not show the exact location of existing surveyed parcels or show all easements and reservations.

6/27/19

# AERIAL PHOTOGRAPHS



- Roads
- + Railroad
- ▭ DB Management Authority Land

Note: This map is for graphic representation only. It is intended to be used as a guide only and may not show the exact location of existing surveyed parcels or show all easements and reservations.

6/27/19

# YANERT

## INTRODUCTION

The entire Yanert municipal land is east of the intersection of the George Parks Highway and the Nenana River, northeast of the Denali Airport and is approximately 2,775.98 acres.

## OVERALL MUNICIPAL LAND CHARACTERISTICS

- State-owned land to the north and east. Native land to the south. State- and borough-owned land to the west
- A large hill known as Karma Ridge, with an elevation ranging from 1,900 at the north to 2,000 at the south
- Revine Creek and another unnamed tributary to the Yanert Fork traverses the eastern portion of the parcel. There are numerous ponds/lakes scattered throughout the parcel

## LAND CLASSIFICATION RECOMMENDATIONS

*See: Map 1 for subarea locations. Map 2 for Easements in the Yanert municipal land, topographic map, and aerial photograph are also provided below for additional information.*

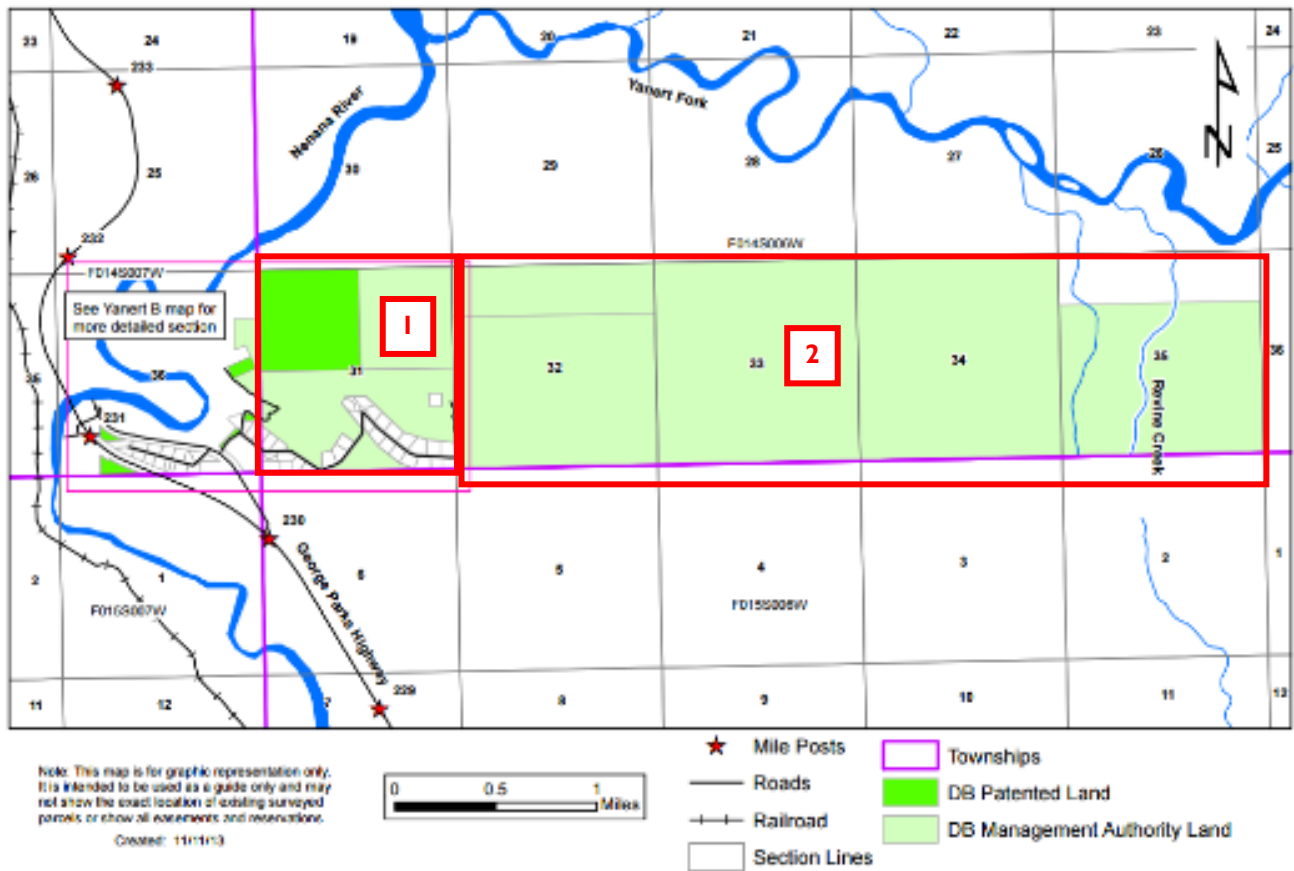
Subarea	Area (approx.)	Land Classification (proposed)	Management Intent	Rationale & Other Notes
1	379.98 acres	Multiple Use -Residential -Amenity Value -Recreation	To prepare a more in depth management plan that identifies specific portions of the subarea for sale for residential development	<ul style="list-style-type: none"> <li>• Near McKinley Village and would locate housing where population is growing</li> <li>• The subarea contains an already platted subdivision with a built roadway that could be extended to accommodate additional residential lots.</li> <li>• Northwest quadrant of Section 31 is the most developable. Access is achievable despite there being steep slopes on the western portion of Section 31.</li> </ul>
2	2,396 acres	Land Bank	To retain the land as-is until market demand more clearly identifies its highest and best use	Although adjacent to Subarea 1 where there is a lot of potential for growth, this subarea may be too far removed and have drainage issues, along with steep slopes that would make development difficult.

Patent #	Date	Plat	Acres	Description	ADL#	Notes
21745	11/12/2009	n/a	159.98	USS 12132 NE4 Section 31, Township 14S, Range 6W FM.	415803	

**Management Authority Lands  
Yanert**

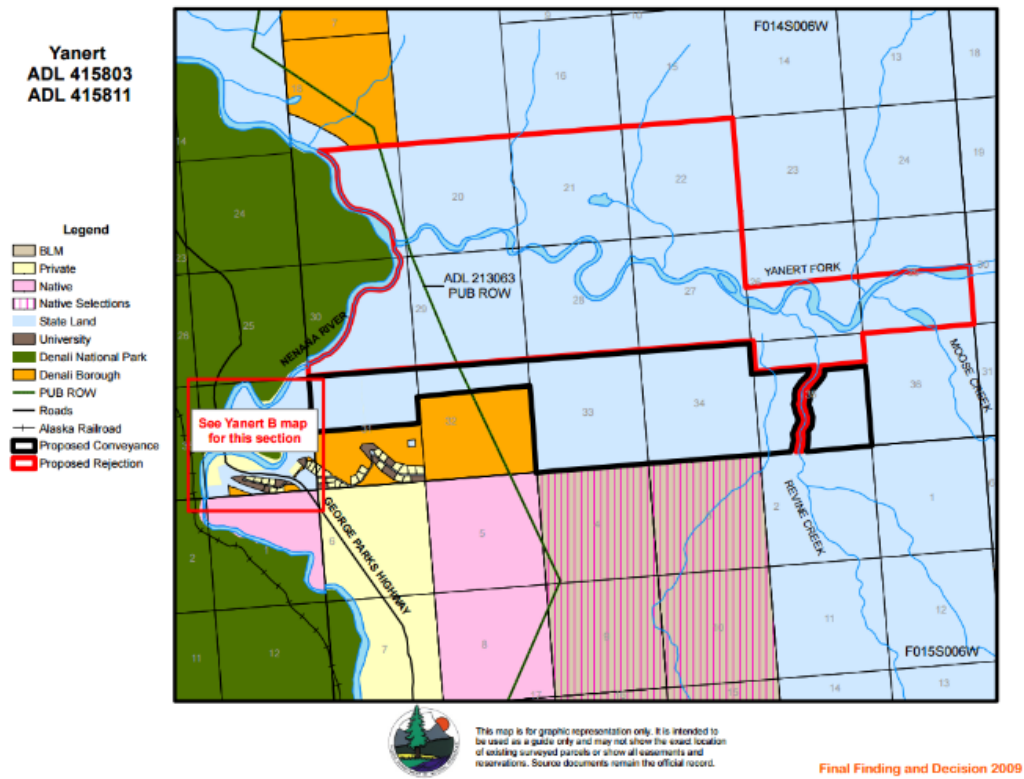
415803	F014S006W Section 31 NE4, TRACT F OF ASLS 83-194, AND REMAINING S2 EXCLUDING USS 5565, ADL 401869 AND ASLS 83-194.	220
415803	F014S006W Section 32 N2N2, S2N2 AND S2.	640
415803	F014S006W Section 33: All.	640
415803	F014S006W Section 34: All.	640
415803	F014S006W Section 35 S2N2, S2 excluding the bed of Revine Creek.	476

**MAP I: YANERT MUNICIPAL LAND SUBAREAS**

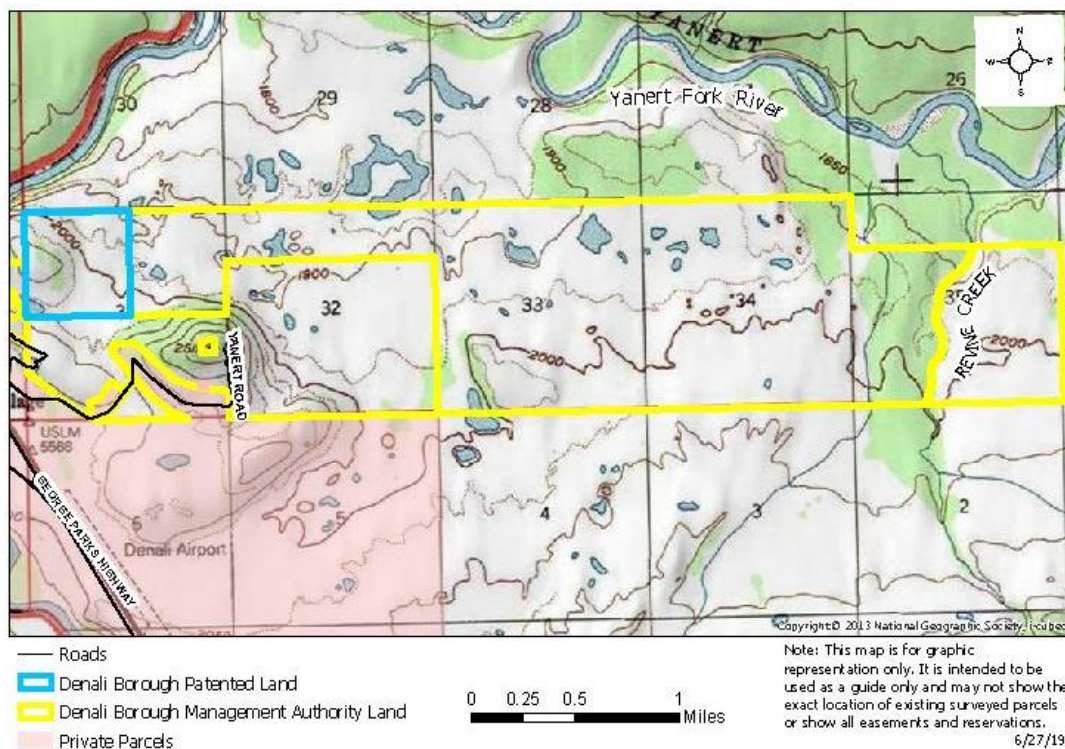


## MAP 2: EASEMENTS IN THE YANERT MUNICIPAL LAND

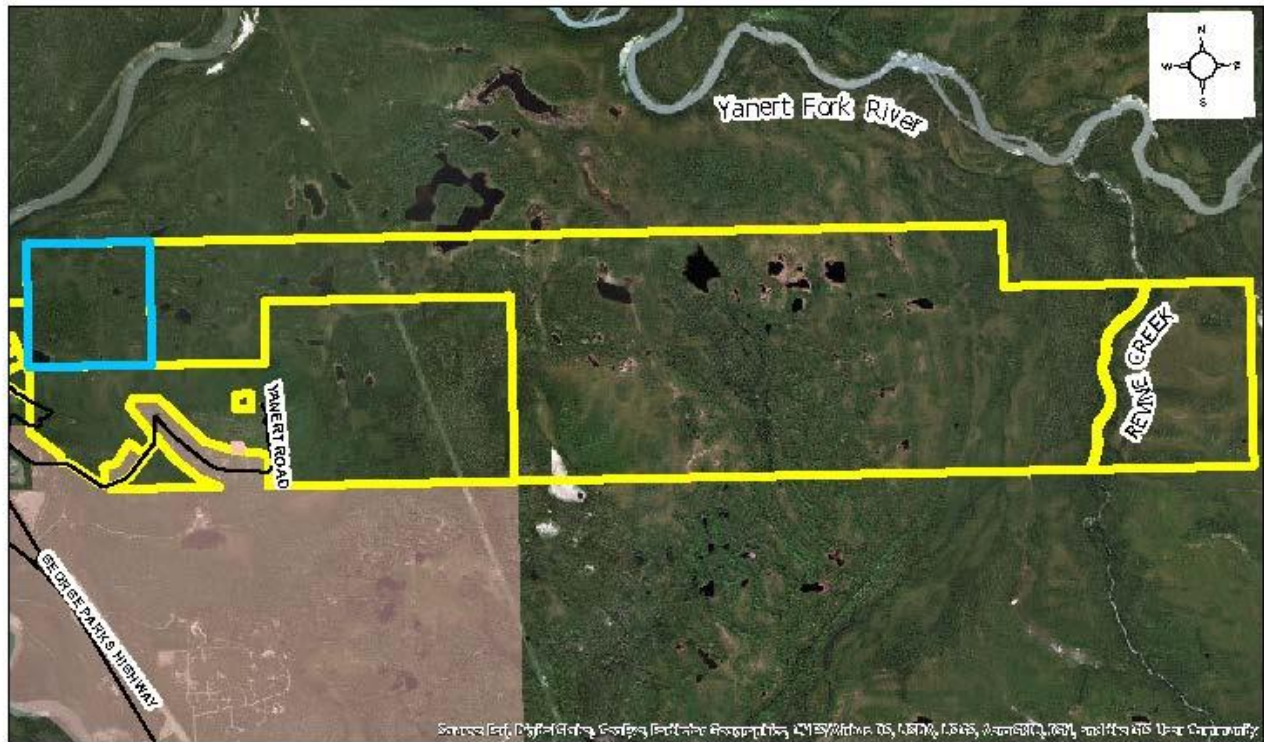
*This map is provided to show the location of approved easements and to provide a general context of land ownership in the area only. This map was created prior to final approval of the land transfer, and therefore, does not show the parcels that have been conveyed to the borough. See Map 1 for the approved disposition of borough-owned land.*



## TOPOGRAPHIC MAP

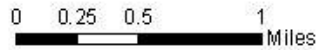


### Yanert - Municipal Entitlement



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

- Roads
- Denali Borough Patented Land
- Denali Borough Management Authority Land
- Private Parcels



Note: This map is for graphic representation only. It is intended to be used as a guide only and may not show the exact location of existing surveyed parcels or show all easements and reservations.  
6/27/19

# YANERT B

## INTRODUCTION

The Yanert B municipal land is south of Montana Creek, directly east of Nenana River at mile marker 231 and approximately 202.751 acres.

## OVERALL MUNICIPAL LAND CHARACTERISTICS

- Good opportunities for more recreation, commercial and residential uses. One of the few “mixed use” areas.
- Surrounded by a mix of state, university, tribal, private and federal lands. It has one of the more intricate mixes of land use out of all Denali Borough parcel areas.
- Parks Highway moves north/south through area. Highway right-of-way is in southwest corner, where it splits a portion of Denali Borough ownership. Access into the parcel is provided by a mix of public and private rights-of-way, including Old Denali Highway, Blueberry Hill Drive and Yanert Road.
- Area mostly flat, ranging from 1,900 - at NE to approx. 2,200. Hill at east rises to 2,500
- Nenana River runs north/south on western portion of area
- Level land, good access/proximity to Parks Highway. Eastern portion of property less accessible

## LAND CLASSIFICATION RECOMMENDATIONS

*See Map 1 for subarea locations. Map 2: Easements in the Yanert B municipal land, topographic map, and aerial photograph are also provided below for additional information.*

Subarea	Area (approx.)	Land Classification (proposed)	Management Intent	Rationale & Other Notes
1	31 acres	Residential	To prepare a more in depth management plan that identifies specific portions of the subarea for sale for residential development	<ul style="list-style-type: none"> <li>• Public Easement ADL 400671</li> <li>• Public Utility Easement ADL 74265</li> <li>• Private Property within this parcel</li> </ul>
2	Tract B 2,359 acres	Land Bank	To maintain as-is	<ul style="list-style-type: none"> <li>• The site contains steep slopes that will make development difficult.</li> <li>• DOT has identified this parcel as a potential area for the mile 31 enhancement project</li> </ul>
3	Tract A 5 acres	Multiple Use - Public Facility - Commercial/ Industry	To retain for future development as McKinley Village continues to grow	Due to the commercial changes in the area this growth brings, it is important

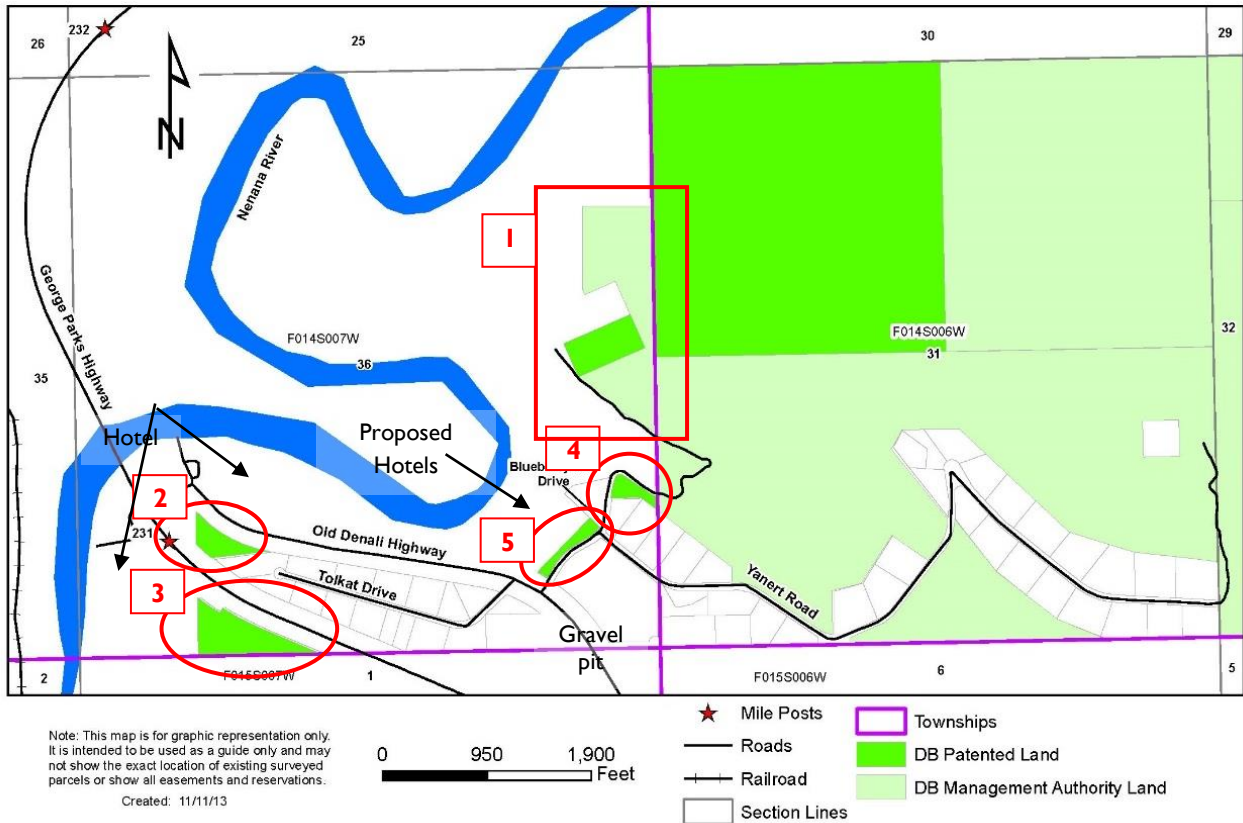
Subarea	Area (approx.)	Land Classification (proposed)	Management Intent	Rationale & Other Notes
				to keep options open on this parcel.
4	Tract E 1.353 acres	Residential	To prepare a more in depth management plan that identifies specific portions of the subarea for sale for residential development	<ul style="list-style-type: none"> <li>Near McKinley Village and would locate housing where population is growing</li> <li>Subarea is adjacent to a built road and already platted subdivision.</li> </ul>
5	Tract C 1.338 acres	Multiple Use -Public Facility -Commerical/ Industrial	To retain until the effect of the proposed hotel locating directly to the northwest is known	Subarea has the potential to be sold or leased to hotel if/when it is built.

Patent #	Date	Plat	Acres	Description	ADL#	Notes
19654	2/14/2005	85-11	9.412	Tracts A, C & E ASLS 83-194, Village View Subdivision	41580 3	
21743	11/12/2009	85-11	2.359	Tract B ASLS 83-194, Village View Subdivision	41580 3	
21744	11/12/2009	n/a	5	Lot 4 USSS 5565	41580 3	

Management Authority Lands Yanert B		
ADL #	DESCRIPTION	ACRES
415811	F014S007W Section 36 THAT PORTION OF THE E2NE4 AND NE4SE4 WHICH IS CLASSIFIED SETTLEMENT EXCLUDING USS 5565, ASLS 90-319 AND ASLS 83-194.	26

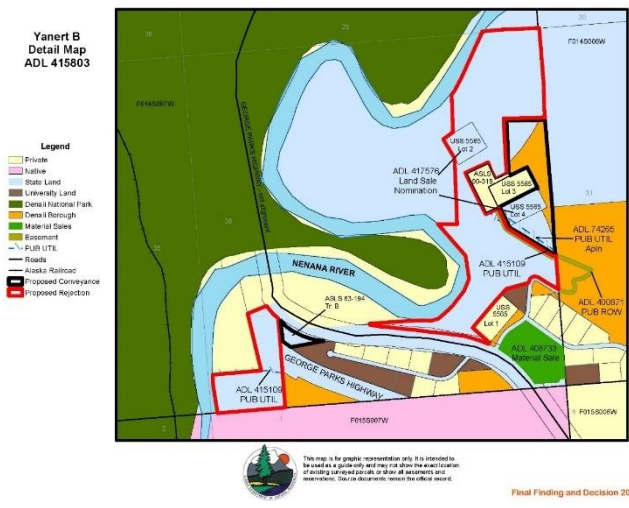


# MAP 1: YANERT B MUNICIPAL LAND SUBAREAS



# MAP 2: EASEMENTS IN THE YANERT B MUNICIPAL LAND

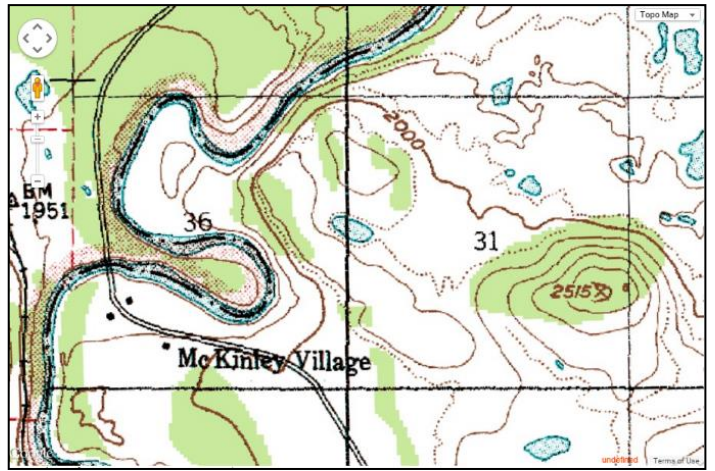
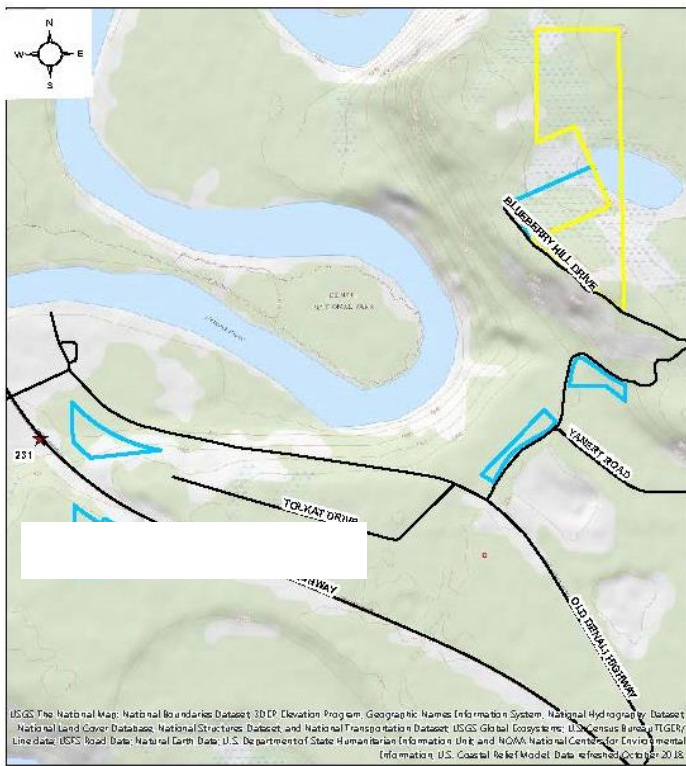
*This map is provided to show the location of approved easements and to provide a general context of land ownership in the area only. This map was created prior to final approval of the land transfer, and therefore, does not show the parcels has having been conveyed to the borough. See Map 1 for the approved disposition of borough-owned land.*



The State of Alaska has the following easements in this MUNICIPAL LAND:

- George Parks Highway Corridor
- Public utility ADL 415109
- Public utility ADL 74265
- Material Sale Site: ADL 408733
- Right of Way ADL 400671

## TOPOGRAPHIC MAP



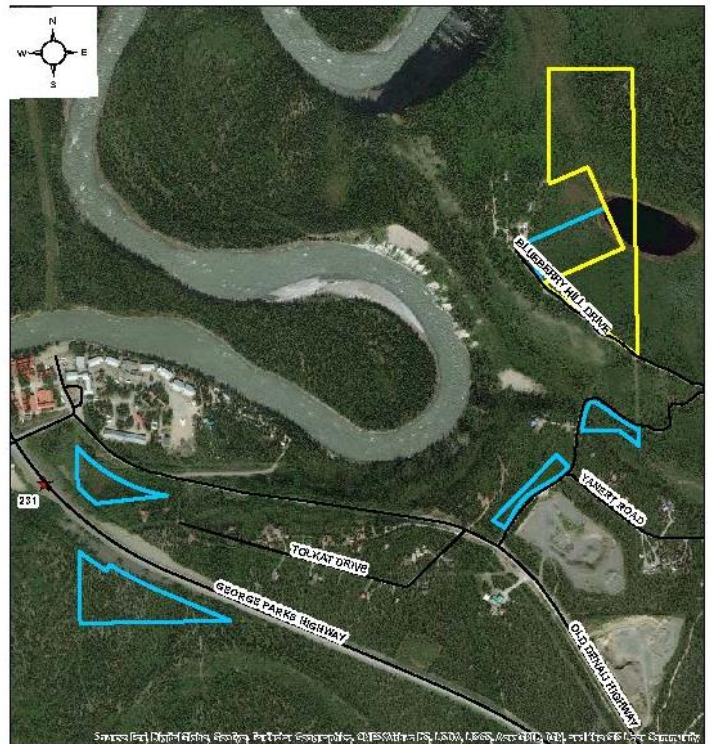
★ Mile Posts  
 Roads  
 Denali Borough Patented Land  
 Denali Borough Management Authority Land

0    375    750    1,500  
 US Feet

Note: This map is for graphic representation only. It is intended to be used as a guide only and may not show the exact location of existing surveyed parcels or show all easements and reservations.

6/27/19

## AERIAL MAP



★ Mile Posts  
 Roads  
 Denali Borough Patented Land  
 Denali Borough Management Authority Land

0    375    750    1,500  
 US Feet

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6/27/19

# NENANA RIVER 1

## INTRODUCTION

Approximately 9 miles northeast of the George Parks Highway & Denali Highway intersection. A proposed hydroelectric facility located upstream from this property.

## OVERALL MUNICIPAL LAND CHARACTERISTICS

- Parcel is relatively steep with the elevations ranging from 2,300 to 2,500 feet
- Bruskana Creek is adjacent to the parcel to the south
- Covered with forest and shrubs
- Parks Highway is the nearest road and is approximately 6 miles west of the parcel
- A power site was withdrawn from the Nenana River approximately one mile west of this site; however, a proposed hydroelectricity facility is planned nearby
- Bordered by State land on the north, west, and south and Native land is to the east

## LAND CLASSIFICATION RECOMMENDATIONS

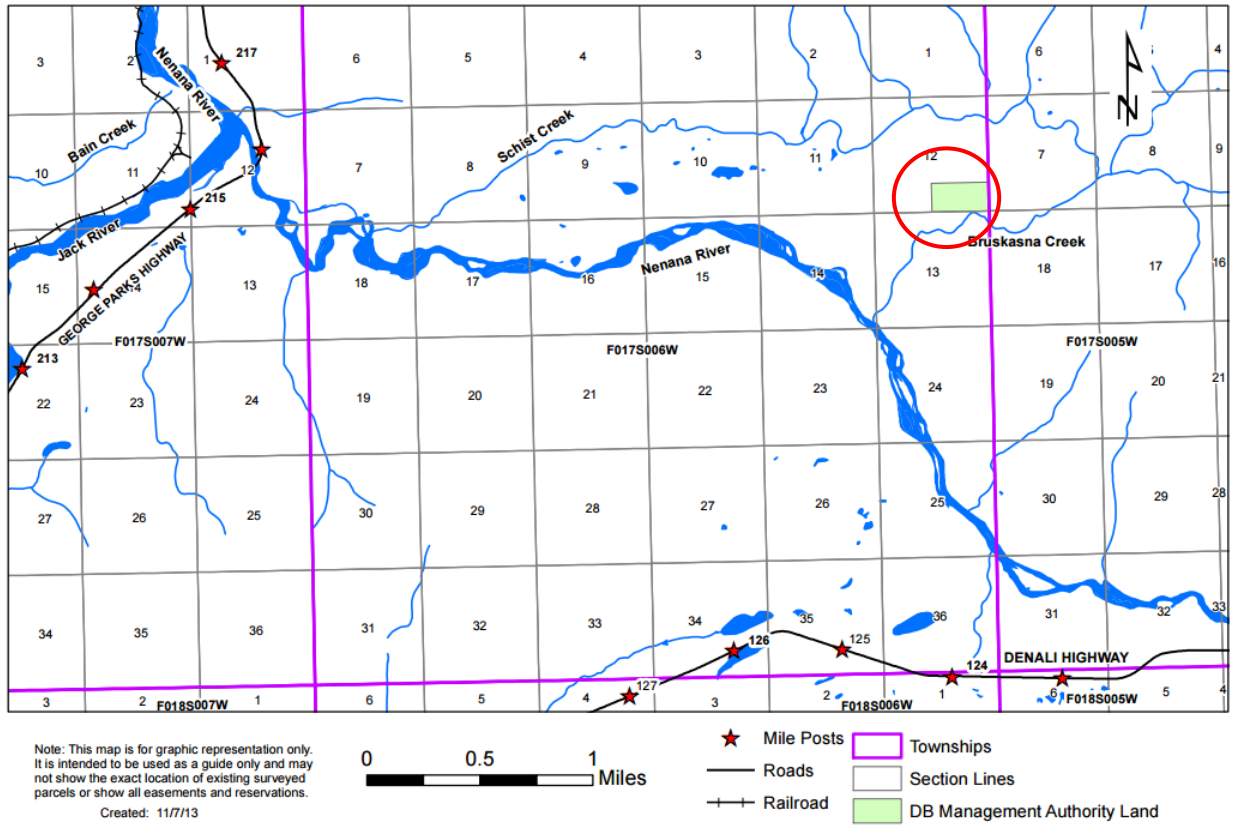
*See Map 1 for municipal land location. Map 2: Nenana River I municipal land ownership & Easements, topographic map, and aerial photograph are also provided below for additional information.*

Subarea	Area (approx.)	Land Classification(proposed)	Management Intent	Rationale & Other Notes
-	80 acres	Land Bank	To retain the land as-is until market demand more clearly identifies its highest and best use	It is unknown at this time what, if any, affect the proposed hydroelectric plant will have on this property

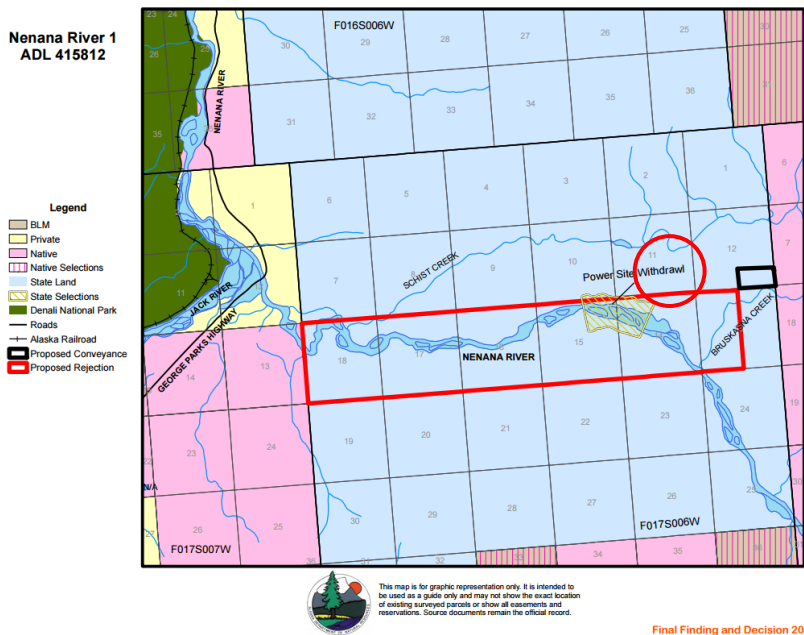
### Management Authority Lands Nenana River 1

ADL #	DESCRIPTION	ACRES
415812	F017S006W Section 12 S2SE4.	80

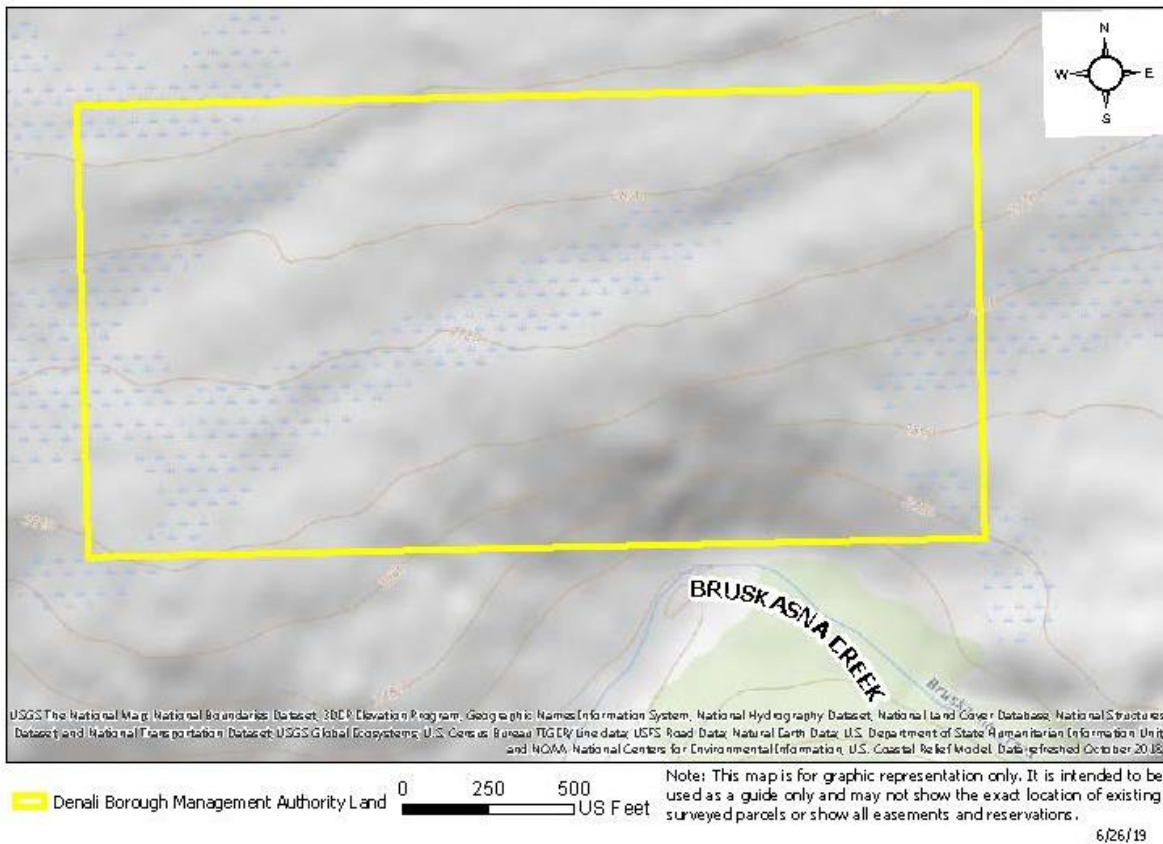
# MAP I: NENANA RIVER I MUNICIPAL LAND



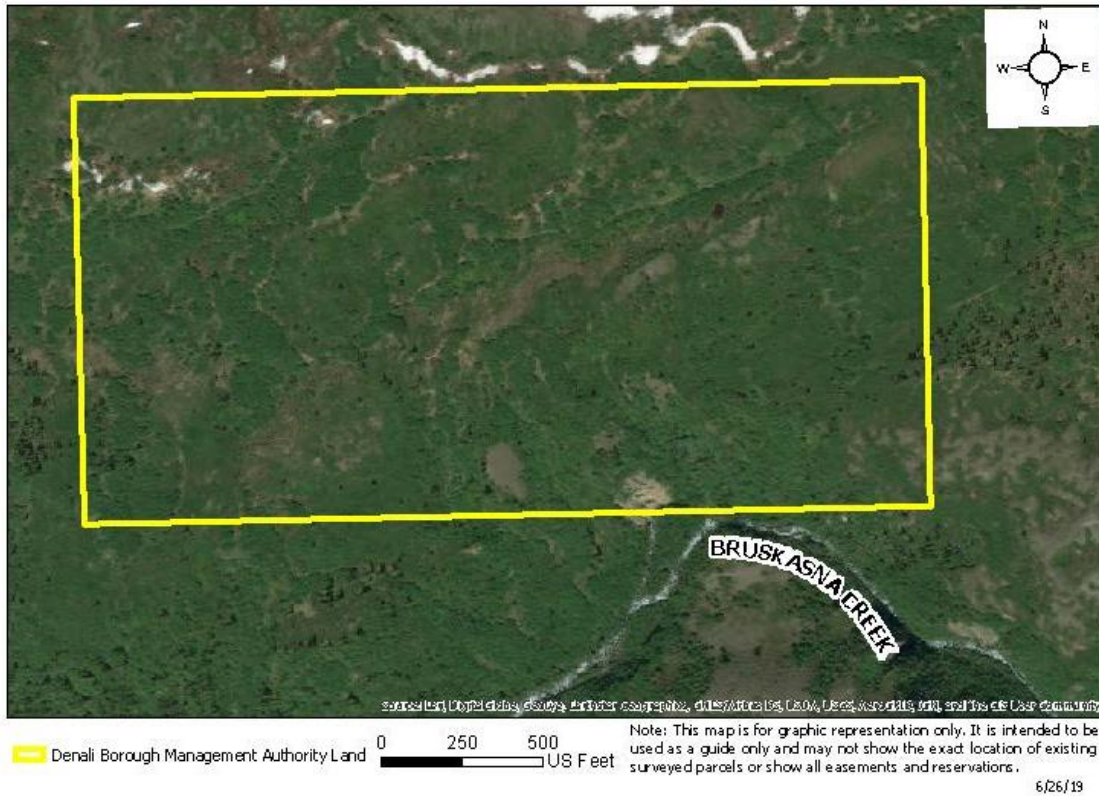
# MAP 2: EASEMENTS IN THE NENANA RIVER I MUNICIPAL LAND



## TOPOGRAPHIC MAP



## AERIAL PHOTOGRAPH



# NENANA RIVER 2

## INTRODUCTION

Located on both sides of the Denali Highway between miles 112 & 117. An unnamed, unimproved road is the northern boundary of the parcel.

## OVERALL MUNICIPAL LAND CHARACTERISTICS

Nenana Rivers runs parallel to the parcel to the north. Lily Creek is adjacent to the northern boundary of the parcel at several points. The parcel is traversed several times by tributaries to the Nenana River and Lily Creek.

## LAND CLASSIFICATION RECOMMENDATIONS

Classify most of the parcels Land Bank and wait to do further research on what the best purpose for the land.

The Department of Transportation and Public Facilities identified an 80 parcel that would be good for a material site. This parcel has a DOT material site number, MS 52-2-097-2, but DNR did not recognize it as a material site before conveying it the borough.

Subarea	Area (approx.)	Land Classification (proposed)	Management Intent	Rationale & Other Notes
<b>1</b>	3,700 acres	Land Bank	To retain the land as-is until market demand more clearly identifies its highest and best use	
<b>2</b>	80 acres	Material site	Consider leasing it to DOT	Maintenance of the Denali Highway

## POTENTIAL LAND ACTIONS:

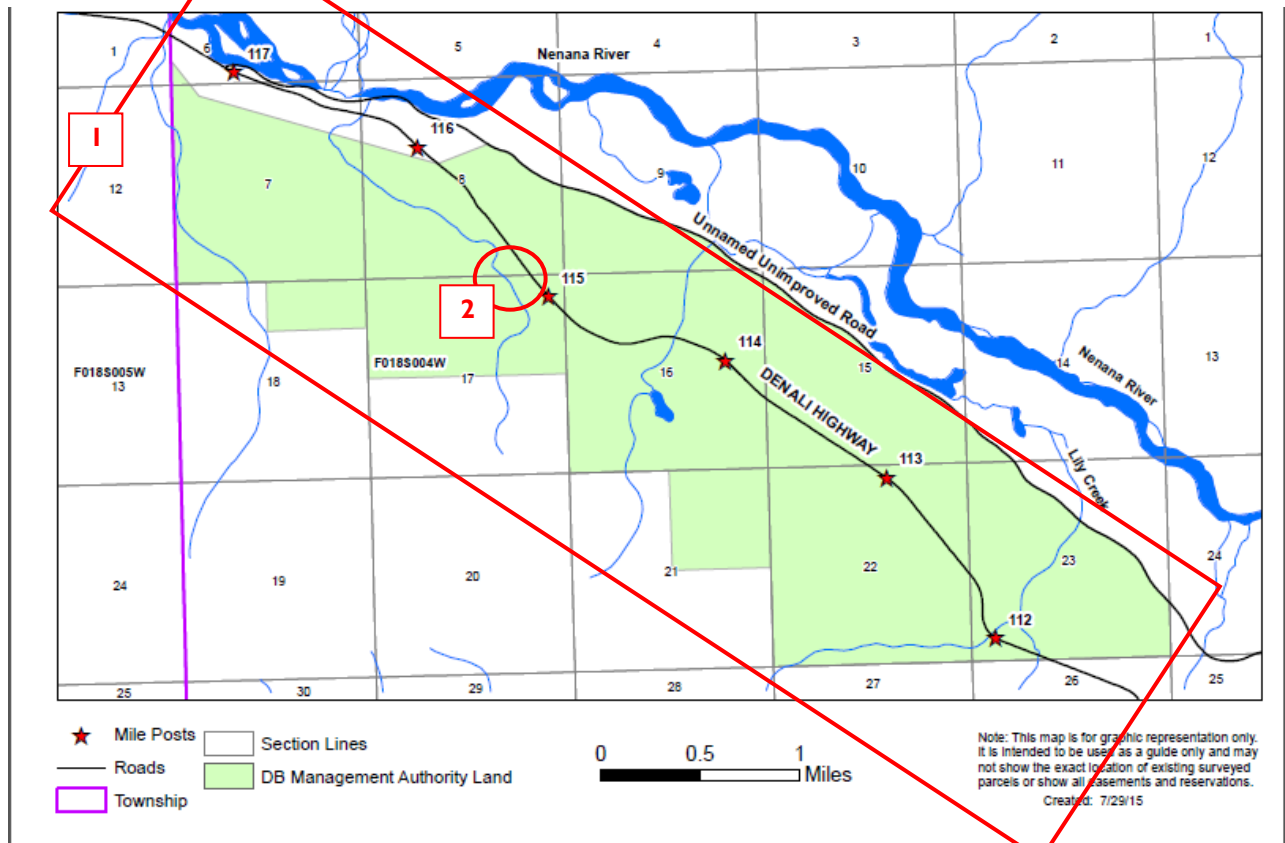
DOT has made a long-term lease request for this potential material site for maintenance of the Denali Highway.

### Management Authority Lands Nenana River 2

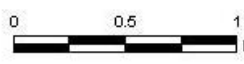
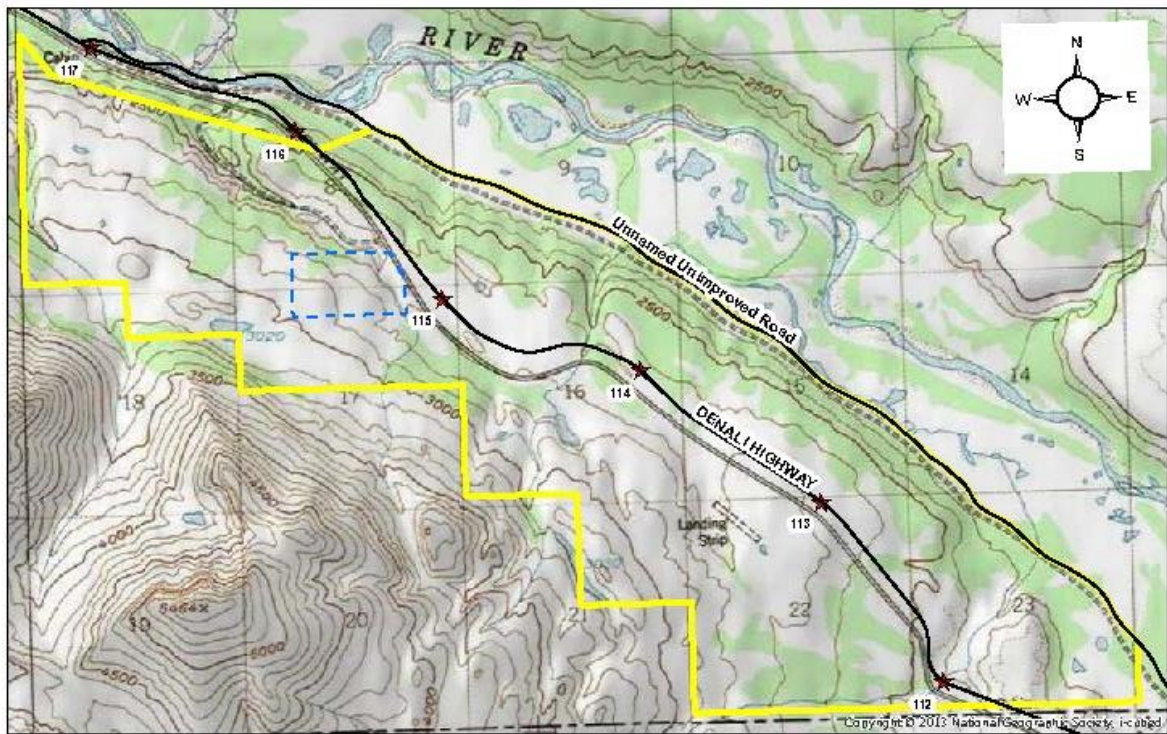
ADL #	DESCRIPTION	ACRES
415813	F018S004W Section 06: That portion in the SW1/4 below the YTAP management unit P-62 boundary	10
415813	F018S004W Section 07: That portion below the YTAP management unit P-62 boundary	500

415813	F018S004W Section 08: That portion below the YTAP management unit P-62 boundary and that portion below the northern boundary of the unnamed unimproved 60-foot wide road easement	380
415813	F018S004W Section 09: That portion in the SW1/4 below the northern boundary of the unnamed unimproved 60-foot wide road easement	110
415813	F018S004W Section 14: That portion in the SW1/4 below the northern boundary of the unnamed unimproved 60-foot wide road easement	15
415813	F018S004W Section 15: That portion below the northern boundary of the unnamed unimproved 60-foot wide road easement	360
415813	F018S004W Section 16: All	640
415813	F018S004W Section 17: N1/2	320
415813	F018S004W Section 18: N1/2 NE1/4	80
415813	F018S004W Section 21: NE1/4	160
415813	F018S004W Section 22: All	640
415813	F018S004W Section 23: That portion below the northern boundary of the unnamed unimproved 60-foot wide road easement	470

MAP: NENANA RIVER 2 MUNICIPAL LAND



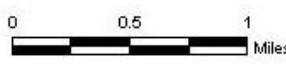
## TOPOGRAPHIC MAP



- Roads
- ★ Mile Posts
- ▭ Denali Borough Management Authority Land
- ▭ DOT Potential Material Site - MS 52-2-097-2

Note: This map is for graphic representation only. It is intended to be used as a guide only and may not show the exact location of existing surveyed parcels or show all easements and reservations.

## AERIAL MAP



- Roads
- ★ Mile Posts
- ▭ Denali Borough Management Authority Land
- ▭ DOT Potential Material Site - MS 52-2-097-2

Note: This map is for graphic representation only. It is intended to be used as a guide only and may not show the exact location of existing surveyed parcels or show all easements and reservations.



## 5. SUMMARY

This management plan identifies all the municipal land the borough has acquired since incorporation in 1990 and is a broad overview of the management intent in the 24 identified areas. A more in-depth planning process such as a development plan will need to be done to figure out how a specific area will be divided into the classifications which were stated in the management plan. In the next more in-depth planning process areas identified as residential could go through the process of developing a subdivision by identifying lot size, number of lots to be created, road right-of-way, utility easements, and green spaces.

Further planning efforts identified while writing the management plan were as follows:

- McKinley Village and Healy are the most requested areas in the borough for residential properties. Find areas to open up for more residential properties.
- Material Sites in various borough properties to help residents with road construction and maintenance.
- Locate a parcel for a shooting range in the Healy area.
- Work with the state to use state and borough land for a potential regional airport

Some land actions awaiting having a management plan were the three (3) lease requests we have and the potential sale of the land where there is an encroachment. Once the management plan is adopted then the public process for addressing these requests can begin.

## 6. ACKNOWLEDGEMENTS

Denali Borough Recommendations for an Improved Land Management System Report by  
AgNew:: Beck Consulting, Inc. on November 16, 2015

Borough Staff:

Marsha Lambert  
Trena Haugen  
Mayor Clay Walker  
Connie MacMaster

Planning Commission