

January 12, 2017

Electronically Filed: FERC eFiling

Honorable Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

**Updated Preliminary Permit Application for Chugach Electric Association, Inc. –
Snow River Project, P-14810**

Dear Secretary Bose:

On December 23, 2016, Chugach Electric Association Inc. (Chugach) filed a preliminary permit application for the Snow River Hydroelectric Project No. 14810-000. On January 4, 2017, the Commission found the application to be deficient in the following details.

DEFICIENCIES

1. Section 4.81(b)(1) of the Commission's regulations requires that all applications for preliminary permits include the general configuration, physical composition, and length of the proposed dams. While the general configuration and physical composition was provided for one of the proposed dams, this information was not provided for the accompanying saddle dams. Please revise your application to include this information.
2. Section 4.81(b)(1) of the Commission's regulations requires that all applications for preliminary permits include a description of the tailrace. While your application states that water will be discharged directly to the Snow River, it does not describe the mechanism by which this will occur. Please revise your application to include this information.

The Revised Preliminary Permit Application is attached with underlined revisions addressing the deficiencies.

If there are any additional questions, please contact Michael Brodie at 907-762-4835 or mike_brodie@chugachelectric.com.

Sincerely:



Paul Risse
Senior Vice President Production and Engineering
5601 Electron Drive
Anchorage, AK 99518
(907) 563-7494

cc:

Regional Director **(Certified Mail: 7008 0150 0000 4975 8059)**
Portland Regional Office
Federal Energy Regulatory Commission
805 SW Broadway, Fox Tower
Suite 550
Portland, OR 97205

Alaska State Director **(Certified Mail: 7008 0150 0000 4975 8066)**
Bureau of Land Management
Division of Lands and Renewable Resources (AK932)
Attn: FERC Withdrawal Recordation
222 West 7th Avenue, Number 13
Anchorage, AK 98513-759

BEFORE THE FEDERAL ENERGY REGULATORY COMMISSION

APPLICATION FOR PRELIMINARY PERMIT

REVISED

SNOW RIVER PROJECT

PROJECT NO. P-14810-000

CHUGACH ELECTRIC ASSOCIATION, INC.

5601 ELECTRON DRIVE
ANCHORAGE, AK 99518

(907) 563-7494

DECEMBER 23, 2016

REVISED JANUARY 12, 2017

VERIFICATION STATEMENT

This application for preliminary permit is executed in

State of: Alaska

Borough of: Kenai Peninsula

By: Paul Risse
Chugach Electric Association, Inc.
5601 Electron Drive
Anchorage, AK 99518

Being duly sworn, deposes and says that the contents of this application are true to the best of his knowledge or belief. The undersigned applicant has signed the application this

23 day of Dec 2016.

Chugach Electric Association, Inc.
5601 Electron Drive
Anchorage, AK 99518

Applicant
By:

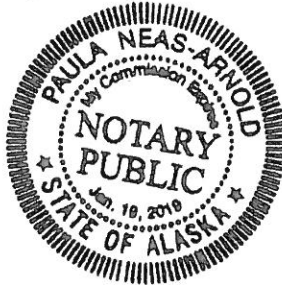
Paul Risse

Paul Risse
Senior Vice President Production and Engineering
Chugach Electric Association, Inc.

Subscribed and sworn before me, a Notary Public of the State of Alaska, this

23rd

day of Dec 2016.



/SEAL/

Paula Neas Arnold

(Notary Public in and of Alaska)

My Commission expires:

Jan 19, 2019

BEFORE THE FEDERAL ENERGY REGULATORY COMMISSION

Application for Preliminary Permit

Initial Statement

(1) Chugach Electric Association, Inc. (Chugach) applies to the Federal Energy Regulatory Commission (Commission) for a preliminary permit for the proposed Snow River Project (Project), as described in the attached exhibits. This application is made in order that Chugach may secure and maintain priority of application for a license for the Project under Part I of the Federal Power Act while obtaining the data and performing the acts required to determine the feasibility of the Project and to support an application for a license.

(2) The location of the proposed Project is:

State or territory: Alaska

County: Kenai Peninsula Borough

Township or nearby town: The Town of Moose Pass, Alaska is located approximately 18 miles to the north, and the City of Seward, Alaska is located approximately 15 miles to the south.

Stream or other body of water: Snow River

(3) The exact name, business address, and telephone number of the applicant are:

Chugach Electric Association, Inc.
5601 Electron Drive
Anchorage, AK 99518
(907) 563-7494

The exact name and business address of each person authorized to act as agent for the applicant in this application are:

Paul Risse
Senior Vice President Production and Eng
5601 Electron Drive
Anchorage, AK 99518
(907) 563-7494

Michael Brodie
Manager Environmental Engineering
5601 Electron Drive
Anchorage, AK 99518
(907) 563-7494

(4) Chugach is a domestic corporation and is not claiming preference under section 7(a) of the Federal Power Act.

(5) The proposed term of the requested permit is 36 months.

(6) There is no existing dam or other project facility at the proposed project location.

SECTION 4.32(a) INFORMATION

1. Identification of persons, associations, domestic corporations, municipalities, or states that have or intend to obtain and will maintain any proprietary right necessary to construct, operate, or maintain the project:

The Applicant, intends to obtain and will maintain any proprietary rights necessary to construct, operate, and maintain the licensed project.

2. Identify:

- i. Every county in which any part of the project, and any Federal facilities that would be used by the project, would be located.

Kenai Peninsula Borough
144 North Binkley Street
Soldotna, Alaska 99669

- ii. Every city, town, or similar local political subdivision:

- A. In which any part of the project, and any Federal facilities that would be used by the project, would be located.

Political subdivision: None.

- B. That has a population of 5,000 or more people and is located within 15 miles of the project dam.

There are no cities, towns or similar subdivisions of 5,000 people or more within a 15-mile radius of the Project dam. The unincorporated town of Moose Pass, population 219 (2010) lies approximately 18 miles north of the Project dam. The City of Seward, AK 2,528 (2014) lies approximately 15 miles south of the Project dam.

Contact information for the cities and townships within 15 miles of the Project are:

City of Seward
P.O. Box 167
410 Adams Street City Hall Building
Seward, Alaska 99664

- iii. Every irrigation, drainage, or special purpose subdivision of interest:

- A. In which any part of the project, and any Federal facilities that would be used by the project, would be located; or

- B. That owns, operates, maintains or uses any project facilities or any Federal facilities that would be used by the project.

None

- iv. Every other political subdivision in the general area of the project that there is a reason to believe they would likely be interested in, or affected by, the application.

Moose Pass Chamber of Commerce
P.O. Box 147
Moose Pass, AK 99631

- v. All Indian tribes that may be affected by the project.

The Applicant has identified the following Indian tribes that may be affected by the project:

CIRI (Cook Inlet Region, Inc.)
Box 93330
Anchorage, AK 99509

Kenaitze Indian Tribe
P.O. Box 988
150 N. Willow St.
Kenai, Alaska 99611

Chugach Alaska Corporation
3800 Centerpoint Drive, Ste. 1200
Anchorage, Alaska 99503

Exhibit 1: Project Description

The proposed Project would be a hydroelectric generation project located in the Snow River Basin on the Kenai Peninsula, approximately 15 miles north of Seward, Alaska (see Exhibit 3 for location map). It would utilize water from the mainstem of Snow River captured at a proposed dam site located at approximate River Mile (RM) 9 upstream from the confluence of the Snow River with Kenai Lake. The proposed dam would consist of a main dam spanning the Snow River approximately 3 miles above the confluence of the mainstem Snow River and the South Fork Snow River and two small saddle dams to form the reservoir. Water from the reservoir would be diverted through a combination tunnel and penstock to three 25 MW turbine units housed in an approximate 8000-square foot powerhouse building. The Project would have an estimated installed capacity of 70.9 megawatts (MW) and a total estimated annual generation of 341,433 megawatt-hours (MW-hrs). A transmission line would be constructed from the powerhouse to an interconnection point with the existing high voltage transmission line located west of the proposed powerhouse location.

The Snow River watershed includes approximately 111 square-miles upstream of the proposed dam site. A map showing the general locations of proposed Project features, including the reservoir, is provided in Exhibit 4. A larger scale map of the dam and power production related facilities is shown in Exhibit 5.

Chugach is proposing a main dam and two saddle dams, each with crest elevation of 1,300 feet Mean Sea Level (MSL) with dam freeboard of 20 feet, which would create a reservoir with a maximum surface elevation of 1,280 feet MSL, with a surface area of 5,321 acres. The main dam has a crest length of approximately 700 feet and would be 340 feet tall at its maximum section. The right bank auxiliary dam would have an approximate crest length of 300 feet and a height of 60 feet. The left bank auxiliary dam would have an approximate crest length of 500 feet and would be approximately 80 feet in height. The spillway is envisioned as an approximately 400 feet long uncontrolled overflow section in a bedrock saddle on the left bank adjacent to the auxiliary dam. The spillway discharge would flow into an unnamed drainage which joins the Snow River mainstem approximately 3 miles downstream. All the dams would be constructed as either concrete-faced rockfill or roller compacted concrete gravity dams.

At this time, Chugach is evaluating two distinct intake/tunnel/penstock/powerhouse/transmission line/access road alternatives, as shown in Exhibit 4, beginning at either the right (Alternative 1) or left (Alternative 2) dam abutments, looking downstream. Chugach anticipates selecting a preferred alignment during the preliminary permit term. The types of conveyance features for both right bank and left bank alternatives are similar and consist of an intake structure leading to a power tunnel that transitions to a surface penstock leading to a surface powerhouse on the bank of the Snow River. Water would then discharge back directly into the river below the powerhouse.

Alternative 1 starts at the right abutment and consists of a dam and an upstream intake structure that diverts flow into a gently inclined westerly tunnel beneath a high mountain ridge. The tunnel intake portal elevation is positioned above the river thalweg at approximately 1,100 feet elevation. The tunnel passes beneath the mountain and daylights at approximately 820 feet

elevation, transitioning to a surface penstock that traverses downslope to a river-level powerhouse at approximately 550 feet elevation. The powerhouse would discharge through a short tailrace channel, where flows would directly discharge to the Snow River. The type of turbines proposed requires several feet of submergence at the discharge point, so the tailrace would consist of a small afterbay pool which would then transition to a short gravity flow section to Snow River. A short access road would be constructed from the tunnel portal down to the powerhouse. The access road would then leave the powerhouse and gently traverse the sidehill to a point coincident with the existing railroad bridge crossing. A proposed new powerhouse access road bridge would be constructed parallel with the railroad bridge and terminate at Seward Highway. The transmission line parallels the road from the powerhouse, then extends past Seward Highway upslope to interconnect with the existing high voltage transmission line on the hillside. For this alternative, the main dam construction access road would consist of the access road described in Alternative 2.

Alternative 2 starts on the left abutment upstream of the dam. Water is diverted into a conveyance tunnel intake portal positioned at approximately elevation 1,100 feet. The conveyance tunnel would pass beneath the existing left bank bedrock ridge with a vertical gateshaft positioned on the ridgetop for hydraulic control. Downstream of the gateshaft, the tunnel would continue on to a surface portal at approximately 870 feet elevation where the conveyance would transition to a surface penstock. The penstock would be routed downhill to the powerhouse at approximately 640 feet elevation. The access road would traverse from the upstream dam area over the ridge and down to the powerhouse. The powerhouse would discharge to an unnamed tributary approximately 2000 feet upstream from the confluence with Snow River. The powerhouse would also require a small afterbay pool immediately adjacent to the powerhouse to maintain a submerged discharge. The flows would run through the afterbay and enter the tributary to flow downstream to the confluence. The access road would then leave the powerhouse and traverse the sidehill above the river floodplain, then cross the South Branch Snow River via a new bridge to interconnect with the Seward Highway. The transmission line would parallel the access road to Seward Highway, then traverse directly uphill to interconnect to the existing transmission line.

The upper highland areas on both the left and right banks away from the dam abutments have undulating, glacially-scoured bench features that will require one or more low auxiliary dam(s) designed to contain the full reservoir with 20 feet of freeboard. The auxiliary dam concepts are shown on Exhibits 4 and 5. The auxiliary dams would be constructed either as concrete faced rockfill dams or roller compacted concrete gravity dams, similar to the main dam concepts.

The concept for the Project spillway is to route flood or ice dam flows through a bedrock notch on the left side of the drainage, well away from the dam, into a tributary drainage that exits toward the Snow River from the left bank auxiliary dam area. This is intended to accommodate the full ice dam release from the basin upstream. The spillway and downstream flow path need to be wide enough and free of obstructions to accommodate the ice dam releases without blocking. Records indicate that this ice dam forms and breaches in the fall approximately every 2

to 3 years, releasing up to 140,000 acre-feet of water over a very short period (NOAA, 2015)¹. Depending on the reservoir operating protocol, the reservoir level could be managed to capture most, if not all of this inflow, but this would need to be studied in future design efforts. Sediment delivery during these events and potential loss of reservoir capacity must also be considered.

Project features and their characteristics for the proposed Project are shown in the table below.

	Snow River Project – Right Abutment Alternative 1	Snow River Project – Left Abutment Alternative 2
Top of dam elevation	1,300 ft	1,300 ft
Dam composition	Concrete-faced rockfill dam (CFRD) or roller-compacted concrete (RCC)	Concrete-faced rockfill dam (CFRD) or roller-compacted concrete (RCC)
Maximum water surface elevation	1,280 ft	1,280 ft
Reservoir area at max water elevation	5,321 acres	5,321 acres
Reservoir storage capacity	489,000 ac ft	489,000 ac ft
Gross head	730 ft	640 ft
Intake elevation	1,100 ft	1,100 ft
Powerhouse elevation	550 ft	640 ft
Powerhouse dimensions	80 ft by 100 ft	80 ft by 100 ft
Powerhouse composition	Pre-engineered metal building	Pre-engineered metal building
Number of generating units	3	3
Unit type and rated capacity	25 MW each	25 MW each
Maximum gross head	730 ft	<u>640</u> ft
Net head (95% of available head)	<u>694</u> ft	<u>608</u> ft
Estimated powerhouse capacity	70.9 MW	70.9 MW
Average annual energy	341,433 MW-hrs	<u>299,123</u> MW-hrs
Tunnel length	10,040 ft	3,310 ft
Tunnel diameter	14 ft; horseshoe	14 ft; horseshoe
Penstock length	1,410 ft	2,650 ft
Penstock diameter	173 in	173 in
Penstock composition	steel	steel
Transmission line length	2.55 mi	2.55 mi
Transmission line voltage	69-kV	69-kV
Tunnel/Dam access road length	1,410 ft	12,600 ft
Powerhouse road length	6,858 ft	8,000 ft

Most major Project features would be located on federal lands within the Chugach National Forest. Private and state lands located along Snow River downstream of the South Fork

¹ NOAA (National Oceanic and Atmospheric Administration). 2015. National Weather Service Alaska-Pacific River Forecast Center. http://aprfc.arh.noaa.gov/general/snow_report.html (Data on Snow River Glacial Lake), http://aprfc.arh.noaa.gov/general/snow_map.html (General location map), http://aprfc.arh.noaa.gov/general/snow_image1.html (Image of Snow River Glacial Lake).

confluence may be affected by the transmission line and access road developed for the Project to connect to the existing transmission line, highway, and railroad for Project purposes. Further design efforts are needed to identify affected landowners.

The proposed Project boundary for this preliminary permit application is shown in Exhibit 6. Total acreage within the Project boundary is estimated at 16,890 acres, including 15,957 acres in federal ownership and 933 acres in non-federal ownership. A completed Form FERC-587, as shown in Exhibit 7, is being submitted to the Alaska State Director, Bureau of Land Management by copy of the cover letter to this preliminary permit application.

Exhibit 2: Proposed Study Program

The study program in support of developing a License Application would be conducted according to the Commission's licensing regulations and in close coordination with applicable landowners and resource agencies. Field studies would be conducted for the potential program elements listed below, and all necessary and feasible measures would be taken to minimize disturbance to the environment and landscape during the study program. The estimated cost of conducting studies, investigations, tests, surveys, mapping, and of developing plans and specifications for the proposed Project during the permit term is \$1,000,000. Funds would be drawn from a combination of internal and external financing sources. Power generated from the Project would be provided to retail, commercial, and wholesale customers of Chugach.

Potential Study Program Elements

Engineering and Feasibility

- Refined hydrologic analysis
- Topography/Light Detection and Ranging (LiDAR) data gathering
- Stream gaging
- Geohazard mapping
- Geologic investigation
- Preliminary design analysis
- Transmission line and access route evaluation
- Economic analysis

Environmental Studies

- Fish species composition
- Fish habitat assessment
- Rare, Threatened and Endangered (RTE) species inventory
- Vegetation
- Wildlife
- Recreation
- Cultural/Alaska Native
- Aesthetics
- Socioeconomics
- Project effects analysis

Stakeholder Consultation

The following entities are potential stakeholders (i.e., agencies, non-governmental organizations [NGOs], Native Corporations, and communities) in the licensing process for the Project:

Alaska Center
Alaska Conservation Foundation
Alaska Department of Environmental Conservation
Alaska Department of Fish and Game
Alaska Department of Natural Resources, Division of Mining, Land, and Water
Alaska Department of Natural Resources, State Historic Preservation Office
Alaska Fly Fishers
Alaska Railroad Corporation
American Rivers
Chugach Alaska Corporation
Cook Inlet Region, Inc. (CIRI)
Department of the Army, U.S. Army Engineer District, Alaska Regulatory Division
Kenai Peninsula Borough
Kenai River Sportfishing Association
Kenai River Watershed Foundation
Kenaitze Indian Tribe
Natural Heritage Institute
National Oceanic and Atmospheric Administration, National Marine Fisheries Service
(NOAA Fisheries)
National Park Service
Trout Unlimited, Alaska Council
US Environmental Protection Agency
US Forest Service
US Fish and Wildlife Service
US Geological Survey

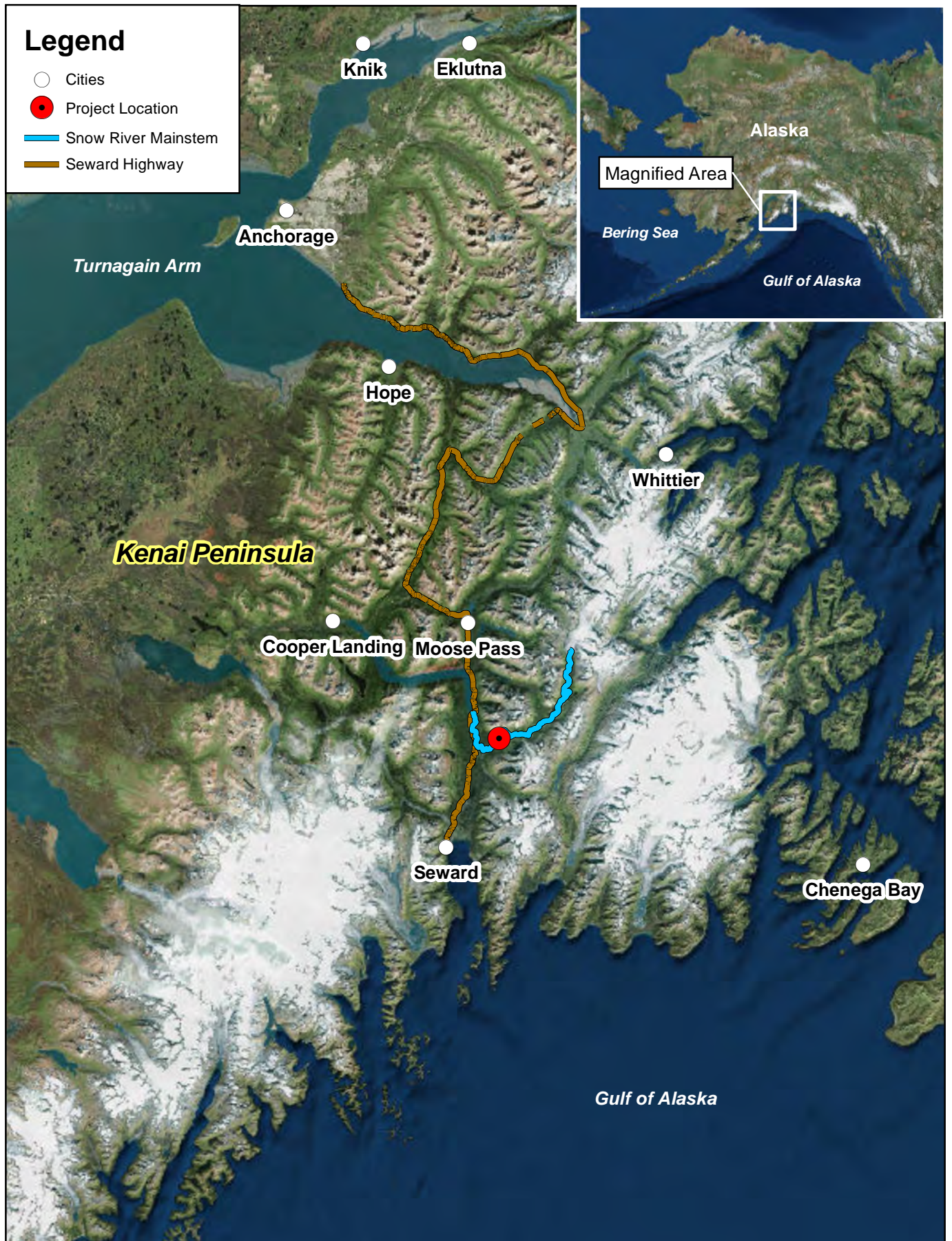
Study Program Schedule

Study program element	2017				2018				2019				2020
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1
Feasibility evaluation	X	X											
Initial stakeholder consultation	X	X	X	X									
Site reconnaissance and baseline resource assessment			X	X									
Prepare and file Pre-Application Document (PAD)					X	X							
Study planning ²				X	X	X							
Field studies (Year One)						X	X	X					
Additional data collection as needed to augment Year 1 studies ²										X	X		
Initiate preparation of Draft License Application											X	X	
Preliminary Permit expires													X

² It is anticipated that the vast majority of fieldwork would be completed in 2018, with only small-scale supplementary data collection occurring in 2019 prior to filing of the Draft License Application.

Legend

- Cities
- Project Location
- Snow River Mainstem
- Seward Highway

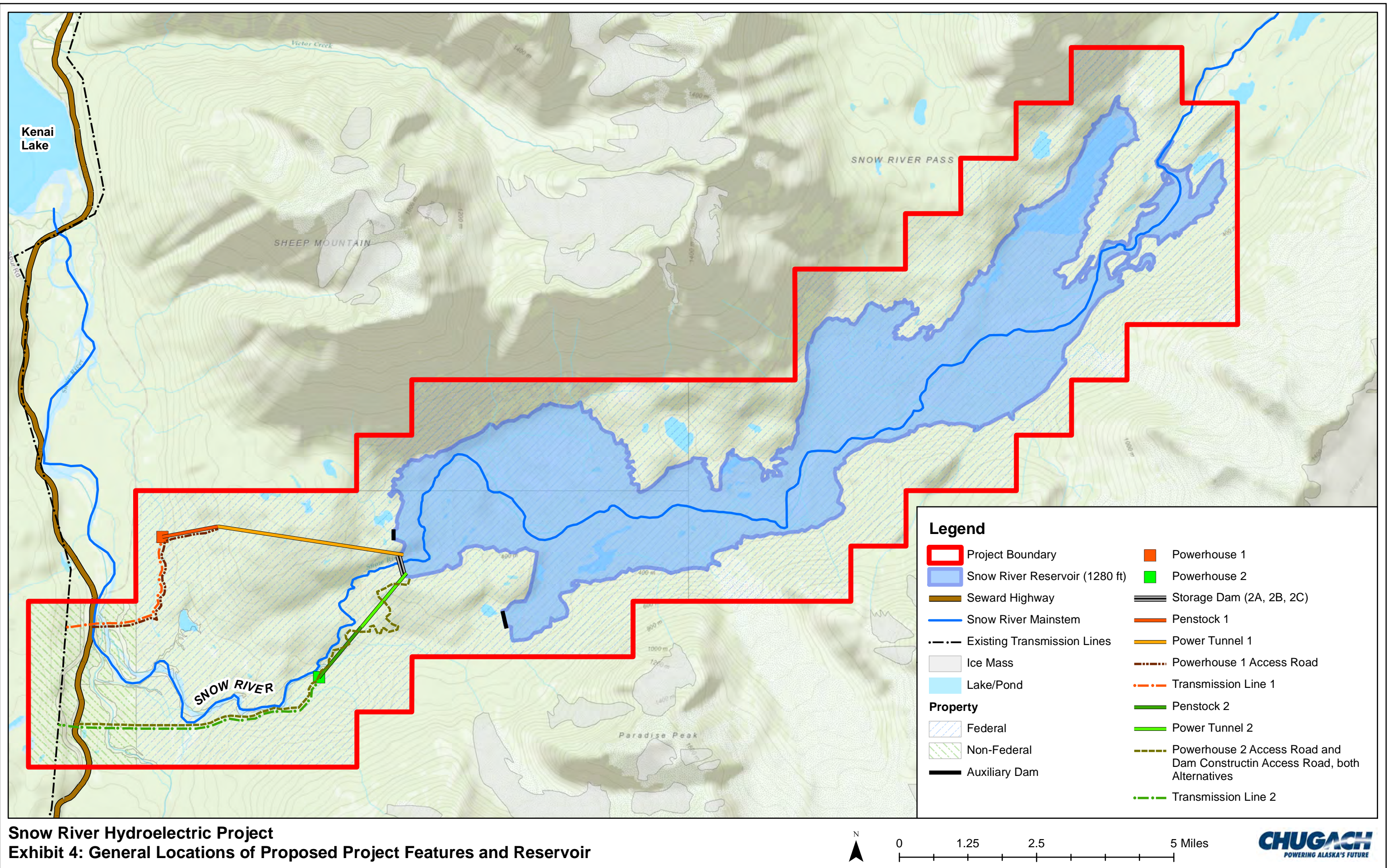


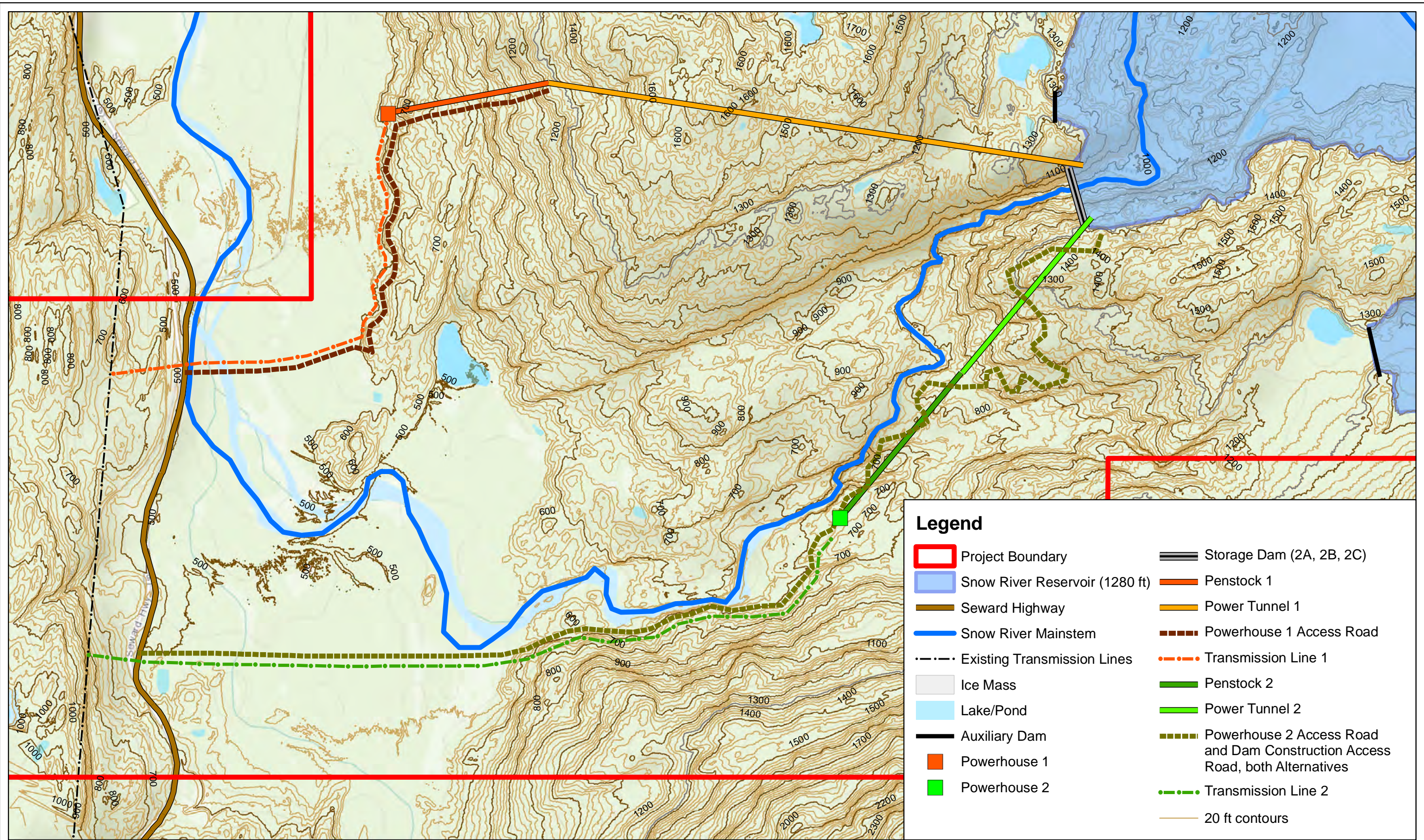
Snow River Hydroelectric Project
Exhibit 3: Project Location Map



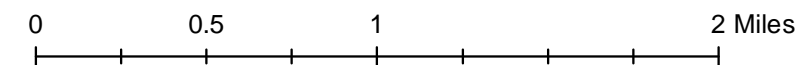
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CHUGACH
POWERING ALASKA'S FUTURE



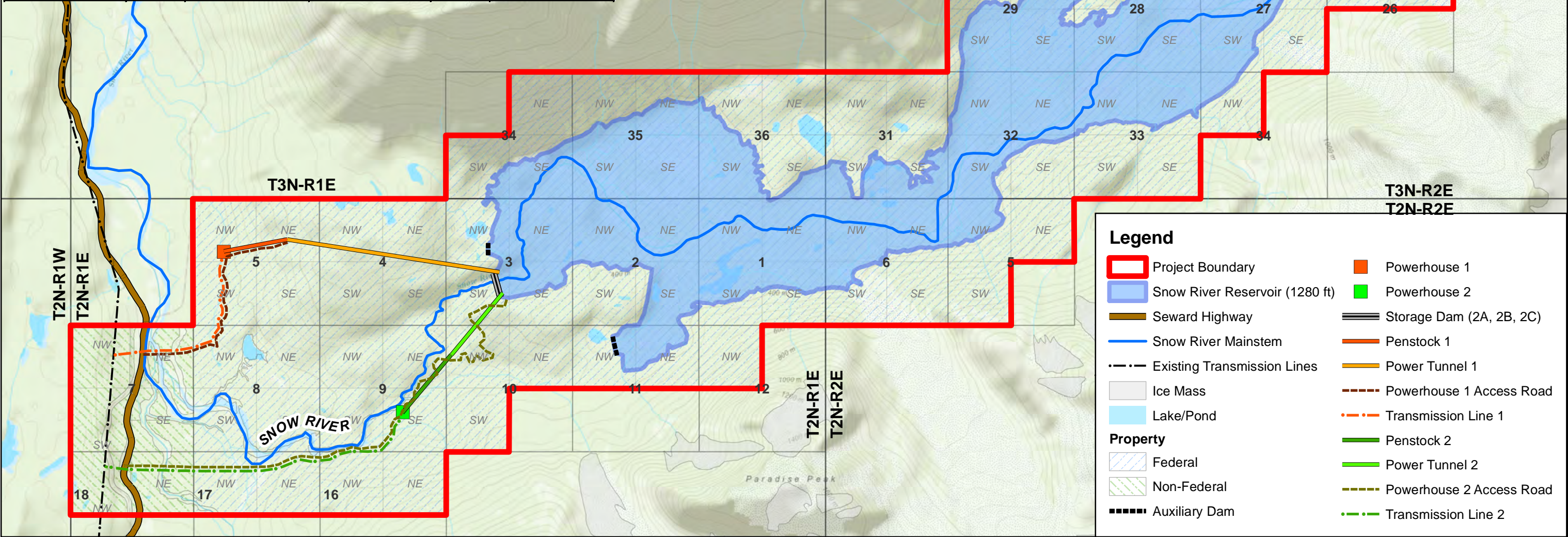


Snow River Hydroelectric Project
Exhibit 5: General Locations of Proposed Dam and Power Production Related Facilities

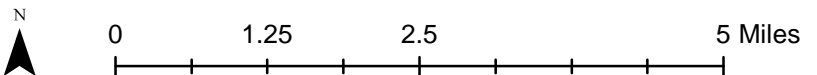


Lands Within Project Area					
Township-Range	Section	Quarter Sections	Township-Range	Section	Quarter Sections
T2N, R1E, SM	Sec. 1	NE, NW, SE, SW	T3N, R1E, SM	Sec. 34	NE, SE, SW
T2N, R1E, SM	Sec. 2	NE, NW, SE, SW	T3N, R1E, SM	Sec. 35	NE, NW, SE, SW
T2N, R1E, SM	Sec. 3	NE, NW, SE, SW	T3N, R1E, SM	Sec. 36	NE, NW, SE, SW
T2N, R1E, SM	Sec. 4	NE, NW, SE, SW	T3N, R2E, SM	Sec. 14	NW, SE, SW
T2N, R1E, SM	Sec. 5	NE, NW, SE, SW	T3N, R2E, SM	Sec. 15	NE, SE, SW
T2N, R1E, SM	Sec. 7	NE, NW, SE, SW	T3N, R2E, SM	Sec. 21	NE, SE, SW
T2N, R1E, SM	Sec. 8	NE, NW, SE, SW	T3N, R2E, SM	Sec. 22	NE, NW, SE, SW
T2N, R1E, SM	Sec. 9	NE, NW, SE, SW	T3N, R2E, SM	Sec. 23	NE, NW, SE, SW
T2N, R1E, SM	Sec. 10	NE, NW, SW	T3N, R2E, SM	Sec. 26	NE, NW
T2N, R1E, SM	Sec. 11	NE, NW	T3N, R2E, SM	Sec. 27	NE, NW, SE, SW
T2N, R1E, SM	Sec. 12	NW	T3N, R2E, SM	Sec. 28	NE, NW, SE, SW
T2N, R1E, SM	Sec. 16	NE, NW	T3N, R2E, SM	Sec. 29	NE, NW, SE, SW
T2N, R1E, SM	Sec. 17	NE, NW	T3N, R2E, SM	Sec. 31	NE, NW, SE, SW
T2N, R1E, SM	Sec. 18	NE, NW	T3N, R2E, SM	Sec. 32	NE, NW, SE, SW
T2N, R2E, SM	Sec. 5	NE, NW, SW	T3N, R2E, SM	Sec. 33	NE, NW, SE, SW
T2N, R2E, SM	Sec. 6	NE, NW, SE, SW	T3N, R2E, SM	Sec. 34	NW
SM - Seward Meridian					

Project Area	Federal Land	Non-Federal Land
16,890 Acres	15,957 Acres	933 Acres



Snow River Hydroelectric Project
Exhibit 6: Proposed Boundary and Land Ownership



LAND DESCRIPTION

Public Land States (Rectangular Survey System Lands)

1. STATE Alaska 2. FERC PROJECT NO. _____

3. TOWNSHIP T3N RANGE R1E MERIDIAN Seward

4. Check one:

Check one:

☐ License
☒ Preliminary Permit

☒ Pending
☐ Issued

If preliminary permit is issued, give expiration date: _____

5. EXHIBIT SHEET NUMBERS OR LETTERS

Section 6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36
			X	X	X

6. contact's name Michael Brodie

telephone no. (907-563-7494)

Date submitted December 23, 2016

LAND DESCRIPTION

**Public Land States
(Rectangular Survey System Lands)**

1. STATE Alaska 2. FERC PROJECT NO. _____

3. TOWNSHIP T2N RANGE R2E MERIDIAN Seward

4. Check one:

☐ License
☒ Preliminary Permit

Check one:

☒ Pending
☐ Issued

If preliminary permit is issued, give expiration date: _____

5. EXHIBIT SHEET NUMBERS OR LETTERS

Section 6 X	5 X	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

6. contact's name Michael Brodie

telephone no. (907-563-7494)

Date submitted December 23, 2016

LAND DESCRIPTION

Public Land States (Rectangular Survey System Lands)

1. STATE Alaska 2. FERC PROJECT NO. _____

3. TOWNSHIP T3N RANGE R2E MERIDIAN Seward

4. Check one:

Check one:

 License
X Preliminary Permit

X Pending
 Issued

If preliminary permit is issued, give expiration date: _____

5. EXHIBIT SHEET NUMBERS OR LETTERS

Section 6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
			X	X	
19	20	21	22	23	24
		X	X	X	
30	29	28	27	26	25
	X	X	X	X	
31	32	33	34	35	36
X	X	X	X		

6. contact's name Michael Brodie

telephone no. (907-563-7494)

Date submitted December 23, 2016

This information is necessary for the Federal Energy Regulatory Commission to discharge its responsibilities under Section 24 of the Federal Power Act.

LAND DESCRIPTION

Public Land States (Rectangular Survey System Lands)

1. STATE Alaska 2. FERC PROJECT NO. _____

3. TOWNSHIP T2N RANGE R1E MERIDIAN Seward

4. Check one:

Check one:

 License
X Preliminary Permit

X Pending
 Issued

If preliminary permit is issued, give expiration date: _____

5. EXHIBIT SHEET NUMBERS OR LETTERS

Section 6	5	4	3	2	1
	X	X	X	X	X
7	8	9	10	11	12
	X	X	X	X	X
18	17	16	15	14	13
	X	X			
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

6. contact's name Michael Brodie

telephone no. (907-563-7494)

Date submitted December 23, 2016