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# Lowell Creek Flood Diversion Study

## Appendix G - Correspondence

### Seward, Alaska



**September 2020**



**US Army Corps  
of Engineers®**  
Alaska District





DEPARTMENT OF THE ARMY  
ALASKA DISTRICT, U.S. ARMY CORPS OF ENGINEERS  
P.O. BOX 6898  
JOINT BASE ELMENDORF-RICHARDSON, AK 99506-0898

December 17, 2019

Mr. Greg Balogh  
NOAA Fisheries  
Protected Resources Division  
222 West 7<sup>th</sup> Avenue, Box 43  
Anchorage, AK 99513

RE: Request for Concurrence of NMFS Status Species List, Feasibility Assessment, Lowell Creek, Seward, Alaska.

Mr. Balogh,

The U.S. Army Corps of Engineers (USACE), Alaska District is conducting a feasibility assessment of potential flood control measures at Lowell Creek, Seward, Alaska. These measures include increasing the existing tunnel's diameter, creation of a second tunnel, and addressing flood conditions at the existing outlet. Under the provisions set forth for interagency consultation and coordination under Section 7 of the Endangered Species Act (ESA), and of the National Environmental Policy Act (NEPA), USACE has compiled a status-species list derived from the Alaska Protected Resources Division's Species Distribution Mapping tool for your interpretation and approval moving forward.

**ESA Status Species**

Steller sea lion (*Eumetopias jubatus*) Western DPS  
Fin whale (*Balaenoptera physalus*)  
Humpback whale (*Megaptera novaeangliae*) Western North Pacific and Mexico DPS  
North Pacific right whale (*Eubalaena japonica*)  
Sperm whale (*Physeter macrocephalus*)

**Marine Mammal Protection Act Status Species**

Harbor seal (*Phoca vitulina*)  
Steller sea lion (*E. jubatus*) Eastern DPS  
Northern fur seal (*Callorhinus ursinus*)  
Dall's porpoise (*Phocoenoides dalli*)  
Gray whale (*Eschrichtius robustus*)  
Harbor porpoise (*Phocoena phocoena*)  
Killer whale (*Orcinus orca*)  
Humpback whale (*Megaptera novaeangliae*) Hawaii DPS  
Minke whale (*Balaenoptera acutorostrata*)  
Pacific white sided dolphin (*Lagenorhynchus obliquidens*)  
Northern sea otter (*Enhydra lutris kenyoni*) Southcentral Alaskan stock

USACE currently envisions its potential flood control measures at Lowell Creek to require in-water disposal of virgin bedrock material generated by the drilling and blasting of a new tunnel. Long-term effects would be similar to the existing condition, surface waters, and gravel and debris from Lowell Creek's watershed, the same material that comprises the Seward alluvium, would be directed to the waters of Resurrection Bay.

USACE appreciates NMFS' helpful coordination in determining an appropriate species list for consideration in forthcoming analyses.

Sincerely,

A handwritten signature in black ink that reads "Mike Rouse". The signature is written in a cursive style, with the first name "Mike" and the last name "Rouse" clearly legible.

Mike Rouse  
Fisheries Biologist  
U.S. Army Corps of Engineers  
Alaska District



**DEPARTMENT OF THE ARMY**  
**ALASKA DISTRICT, U.S. ARMY CORPS OF ENGINEERS**  
**P.O. BOX 6898**  
**JOINT BASE ELMENDORF-RICHARDSON, AK 99506-0898**

Douglass Cooper  
Conservation Planning Assistance  
Anchorage Fish & Wildlife Field Office  
4700 BLM Road  
Anchorage, AK 99507

Dear Mr. Cooper,

The U.S. Army Corps of Engineers (USACE) respectfully requests your formal collaboration under the Fish and Wildlife Coordination Act in the identification, characterization, or development of either alternatives or mitigation strategies associated with a USACE feasibility assessment of potential flood control measures located at Lowell Creek, Seward, Alaska.

USACE's feasibility study is being conducted under authority granted by Section 5032 of the Water Resources Development Act of 2007 (P.L. 110-114):

*SEC. 5032. LOWELL CREEK TUNNEL, SEWARD, ALASKA.*

*(a) LONG-TERM MAINTENANCE AND REPAIR.-*

*(1) MAINTENANCE AND REPAIR.-The Secretary shall assume responsibility for the long-term maintenance and repair of the Lowell Creek tunnel, Seward, Alaska.*

*(2) DURATION OF RESPONSIBILITIES.-The responsibility of the Secretary for long-term maintenance and repair of the tunnel shall continue until an alternative method of flood diversion is constructed and operational under this section, or 15 years after the date of enactment of this Act, whichever is earlier.*

*(b) STUDY.-The Secretary shall conduct a study to determine whether an alternative method of flood diversion in Lowell Canyon is feasible.*

*(c) CONSTRUCTION-*

*(1) ALTERNATIVE METHODS.-If the Secretary determines under the study conducted under subsection (b) that an alternative method of flood diversion in Lowell Canyon is feasible, the Secretary shall carry out the alternative method.*

*(2) FEDERAL SHARE.-The Federal share of the cost of carrying out an alternative method under paragraph (1) shall be the same as the Federal share of the cost of the construction of the Lowell Creek tunnel.*

Implementation Guidance provided by HQUSACE for Section 5032 states that the feasibility study should be conducted in accordance with current budgetary policy and procedural guidance contained in ER 1105-2-100, USACE's Planning Guidance Notebook, for projects authorized without a report.

Because construction authority is included in Section 5032, the final product of this study will be a Report of the Director of Civil Works.

Lowell Creek's existing flood control structure is comprised of an elevated spillway diversion and 2,068 foot-long concrete-lined, steel rail reinforced tunnel running southeast through Bear Mountain where the entirety of Lowell Creek's surface waters are diverted and discharged via elevated spillway, subsequently flowing beneath Lowell Point Bridge, and into Resurrection Bay. These structures were constructed between 1939 and 1940 by USACE , and are not thought to be capable of mitigating the watershed probable maximum flood or a catastrophic failure due to tunnel blockage, greatly endangering the residents of Lowell Creek's historic channel. Similarly, Lowell Creek poses a persistent flood risk to nearby infrastructure at its outfall terminus due to its predisposition to rapidly accrete debris and overtop Lowell Point Bridge. Due to its steep-walled, sparsely vegetated , talus-strewn watershed, Lowell Creek produces significant quantities of rock and boulder debris during peak flow conditions, once generating an estimated 10,000 cubic yards in an 11-hour timeframe (Stauffer 2010). Lowell Creek' s historic alluvial deposition constitutes a large portion of the landmass that the town of Seward is built upon , and its relative rate of deposition is readily apparent when viewing sequential timeline satellite or aerial photographs of the existing outfall terminus.

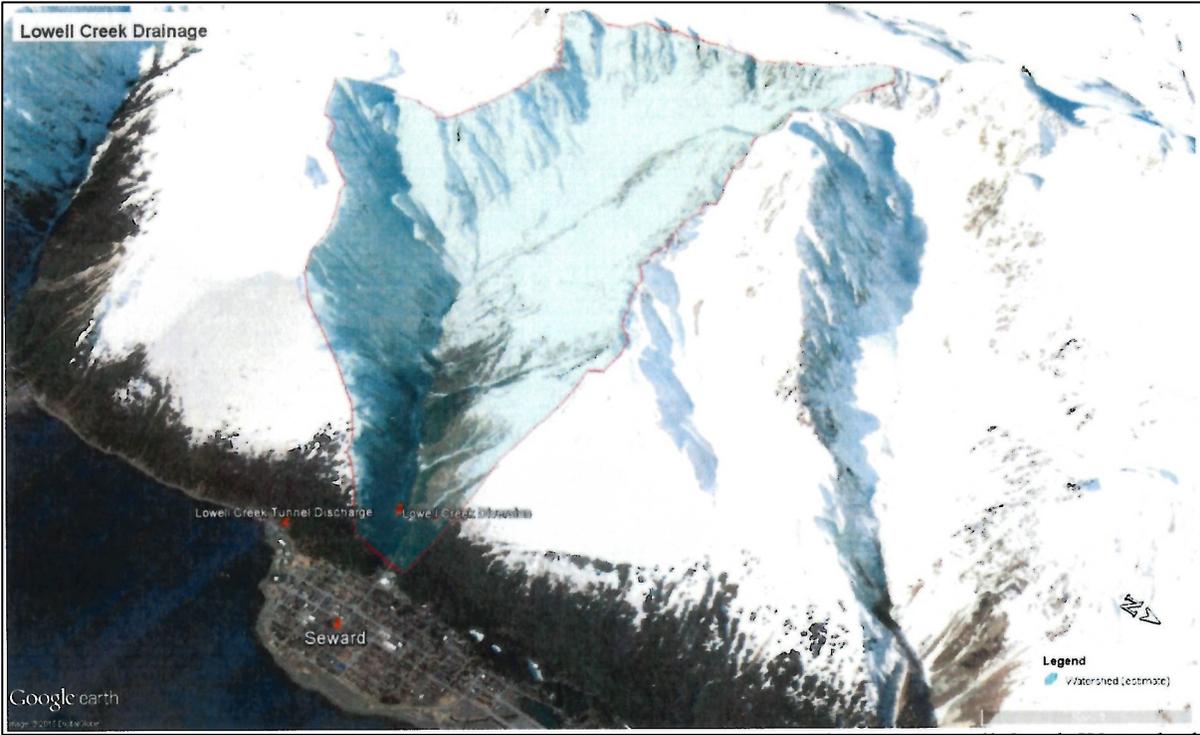


Figure 1. Lowell Creek Watershed



Figure 2. Existing Lowell Creek outfall terminus

In 2016, USACE developed an Environmental Analysis and subsequently issued a Finding of No Significant Impact for maintenance actions necessary to the longevity of the existing Lowell Creek flood control structures. Maintenance actions were conducted in mid-winter to avoid surface flows that might preclude repair actions. Due to the project footprint (the majority of work occurring within the Lowell Creek Tunnel, and previously disturbed and paved areas used as laydown sites), the type of work being conducted, and specific timing of the repair actions, impacts to threatened and endangered species, bald and golden eagles, and migratory birds were not reasonably expected to occur. Similarly, downstream effects of such work were negligible and were not anticipated to impact anadromous waters, essential fish habitat, marine mammals, or threatened or endangered species and their respective critical habitats.

Currently, USACE is evaluating the efficacy of a suite of alternatives that address a watershed probable maximum flood scenario that include the creation of a second, larger tunnel, upstream of the existing tunnel structure; increasing the existing tunnel diameter; increasing the height and length of the existing spillway structure; or a combination of all alternatives. Potential impacts to the natural environment as a result of this project are not anticipated to be significant. However, USACE intends to implement reasonable mitigation measures that further negate perceived impacts to natural systems and the species that utilize them.

USACE believes that two of these potential alternatives, increasing the diameter of the existing tunnel and creation of a second tunnel, will generate a volume of granitic rubble that will likely have to be disposed of in the waters of the adjacent Resurrection Bay. These volumes of debris would be quantified in the few

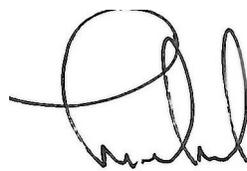
tens of thousands of cubic yards, and pale in comparison to Lowell Creek's natural capacity to generate sediment. Similarly, there exists the potential for vegetation clearing in the lower Lowell Creek Watershed, but this is not expected to be excessive.

Under its NEPA and project planning guidance, USACE is currently preparing an Environmental Assessment for this feasibility assessment and seeks to include USFWS coordination in the identification, characterization, or development of either alternatives or mitigation strategies. Precision data and schematics of proposed alternatives do not exist at this stage of the project development process. However, USACE is resolved to share all existing and pertinent data related to the Lowell Creek flood control feasibility assessment with USFWS in the spirit of satisfying the precepts of the Fish and Wildlife Coordination Act.

Please direct any questions or considerations that you may have to Mr. Michael Rouse, Fisheries Biologist/ NEPA Coordinator, U.S. Army Corps of Engineers, Alaska District, 907-753-2743, or at [Michael.B.Rouse@usace.army.mil](mailto:Michael.B.Rouse@usace.army.mil)

#### References

Stauffer, C., 2010. Learning To Live With Water: A History of Flooding in Seward, Alaska. 1903-2009. Seward/Bear Creek Flood Service Area.



Michael Rouse  
Fisheries Biologist/ NEPA Coordinator  
U.S. Army Corps of Engineers

**From:** [Greg Balogh - NOAA Federal](#)  
**To:** [Rouse, Michael B CIV USARMY CEPOA \(USA\)](#)  
**Subject:** [Non-DoD Source] Re: Lowell Creek Feasibility Study Species List  
**Date:** Tuesday, December 17, 2019 12:35:35 PM

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Thanks, Mike.

I don't know the full extent of the project's effects, but considering effects on right and sperm whales strikes me as overkill. You might take a few moments to consider whether the project would actually affect these two species at all (and how). It might be the case that a no effect determination would be appropriate.

On Tue, Dec 17, 2019 at 10:16 AM Rouse, Michael B CIV USARMY CEPOA (USA)  
<[Michael.B.Rouse@usace.army.mil](mailto:Michael.B.Rouse@usace.army.mil)> <<mailto:Michael.B.Rouse@usace.army.mil>> > wrote:

Good Morning Greg,

The Alaska District of the U.S. Army Corps of Engineers is currently assessing the feasibility of enacting flood control measures at Lowell Creek, Seward, Alaska. These measures may include enhancements to the existing tunnel and diversion system, creation of a new, larger diameter tunnel, and addressing the flood-prone outlet area. The Corps acknowledges that some of these measures may affect the waters of Resurrection Bay.

We have developed a list of status species for your review and input.

Thank you,

Mike Rouse  
Fisheries Biologist / NEPA Coordinator  
Alaska District US Army Corps of Engineers  
(907) 753-2743

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Greg Balogh

AKR PRD ANC Field Office Supervisor  
NOAA Fisheries  
222 W 7th Ave Rm 552, Box 43  
Anchorage, AK 99513  
907-271-3023 (w)  
907-306-1895 (c)

To report a stranded or entangled marine mammal, contact the Stranding Network at 1-877-925-7773 <tel:  
(877)%20925-7773>



United States Department of the Interior  
U.S. FISH AND WILDLIFE SERVICE  
Anchorage Fish and Wildlife Conservation Office  
4700 BLM Road  
Anchorage, Alaska 99507-2546



IN REPLY REFER TO:  
FWS/IR11/AFES/AFWCO

January 21, 2020

Mr. Mike Rouse  
U.S. Army Corps of Engineers  
P.O. Box 6898  
Joint Base Elmendorf-Richardson, Alaska 99506

Subject: Lowell Creek Flood Diversion Structure Seward, Alaska  
(Consultation #07CAAN00-2017-CPA-0011)

Dear Mr. Rouse:

Thank you for requesting input from the U.S. Fish and Wildlife Service (Service), pursuant to the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.) on the Lowell Creek Flood Diversion Structure Project. The Service has reviewed the project and has no objections at this time. Due to limited expected impacts on trust resources, we will not pursue further investigation or a report under the Fish and Wildlife Coordination Act Report. The Service could become more actively engaged in this project should project features be modified, or environmental conditions change so that impacts become more severe than currently anticipated.

Thank you for the opportunity to participate in the project and we look forward to working with you in the future. If you have any questions please contact Ms. Jennifer Spegon at 907-271-2768 or via email at [Jennifer\\_J\\_Spegon@fws.gov](mailto:Jennifer_J_Spegon@fws.gov) and refer to consultation number 07CAAN00-2017-CPA-0011.

Sincerely,

Douglass M. Cooper  
Branch Chief, Ecological Service



DEPARTMENT OF THE ARMY  
ALASKA DISTRICT, U.S. ARMY CORPS OF ENGINEERS  
P.O. BOX 6898  
JBER, AK 99506-0898

CEPOA-PM-C-ER

RECEIVED

OCT 10 2019

OHA

Ms. Judith Bittner  
State Historic Preservation Officer  
Office of History and Archaeology  
550 West 7<sup>th</sup> Avenue, Suite 1310  
Anchorage, AK 99501-3565

OCT 08 2019

Dear Ms. Bittner,

The U.S. Army Corps of Engineers (USACE), Alaska District, has begun researching the feasibility of constructing additional protection for the City of Seward from future flooding events at Lowell Creek (Section 9, T1S, R1W, USGS Quad Seward A-7, Seward Meridian; Figure 1). This study is being conducted under the authority of Section 5032 of the Water Resources Development Act (WRDA) of 2007. In compliance with Section 106 of the National Historic Preservation Act of 1966, the purpose of this letter is to notify you of a Federal undertaking [36 CFR § 800.3(c)(3)] and to seek your concurrence on an assessment of effect [36 CFR § 800.5(b)].

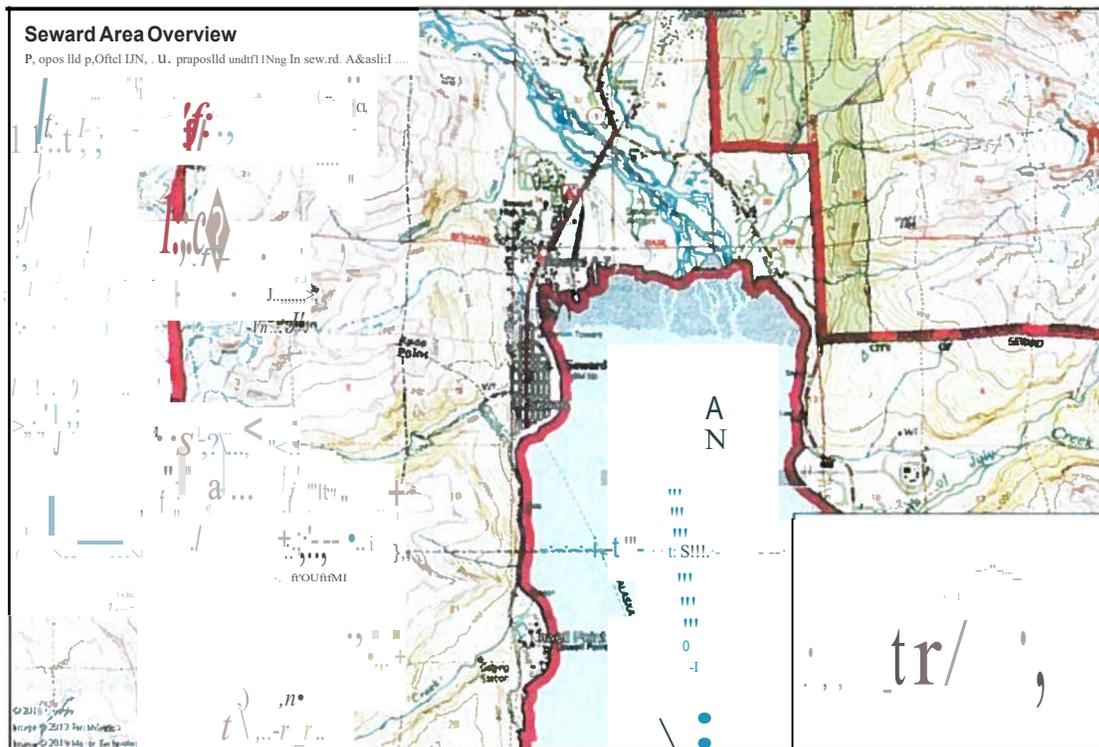


Figure 1. Project area overview.

## Historic Context

### *Precontact History*

The City of Seward is located on the eastern side of the Kenai Peninsula, on Resurrection Bay west of Prince William Sound. The earliest known occupation of Prince William Sound is estimated to have been around 4,000 to 3,500 years ago (Langdon 2002). Tools and objects commonly associated with these populations include small stone oil lamps, painted wooden boxes, wooden storage and cooking baskets, carved wooden serving bowls, skin bedding, crooked knives with blades of cold-hammered copper, bow drills, chisels, wedges, stone adzes, and other ground-slate tools (Crowell and Mann 1998:55). The primary seasonal pattern involved semi-mobile groups of people who moved between summer fishing camps and more permanent winter villages. The earliest-known contact between the people of Resurrection Bay and outsiders occurred in the late 1700s. In 1793, Aleksandr Baranov established a fort and ship building site in *Voskresenskaia*, or Resurrection, Harbor at the head of Resurrection Bay (Trepal 2010).

### *American Period*

The City of Seward was founded in 1902 by surveyors for the Alaska Railroad, built sometime between 1915-1923. Due to its ice-free harbor, and with the added construction of an airfield, it became an important port for unloading supplies headed for Alaska's Interior (Orth 1967). During the early twentieth century, periodic flooding impacted the port and airfield, and the House Territories Committee allocated \$125,000 to construct an intake dam and timber flume. In 1927 the dam and timber flume was constructed but failed in 1935 as the river deposited an estimated 10,000 cubic yards of gravel in 11 hours (KPB 2016; Figure 3). In 1937, additional funds were allocated for a diversion tunnel on Lowell Creek. In 1941, Colonel Benjamin Talley of the USAGE convinced the Port of Seward and the Alaska Railroad to upgrade the harbor facilities to increase capacity for military cargo, and upgrade the railroad to handle the increased use. The military was granted authority to construct additional facilities in Seward, which were completed in 1943 (Mighetto and Homstad 1997).



Figure 2. The Lowell Creek funnel structure built through Seward by the railroad (AHR Record #16122578).

### *Lowell Creek Diversion Tunnel*

Congress authorized the Lowell Creek Diversion Tunnel project in 1937, and USAGE constructed the utility in 1940 (Figure 4). The original project consisted of a dam and a tunnel to divert Lowell Creek away from town and through Bear Mountain into Resurrection Bay. The tunnel was lined with reinforced concrete, with the floor armored with 40-pound railroad rails welded to the channel cross-ties embedded in the floor. Space between the rails was filled with concrete during subsequent tunnel repairs. The tunnel exits into a concrete flume above the ocean south of the city, flowing under a bridge that connects Lowell Point to Seward. In 1945, the City of Seward took over the operation and maintenance of the tunnel. In 1969, 1988, 1989, 1991, and 2003, 2018, and 2019 the cement lining and rails were repaired or replaced (Table 1). The Lowell Creek Diversion Tunnel (SEW-00011) was placed on the National Register of Historic Places on November 23, 1977, due to its pioneering engineering characteristics. USAGE submitted a Finding of Effect letter to the SHPO's office on 4 November 2015 for the actions in 2018 and 2019, and was concurred by the SHPO on 13 November 2015 (SHPO 2015; USAGE 2015).

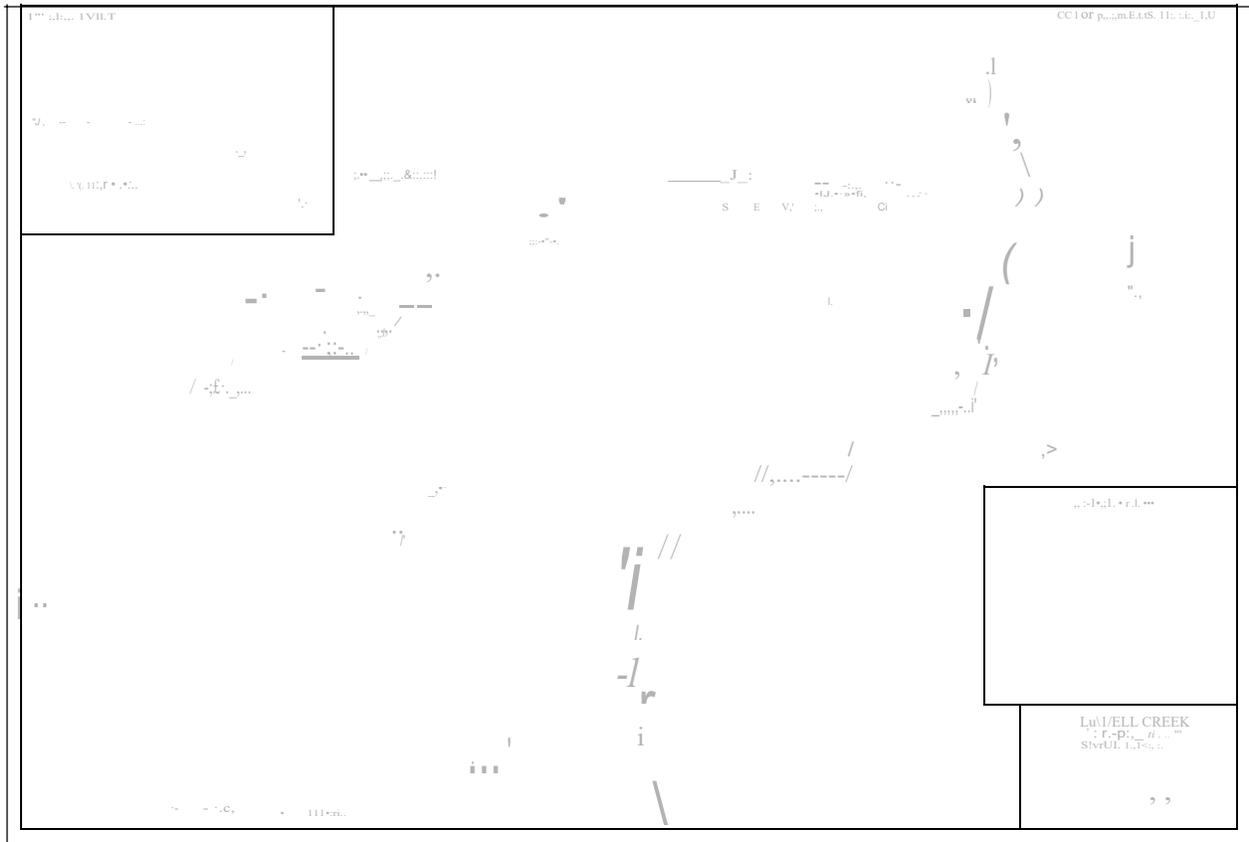


Figure 3. Lowell Creek Diversion Tunnel as-built (USAGE 1945).

Table 1. Major repair activities at Lowell Creek (from Lowell Creek Tunnel Operations

Date	Responsibility	Repair Details
1945	USAGE/City	Rails welded to steel channel cross-ties and finished with concrete to complete project.
1968-69	USAGE	PL 84-99 authorized repairs performed to replace loose rails in the floor and tunnel walls. Rails welded to sole plates and concrete lining between the floor rails were replaced.
1980	City	All loose rails removed from tunnel by the City of Seward
1984	City	Local interests repaired tunnel: loose rails removed and replaced, concrete placed between invert rails, cover of "Anvil Top" concrete placed over existing concrete between invert rails, sidewall rails repaired at tunnel entrance. All protective rails in the middle third of the tunnel and the outfall flume section were removed due to degraded conditions. New concrete was not placed in this area due to lack of funding and the end of the low flow period.
1988	USAGE	Alaska District performs emergency repairs under PL 84-99. Funding was spent filling one large hole in the tunnel

		floor and other adjacent holes. 145 feet of the tunnel invert between station 8+39 and 9+84 was lined with 8000 psi silica fume concrete. Lack of funding and the end of the low flow period prevented any other work from being completed.
1991	USAGE	Alaska District performs repairs under PL 84-99. Repairs included filling holes in the invert with concrete and installing silica fume concrete over the invert.
2003	USAGE	The Alaska District performs one-time emergency repairs as authorized by Section 510 of WRDA 2000. Repairs included replacement of ten rails in the ogive section and the entire invert was brought up to the original finish grade with 10,000 psi silica fume concrete.
2017-2018	USAGE	The Alaska District performed repairs as authorized under Section 5032 of WRDA 2007. Repairs included filling cavities with 10,000 psi silica concrete and replacing 6 damaged 132 pound per yard steel rails.

### Project Description

The USAGE is conducting a study to determine the feasibility of the construction of a similar diversion dam and tunnel to the current Lowell Creek Diversion Tunnel (SEW-00011). The tentatively selected plan (35% construction design) would be larger and be located upriver of the current diversion dam and tunnel. SEW-00011 will remain as backup if the new diversion tunnel is overtopped. Currently, there is an access road along the northern edge of the Lowell Creek canyon; it currently stops at the gravel berms ahead of the diversion dam. Construction equipment would access the project area via this route. The flat area behind SEW-00011 would serve as the staging area for equipment and construction material.

The tentatively selected plan proposed the excavation of a second tunnel through Bear Mountain at a similar slope to the current diversion tunnel. A new dam would be constructed upriver of the current diversion infrastructure; this dam would be taller and larger than the current dam, extending across a greater area of the valley. An aqueduct exiting the tunnel will extend over Lowell Point Road, crossing between the current diversion tunnel outlet and the Resurrection Bay Seafood cannery. This project is expected to look like the current diversion tunnel (SEW-00011); however, it will be able to handle a greater capacity of water and with decreased chances of blockage.



**Assessment of Effect**

The proposed tentatively selected plan will construct infrastructure approximately 400 feet upriver from the current Lowell Creek Diversion Tunnel (SEW-00011), and approximately .75 miles downriver of the Water Intake Building (SEW-01315). These two sites are the only known cultural resources near the project. On 19 July 2019, an SOI-qualified USAGE archaeologist surveyed the Area of Potential Effect (APE) north of Bear Mountain (dam and diversion tunnel entrance) and south of Bear Mountain (flume and outfall) and identified no other cultural resources. SEW-00011 is on the National Register of Historic Places (NRHP), and SEW-01315 has not been evaluated yet.

The proposed tentatively selected plan will help prevent adverse flooding impacts on known cultural resources and historic properties. In the event of an overtopping, there are 25 known cultural resources east of the canyon which could be adversely affected. (Table 2).

Table 2. Cultural Resources Affected by Flooding of the Lowell C

AHRS No.	Site Name	NRHP Status
SEW-00029	Alaska Railroad	Not Eligible
SEW-00032	Observation Car	Not Eligible
SEW-00033	Resurrection Lutheran Church	Not Evaluated
SEW-00034	Seward Memorial Methodist Church	Not Evaluated
SEW-00089	American Legion Post #5	Not Evaluated
SEW-00147	Sacred Heart Roman Catholic Church	Not Eligible
SEW-00148	Seward-Moose Pass Trail	Eligible
SEW-00150	Swetman House	Registered
SEW-00160	Van Gilder Hotel	Registered
SEW-00200	Government Cable Office	Registered
SEW-00223	Winter House	Eligible
SEW-00227	Holland House	Eligible
SEW-00231	Cameron House	Eligible
SEW-00232	Hale House	Eligible
SEW-00233	Odd Fellows Hall	Not Evaluated
SEW-00242	Alaska House	Not Evaluated
SEW-00246	Seeton House	Eligible
SEW-00304	Brownell House	Not Evaluated
SEW-00414	Stewart House	Not Eligible
SEW-01122	First National Bank	Not Eligible
SEW-01123	Liberty Theatre	Not Eligible
SEW-01124	Navigant/World Express Travel Agency	Not Eligible
SEW-01192	Seward Commercial Historic District	Not Eligible
SEW-01557	Seward Highway	Not Eligible
SEW-01606	Forest Service Office Building	Not Evaluated

Construction of the tentatively selected plan, a second dam and diversion tunnel located upriver of the Lowell Creek Diversion Tunnel, will not adversely affect SEW-00011 or the Water Intake Building (SEW-01315). It does not have the potential to impact any other known cultural resources; its construction will serve to protect other cultural resources from flooding damage.

## Conclusion

The proposed tentatively selected plan to create a second diversion tunnel through Bear Mountain will not affect nearby historic properties, namely the Lowell Creek Diversion Tunnel (SEW-00011). SEW-00011 would remain in place and used as a backup in the event the new diversion tunnel is overtopped. The development of the new diversion tunnel will also protect historic properties within the City of Seward from possible future flooding. Following 36 CFR § 800.5(b), the USACE seeks your concurrence on the determination that the proposed undertaking will result in **no adverse effect**. If you have any questions about this project, please contact Joseph Sparaga by phone at 907-753-2640, or by email at [joseph.e.sparaga@usace.army.mil](mailto:joseph.e.sparaga@usace.army.mil).

Sincerely,

Joseph E. Sparaga  
Archaeologist  
Environmental Resources Section

## Cc:

Scott Allen, Tribal Administrator, Qutekcak Native Tribe  
Angelina Sawden, Cultural Resource Project Coordinator, Chugach Alaska Corporation  
Nathan Lojewski, Forestry Manager, Chugachmiut, Inc.  
Brenda Ballou, City Clerk, City of Seward  
Sue McClure, President, Resurrection Bay Historical Society

o Historic Properties Adversely Affected  
Alaska State Historic Preservation Officer  
Date: 11/11/11 File No.: 3 (SO-11-C) c-1:  
Please review 36 CFR 800.1 1/2 A.S. 41.35.070(d)

## References Cited

- Alaska Heritage Resources Survey (AHRS) 2018. AHRS Database. Alaska Office of History and Archaeology.
- Crowell, Aron L. and Daniel H. Mann 1998. *Archaeology and Coastal Dynamics of Kenai Fjords National Park, Alaska*. National Park Service, Anchorage.
- Kenai Peninsula Borough (KPB) 2016. Learning to Live With Water: A History of Flooding in Seward, Alaska 1903- 2009. Electronic document, <[https://www.kpb.us/images/KPB/Service\\_Areas/sbcfsa/documents/Seward\\_Flood\\_History\\_Complete.pdf](https://www.kpb.us/images/KPB/Service_Areas/sbcfsa/documents/Seward_Flood_History_Complete.pdf)>, Accessed 31 July, 2019.
- Langdon, Steve J. 2002. *The Native People of Alaska: Traditional Living in a Northern Land*. Greatland Graphics, Anchorage.
- Mighetto, Lisa and Carla Homstad 1997. *Engineering in the Far North: A History of the U.S. Army Engineer District in Alaska 1867-1992*. Historical Research Associates, Inc., Anchorage.
- National Park Service (NPS) 2018. Kenai Fjords National Park, Alaska, Plant Communities. Electronic document, <<https://www.nps.gov/kefj/learn/nature/plant-communities.htm>> accessed on 24 July 2019.
2018. Kenai Fjords National Park, Alaska, Animals. Electronic document, <<https://www.nps.gov/kefj/learn/nature/animals.htm>> accessed on 24 July 2019.
- Orth, Donald J. 1967. *Dictionary of Alaska Place Names*. Government Printing Office, Washington D.C.
- State Historic Preservation Officer (SHPO) 2015. Letter to USAGE (Shona Pierce) from SHPO (Judith Bittner) re: FOE at Lowell Creek Diversion Tunnel. November 13, 2015.
- Trepal, Dan 2010. *A Slice of Early Seward: How Archeology Provides a Glimpse into Daily Life in this Frontier Town*. National Park Service, Seward.
- U.S. Army Corps of Engineers (USAGE)
2007. Lowell Creek Flood Damage Reduction, IPMP, Trip Report; Lowell Creek Tunnel Inspection, 15 Mar 2007.
2015. Letter to SHPO (Judith Bittner) from USAGE (Shona Pierce) re: FOE at Lowell Creek Diversion Tunnel. November 3, 2015.
2019. Lowell Creek Tunnel Operations and Maintenance Assessment Report, Seward, Alaska. Alaska District.