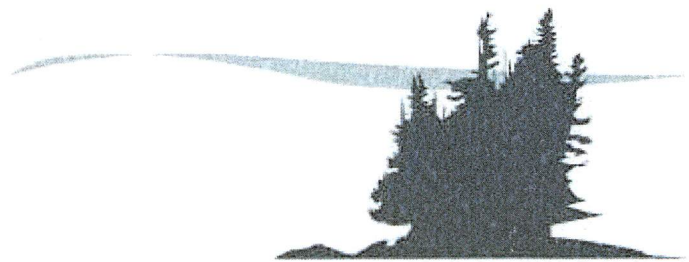


Project Summary Report

July, 2016



City of Thorne Bay, Alaska

City of Thorne Bay
Project Summary Report
July, 2016

Contents

ACRONYMS.....	i
Introduction	1
Financial Summary.....	2
Bank Stabilization: Deer Creek Road and Harbor Parking.....	3
Boat Launch Repairs: Riprap.....	5
Community Pavilion: Site Evaluation and Development	6
Davidson Landing	7
Downtown Waterfront Improvements	11
Freeman Sidewalk	13
Groundwater Source Study	15
Kasaan Road Improvements	16
Survey: Acquisition of Additional Tidelands	18
Survey: Collective Projects.....	19
Trail: Dock to Port.....	21
Trail: Port to The Claw	24
Wastewater Treatment Effluent Disinfection: Contractor Lead.....	28
Wastewater Treatment Effluent Disinfection: CTB Lead.....	29
Water Treatment DBP Reduction: Contractor Lead.....	31
Water Treatment DBP Reduction: CTB Lead	32

THIS PAGE INTENTIONALLY LEFT BLANK

ACRONYMS

ADA.....	Americans with Disabilities Act
ADEC.....	Alaska Department of Environmental Conservation
ADOT&PF.....	Alaska Department of Transportation and Public Facilities
ADNR.....	Alaska Department of Natural Resources
AHRS.....	Alaska Heritage Resources Survey
CFM.....	cubic feet per minute
CTB.....	City of Thorne Bay
DBP.....	disinfection by-products
DSR.....	Design Study Report
EFH.....	Essential Fish Habitat
ESA.....	Endangered Species Act
FY.....	fiscal year
GPS.....	Global Positioning System
ICAP.....	Individual Cost Allocation Plan
OVK.....	Organized Village of Kasaan
NEPA.....	National Environmental Policy Act
NWP.....	United States Army Corps of Engineers Nationwide Permit
PER.....	Preliminary Engineering Report
ROM.....	rough order of magnitude
RAC.....	Rural Advisory Committee
SWPPP.....	Stormwater Pollution Prevention Plan
T&E.....	Threatened and Endangered Species
TAP.....	Transportation Alternatives Program
USACE.....	United States Army Corps of Engineers
USFS.....	United States Department of Agriculture Forest Service
USGS.....	United States Geological Survey
UV.....	Ultra Violet
VPSO.....	Village Public Safety Officer
WESPAK-SE.....	Wetland Ecosystems Services Protocol for Southeast Alaska

THIS PAGE INTENTIONALLY LEFT BLANK

Introduction

The purpose of this summary is to consolidate potential City of Thorne Bay (CTB) projects into one place. The projects in this document have had preliminary engineering reviews only, unless otherwise noted. Consolidation provides:

- Situational awareness to the public and to governing officials.
- Basic information needed to find and leverage funding opportunities.

Projects are not prioritized. Different funding sources have different requirements, and CTB would benefit from leveraging participation from as many funding agencies as possible. Estimates provided are described by their "rough order of magnitude" (ROM) unless otherwise noted.

Thorne Bay has demonstrated commitment to well-planned infrastructure development and execution of planned improvements, and has exhibited a successful track record with state-funded grants:

- CTB has received grants for study of wastewater treatment, and has a Preliminary Engineering Report (PER) completed with recommended actions.
- A Design Study Report (DSR) outlining improvements to reduce water treatment Disinfection By-Products (DBPs) was also completed last year. The DSR has been broken into elements that can be accomplished by CTB staff as time and funds are available.
- Thorne Bay's Waterfront Development Plan, 2015, addresses multi-modal improvements to road, trail and harbor infrastructure with a systemic approach.
- CTB constructed road improvements on Sandy Beach Road in front of the school for a cost of \$275,000. With creative design solutions and flexibility, the cost of this construction was reduced from \$1.3 million estimated by federal agencies.
- CTB continues to partner with the Organized Village of Kasaan (OVK) and the City of Craig on upgrades to Kasaan Road, a partnership which continues to receive funding for ongoing improvements. Improvements to Davidson Landing are staged, and include latrines, and a caretaker facility with local water collection and septic wastewater disposal.

Note that there are two projects that can be completed either by a contractor or by CTB: Wastewater Treatment Effluent Disinfection, and Water Treatment Byproduct Improvement. Both scenarios are presented. The advantage of using a contractor is that CTB staff are free to do perform their primary duties, and the work will be done faster. However, without grant funding, CTB staff will continue to work on the projects to move them forward.

This report was completed with the best information available at the time. As projects are actively developed, readers should anticipate changes over time.

Financial Summary

Note that CTB participation in unfunded projects is assumed to be 20% of the project ROM estimates, unless otherwise outlined in the following project descriptions.

	CTB Participation		Other Sources		Total ROM Cost
	Funded	Unfunded	Funded	Unfunded	
Bank Stabilization: Deer Creek Road and Harbor Parking		\$ 11,680		\$ 46,720	\$ 58,400
Boat Launch Repairs: Riprap		\$ 2,940		\$ 11,760	\$ 14,700
Community Pavilion: Site Evaluation and Development		\$ 15,000		\$ 60,000	\$ 75,000
Davidson Landing		\$ 71,000		\$ 284,000	\$ 355,000
Downtown Waterfront Improvements		\$ 158,900		\$ 635,600	\$ 794,500
Freeman Sidewalk	\$ 70,000		\$334,250		\$ 404,250
Ground Water Source Study		\$ 25,000		\$ 100,000	\$ 125,000
Kasaan Road Improvements	\$ 23,500		\$ 67,500		\$ 91,000
Survey: Acquisition of Additional Tidelands*		\$ 22,000		\$ 88,000	\$ 110,000
Survey: Collective Projects		\$ 3,200		\$ 12,800	\$ 16,000
Trail: Dock to Port	\$ 49,000		\$ 131,600		\$ 180,600
Trail: Port to The Claw	\$ 42,700		\$ 27,000		\$ 69,700
Wastewater Treatment Effluent Disinfection: Contractor Lead**		\$ 77,100		\$ 308,400	\$ -
Wastewater Treatment Effluent Disinfection: CTB Lead		\$ 49,400		\$ 197,600	\$ 247,000
Water Treatment DPB Reduction, Contractor Lead**		\$ 26,000		\$ 104,000	\$ -
Water Treatment DBP Reduction, CTB Lead		\$ 5,806		\$ 22,432	\$ 28,238
TOTAL	\$ 185,200	\$ 468,026	\$560,350	\$1,871,312	\$2,569,388

*Assumes highest cost scenario

**Work will be done by CTB OR by contractor. Only CTB figures are included in total ROM costs

In the project descriptions below, project costs are presented in different ways – there are different sorts of tables in addition to tabular display. These variations represent either the way the information was submitted in a grant application, or the simplest way to illustrate project costs.

Bank Stabilization: Deer Creek Road and Harbor Parking

Support documents: Map below.

Scope: Survey, design and environmental activities associated with riprap repair along CTB Roads.

The CTB proposes reinforcing existing transportation infrastructure at two locations. The riprap will consist of locally-derived material and be placed partially below the high tide line of Thorne Bay. Erosion from tidal energy has reduced existing riprap in several sections along Deer Creek Road on the south side of Deer Creek and just west of Shoreline Drive adjacent to the harbor access path. Both locations will total less than 1/3 of an acre of fill. CTB proposes to use US. Army Corps of Engineers (USACE) Nationwide Permit (NWP) 14 (Linear Transportation Projects).

Deer Creek Road: This area requires isolated riprap repair along approximately 350' of Deer Creek Road, and extends approximately 8' into the wetlands. Wave activity has moved the riprap and is resulting in undercutting the road. The pictures below illustrate areas of concern with the road.



Riprap will be placed during low tide, from the roadway – there will be no heavy equipment in the wetlands. Riprap will not be placed during salmon spawning.

Harbor Parking: Wave activity has also removed riprap south of the harbor office in an approximate 40' by 30' area. This approximately 1,200 square feet area requires placement of riprap.

The Engineering Consultant will coordinate/schedule a pre-application meeting with the USACE to determine the appropriate permit and drawings. The Engineering Consultant anticipates that the

appropriate nationwide permit will be NWP 14. The Engineering Consultant assumes pre-construction notification to the USACE is required since fill would total greater than 1/10 acre. The Engineering Consultant will provide design survey, and plan and profile sheets for improvements. They will evaluate the lots on Deer Creek Road as potential material sites, and provide guidance on material size.

Note that, in order to comply with the USACE NWP, total disturbed acreage must be kept under 14,520 square feet.

Costs: \$58,400

Survey: \$4,000

Environmental: \$1,000

Design: \$5,000

Construction (ROM): \$48,400

Boat Launch Repairs: Riprap

Support documents: None.

Scope: CTB proposes to reinforce an existing boat launch dock, located next to the boat launch ramp in Thorne Bay. The dock was constructed by Alaska Department of Public Facilities (ADOT&PF) and transferred to CTB thereafter. The existing riprap has been eroded by tidal forces and less than 1/3 of an acre of riprap is anticipated below the high tide line to reinforce the dock.



The pictures above show where the riprap has washed away from under the upper part of Thorne Bay's boat launch dock.

The Consultant Engineer proposes USACE NWP 3 (Maintenance). The Engineering Consultant will contact the USACE to schedule a pre-application meeting. They will provide project information to USACE, including questions regarding timing and funding of project(s). The Engineering Consultant assumes that fills total less than 1/3 acre, and that no preconstruction notice or drawings are required for the environmental effort, only an e-mail notification with basic project information.

Costs: \$14,700

Survey: None needed.

Environmental: \$1,000

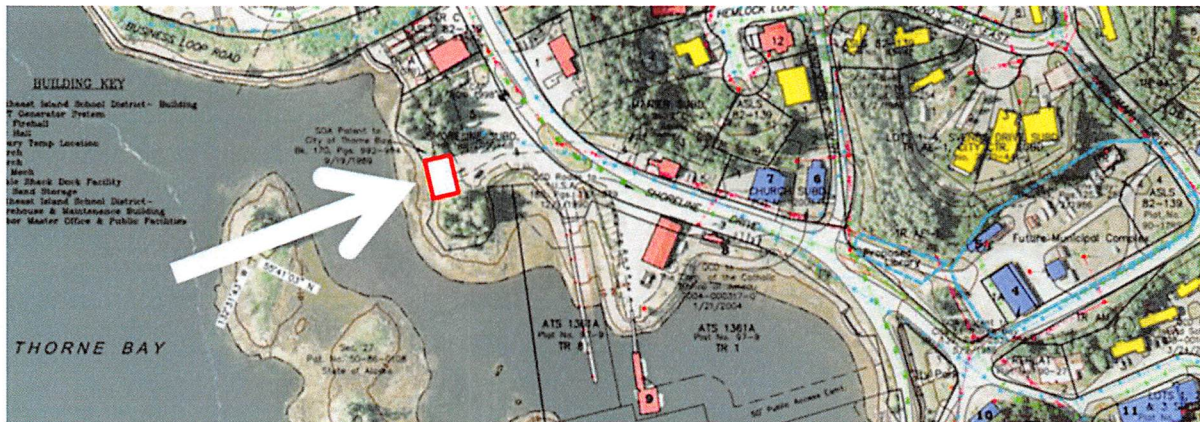
Design: \$3,000

Construction: \$10,700

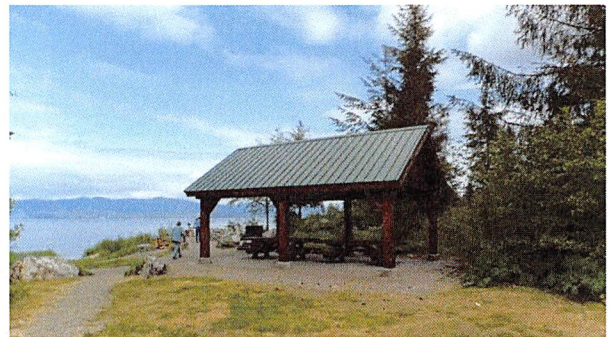
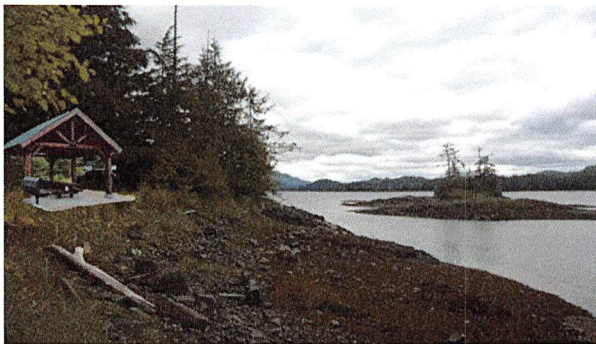
Community Pavilion: Site Evaluation and Development

Support documents: Thorne Bay Waterfront Plan, 2016

Scope: Build a community pavilion near the Boat Launch. The facility would accommodate approximately 50 people, and be used for weddings, picnics, and possibly for the Public Market. The purpose of the facility is to create a space where the citizens of Thorne Bay have beach access, and to draw tourists through the downtown core from the harbor.



The white arrow above indicates the proposed location of the pavilion. Size and orientation are yet to be determined.



The picture above left shows how a shelter might look in the proposed location. The picture to the right is a USFS shelter built in Coffman Cove that is similar to what CTB would like to build.

Costs: \$75,000

Survey: \$3,500

Environmental: \$0

Design: \$6,500

Construction (ROM): \$65,000 – note that volunteer labor could be used to reduce this cost.

Davidson Landing

Support Documents: Davidson Landing Site Improvements Plan Set,
Davidson Landing Facility Analysis Memo

Scope: This project has multiple elements that can be broken out and constructed as funding is available.

To summarize, a simple caretaker facility would be built with a rainwater catchment system for potable water. The wastewater for the facility would be treated using a package aerated septic system. The public restrooms would be vault style, similar to those used by the United States Department of Agriculture Forest Service (USFS). The existing boat ramp is in good condition, but could be stabilized with concrete.

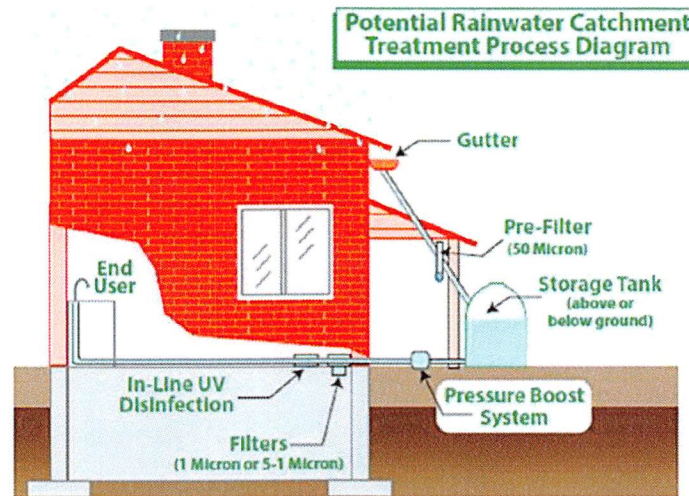
Construction of pit latrines: The Alaska Department of Environmental Conservation (ADEC) has approved this installation according to plans, and Pellet Enterprises is proceeding with this work. These latrines will have no running water and would require annual pumping.

Installation of rain catchment on Fire Station: While the encatchment system is built to ADEC standards for health reasons, it does not require approval because it is isolated from public systems. It would include:

- Screened rainwater gutters on the fire hall and collection piping. Roof may need to be upgraded if condition is poor.
- Pre-storage filtration system to remove large grit, such as an Amiad in-line 50-micron stainless steel screen with a down drain (or equivalent).
- 1-micron cartridge filtration to remove suspended solids. A few options might be:
 - Pentek Big Blue 10-inch cartridge filtration canisters with Harmsco Poly-pleat micron filters (or equivalent), or
 - A 5-micron filter followed by a 1-micron filter, with Pentek Big Blue 10-inch cartridge filtration canisters.
- Ultraviolet (UV) disinfection, to inactivate micro-organisms. This may include:
 - UVMax C4 entire system sterilizer – 14 gallons per minute (gpm), 45 watt, or
 - UV under-sink sterilizer – 2 gpm, 14 watt sterilizer (for treatment of just drinking water at the kitchen sink).
- Pressure tank and booster pump, to increase system pressure. This may include:
 - Amtrol 35-gallon pressure tank with booster pump, or
 - Smartpump (a small in-line pump that does not require a pressure tank).

- Automation for restricting the activity of the pressure boost system when the storage tank is not full.

A diagram of the system is below:



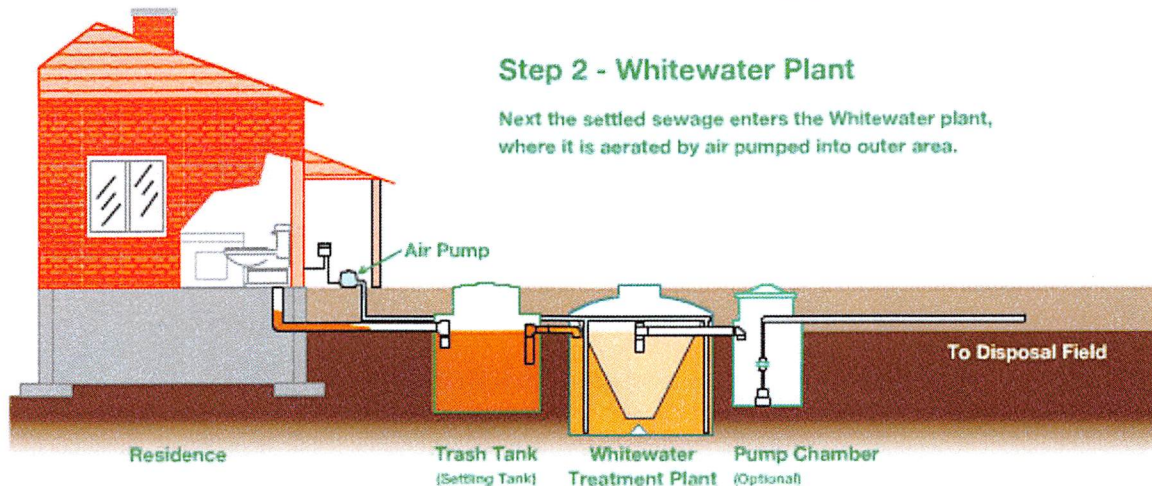
Operational costs would include:

- Filter replacement
- 24/7 energy demand UV lamps
- Replacement of UV lamps on an annual basis
- Pumping costs for booster pump or smart pump

The CTB would need to deliver water to the facility during dry spells or freezing temperatures.

Design and installation of caretaker facility: The facility is expected to be occupied year-round, and could house a small family. The facility could be a kit-style cabin or mobile home. Local vendors can provide logs and construction. The facility would include a whitewater treatment plant with marine discharge. A diagram of the system is below:

Whitewater Treatment Plant



The plan for this system was submitted to the ADEC for approval in July of 2016.

Operational costs will include:

- Power to run an aerator.
- Power to run a discharge pump, if gravity cannot be used.
- Annual pumping.

Design and installation of concrete boat ramp: The existing boat ramp at Davidson Landing could be paved with prefabricated reinforced concrete beams. The existing ramp was constructed by Fama Construction L.L.C. The owner says the ramp is built to proper slope, between 12% and 15% grade, and that prefabricated paving beams could be placed on the existing grade. The Consulting Engineer recommends a 16 foot wide ramp with three feet of riprap on each side. The ramp should extend to approximately two feet below Mean Lower Low Water. The exact length of the existing grading is unknown and should be assessed prior to design, but for estimating and planning was assumed to be 172 feet long. The ramp should be built of tongue and groove precast concrete beams that are 16 feet by four feet by eight inches. These precast beams are produced by companies such as Oldcastle Precast and must be shipped to Thorne Bay or another nearby port by barge. The units weigh approximately 6,400 pounds each. They could be placed by a large excavator or by a crane mobilized to the site. These units could also be cast on-site if a contractor found that to be more cost effective.

Costs: \$355,000

Plans were developed so that a contractor could use methods and materials that best suited construction on Prince of Wales Island. Consulting engineers will be available to assist with choice and placement of materials, final inspection, and regulatory paperwork that needs completion.

Pit Latrines	\$30,000
Rainwater Catchment	\$25,000
Caretaker Facility	\$120,000
Whitewater Septic and Marine Discharge	\$30,000
Boat ramp hardening	\$110,000
Design and permitting	\$40,000

Downtown Waterfront Improvements

Support Documents: Thorne Bay Waterfront Plan, 2016

Scope: The CTB proposes to enhance access to the shoreline through expansion of parking areas and commercial zone adjacent to the Thorne Bay boat harbor through the placement of approximately 1.3 acres of fill below the high tide line of Thorne Bay. The volume of fill needed is approximately 33,000 cubic yards.

Background: A project in the same area was permitted by the USACE in 1984 and has subsequently been changed in the following ways:

- In 1984 (M-860633) the applicant was ADOT&PF and the project purpose was to widen Shoreline Drive and provide a parking area.
- In 1988 the project was modified to accommodate activities association with float plans and moored vessels.
- In 1989 the permit was transferred to the CTB.
- The permit was modified in 1991 (O-840239) to include:
 - steel boat grid;
 - boat repair facility and two haul-out areas;
 - an ice/cold storage facility including an approach, gangway and float; and
 - an airplane float and gangway.
- In 1996 (reference Q-840239) the permit was modified to extend the construction deadline to 2000.

The only authorized construction completed was the steel boat grid.

The new project will be the discharge of fill to expand shoreline drive and provide additional parking and areas for commercial use. The purpose of this project is to provide parking facilities for Shoreline Drive and the associated harbor area, and to accommodate commercial ventures. Harbor parking is currently limited to a small lot in front of the Harbormaster Office, and to informal roadside parking. The roadside parking creates conflicts between pedestrians, prevailing traffic, and vehicles backing out or pulling in. Uplands are steep and limited.

Since the project purpose for this area has changed (from parking to airplane services, then to boat facilities, and now to commercial and parking), and only one permitted facility was built, it would be more efficient to apply for a new permit rather than amend the current permit.

Tasks: Section 404 Permit Applications - Components

A. Coordination with Client and USACE

- a. Pre-application meeting (via phone)
 - b. Pre-public notice coordination/questions
 - c. Post-public notice coordination
- B. Permit Application and Supplemental Information
 - a. Cover Letter
 - b. Purpose and Need
 - c. Project description
 - d. Alternatives
 - e. Alaska Historical Resources Survey (AHRS) Search
 - f. Avoidance & Minimization Measures
 - g. In-lieu fee determination
- C. Mapping
 - a. Habitat Boundaries
 - b. Determination of High Tide Line, Mean High Water and Mean Low Water
 - c. Wetland Ecosystems Services Protocol for Southeast Alaska (WESPAK-SE) Evaluation and Impact Calculations
 - d. Location and vicinity map, and Plan View figures
 - e. Cross sections

Assumptions:

- An Individual Permit is necessary
- No Essential Fish Habitat (EFH) assessment by a professional biologist needed
- No site visits
- No Threatened or Endangered Species (T&E) in the area
- No scoping or Section 106
- Mitigation will be through in-lieu fee program or mitigation bank (cost of mitigation for 1.3 acres of fill determined by in-lieu fee program or mitigation bank)

Costs: \$794,500

Survey: \$8,000

Environmental: \$31,500

Geotech: \$20,000

Design: \$35,000

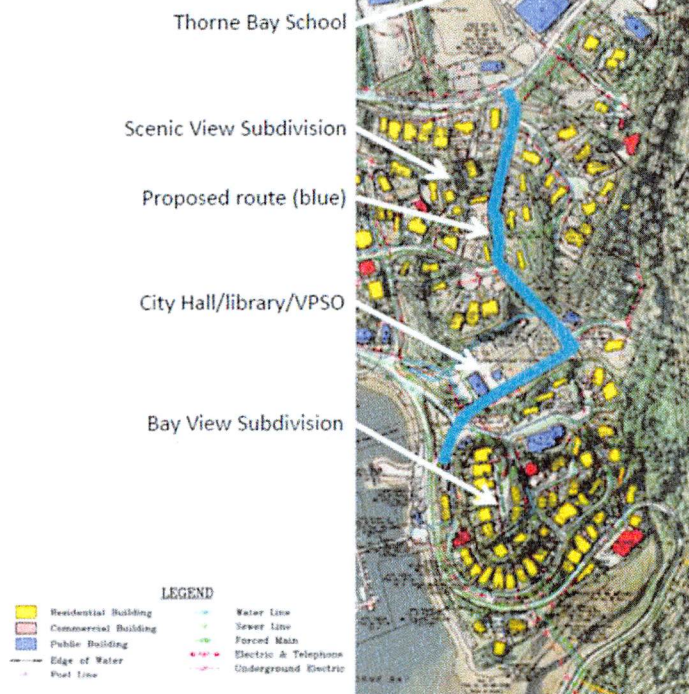
Construction (ROM): \$700,000

Freeman Sidewalk

Support Documents: Thorne Bay Development Plan, Fiscal Year (FY) 2007

Thorne Bay: Freeman Drive Sidewalks

Project Area Map



Scope: Construct a five foot sidewalk with curb and gutter on the northeast side of Freeman Drive from the intersection with Sandy Beach Road to the intersection with Rainy Lane.

Note that page 37 of the Thorne Bay Development Plan Fiscal year (FY) 2007 estimates Freeman Drive Reconstruction, including the sidewalk, curb and gutter, at \$325 per linear foot. Sidewalk construction includes grading, placement of D1, and construction of the sidewalk, curb and gutter. There is one spot where fill would be required, though the extent will not be known until topographical survey is complete. 1-2 storm drain crossings and 1-2 catch basins are anticipated. Thorne Bay's Consultant Engineer estimates

sidewalk, curb and gutter construction costs at \$210 per linear foot, for a total sidewalk construction cost of \$315,000. The estimate is based on the Consultant Engineer's most recent design in Sitka, Alaska, completed in June of 2016.

This improvement provides safe and Americans with Disabilities Act (ADA)-compliant pedestrian pathways between all major subdivisions in North Thorne Bay and the school. Additionally, the terminus at Pearl Nelson Park is close to the harbor, so students commuting via boat from South Thorne Bay can use the route for most of their pedestrian commute. The sidewalk also improves multi-modal access for South Thorne Bay residents accessing basic governmental services such as City Hall, the library, and Village Public Safety Officer (VPSO). The project map illustrates the significant population that will benefit from this improvement.

This falls under the Statewide Highway Safety Program's "Special Users" emphasis area for Bike/Pedestrian operations, under "Engineering" strategy, which encourages and supports local agency incorporation of pedestrian facilities design standards.

Thorne Bay was on the Distressed Community list for Alaska in 2014. They are on the 2015 list if you use the +/-3% criteria. To clarify, while not a Distressed Community, Thorne Bay is newly emergent, and a project like this helps stabilize the community.

This new sidewalk complements connectivity efforts by providing a rationalized route from major North Thorne Bay subdivisions in the Bay View (southeast of City Hall) and Scenic View (northwest of City Hall) subdivisions to public facilities.

As illustrated by inclusion in the FY2007 Thorne Bay Development Plan, the project is publicly vetted and approved by Thorne Bay's governing City Council.

The project requires topographic survey, design and environmental analysis before construction.

Costs: \$404,250

CTB has requested funding through the ADOT&PF Transportation Alternatives Program (TAP) for this project, with proposed funding:

Type of activity	Federal Amount Requested	Local Match
National Env. Policy Act (NEPA)		\$10,000
Design		\$50,000
Construction	\$315,000	
Contract Administration		\$10,000
ICAP (State oversight costs)	\$19,250	
TOTAL	\$334,250	\$70,000

Groundwater Source Study

Support documents: DSR, August 2015

Scope: Conduct hydrological analysis for switching from surface water source to ground water.

This study would include a two phase analysis of:

- Desktop analysis of United States Geologic Survey (USGS) and USFS geologic records to provide drilling locations and recommendations.
- Field reconnaissance and test wells with driller.
- Note that Water Lake could continue to serve the CTB as a secondary source.

Cost: \$125,000

Survey: None.

Environmental: None.

Design: \$125,000, assuming 4 pilot wells are drilled. Costs are for analysis only, and do not include improvements to access or conduct water.

Construction: Will be established following Groundwater Source Study

Kasaan Road Improvements

Support documents: Kasaan to Goose Creek Road Project, Prince of Wales, Alaska

Plan set, 100% draft

Engineer's estimate

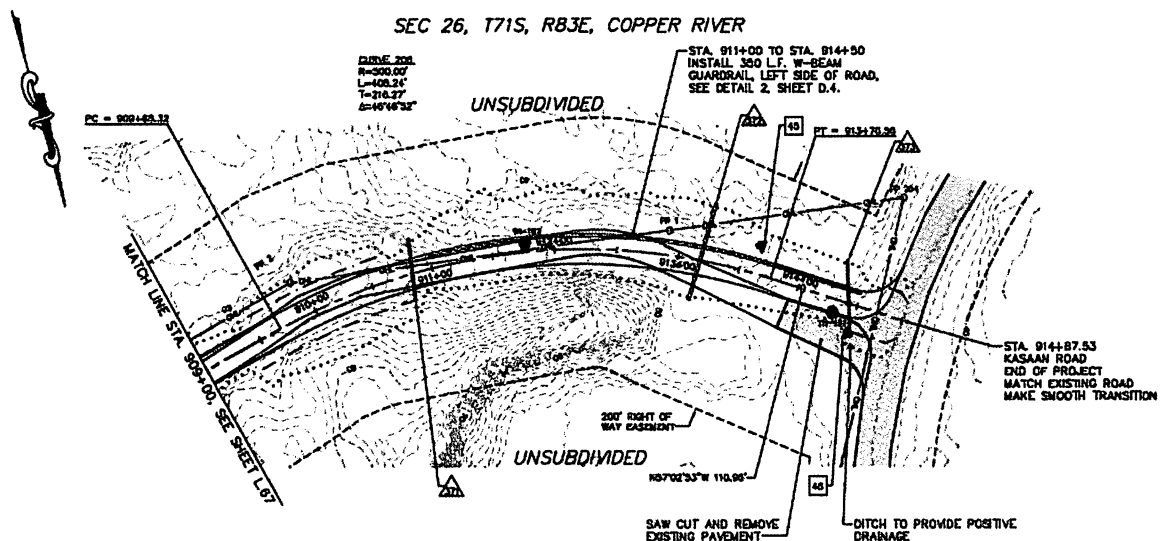
Specifications

Scope: Continue reconstruction of 400 feet of Kasaan Road from the intersection with Thorne Bay Road.

Three grant requests have been received to conduct this work:

- Initial construction on Kasaan Road is beginning in 2016, and is funded from 2015 Rural Advisory Committee (RAC) grant. With this funding the CTB and OVK anticipate culvert replacement and roughed in road realignment.
- CTB has been granted \$30,000 of left over funds from 2015 RAC grant pool to provide additional work on Kasaan Road.
- CTB received 90% funding for the next stage of construction through the 2016 RAC grant process.

The intersection with Thorne Bay Road will be realigned to the south to protect artifacts found in the cuts along the slope in the area of 913+00. This work involves placement of subbase and base material, removal of existing roadway material (decommissioning of the old road alignment), and culvert installation. Detail from the plan set is below:



The use of USFS funds triggers National Environmental Policy Act (NEPA) requirements, which will be conducted by the USFS. The project would be constructed in existing right of way, would not

cross any drainages, doesn't remove any large trees, and is not likely to require any environmental permits. We anticipate some action under the National Historic Preservation Act of 1996.

Costs: \$91,000

CTB has received \$67,500 in USFS RAC grant funds for this project, 90% of the funds requested through the grant application.

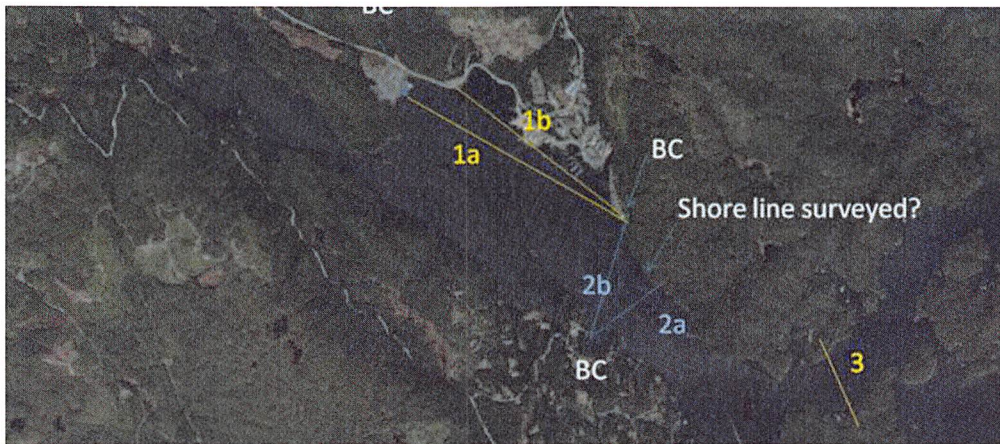
*Note that the USFS will provide NEPA required for the project, saving CTB about \$5,000.

Type of activity	USFS	CTB	Unfunded
NEPA	*		
Permit acquisition		\$ 1,000	
Contract/Grant Administration		\$ 7,500	
Salaries	\$ 40,500		
Materials	\$ 27,000		
Other labor		\$ 15,000	
TOTAL	\$ 67,500	\$ 23,500	

Survey: Acquisition of Additional Tidelands

Support documents: Map

Scope: The Alaska Department of Natural Resources (ADNR) and CTB have been discussing CTB acquiring tidelands in the area. Depending on the requirements of the transfer, there are three scenarios to consider:



1: Transfer tidelands adjacent to CTB (a&b in the figure above represent use of existing survey monuments).

2: Transfer tidelands using the survey corner at Davidson Landing

3: Transfer the entirety of the bay

CTB is working with ADNR on survey required for transfer. The transfer may include a long term lease of ADNR lands in the sort yard.

Costs: \$110,000

It is important to recognize that actual costs will not be fully understood until ADNR issues survey instructions. Costs below do not include estimates of CTB time engaged in negotiations with ADNR determining scope and survey requirements.

Survey: Estimated ROM costs range from \$42,000 to \$110,000, depending on scope, conditions and directions.

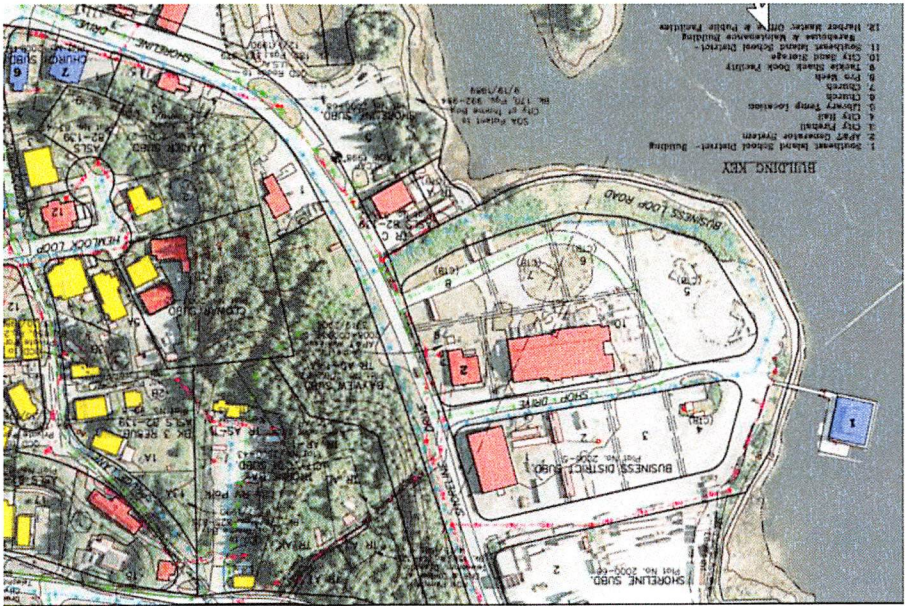
Environmental: None.

Design: None.

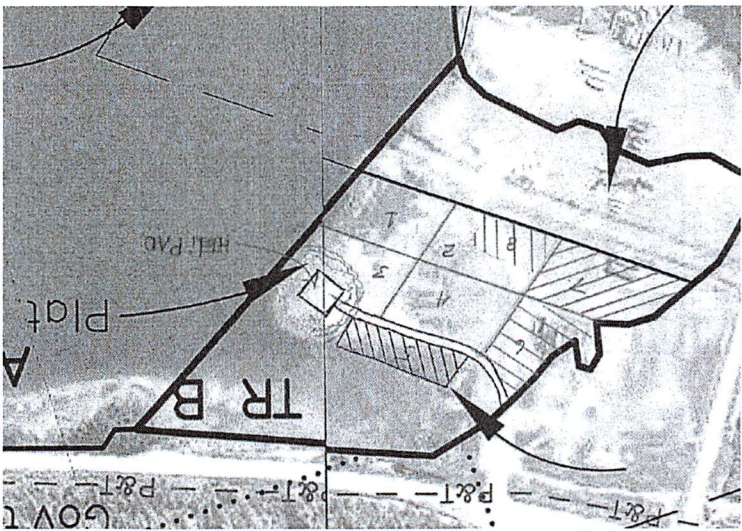
Construction (ROM): None.

Support documents: Maps (below)

Scope: Reset corners in the commercial area within the perimeter of Business Loop Road and Shoreline Drive.



Survey and mark "lots" in the sort yard. This demarcation will only be used to manage lease areas, and does not need to be recorded.



Costs: \$16,000

Survey: \$16,000: \$4,000 for the sort yard, \$12,000 for the commercial area.

Environmental: None.

Design: None.

Construction: None.

Trail: Dock to Port

Support documents: Thorne Bay Waterfront Plan, 2016

Thorne Bay: Dock to Port Trail

Project Area Map

Port to Claw Trail: Informal, improvements proposed under another grant program (blue)

Existing paved sidewalk/trail (white)

This project:
Dock to Port Trail (proposed, green)



Scope: The primary purpose of this project is to separate pedestrians from industrial traffic. Secondly, this will be used as an opportunity to educate visitors on Thorne Bay's forest ecosystems and logging industries.

This project would build a 1,150 foot woodland trail from Thorne Bay's boat launch to The Port, a grocery/post office/dock facility near the intersection of Shoreline Drive and Thorne Bay Road. The route would bypass industrial operations at Thorne Bay's port, reducing pedestrian/heavy equipment conflicts.

The trail would link the existing paved sidewalk along Sandy Beach Road to Thorne Bay's downtown. It is also an element of systemically-planned pedestrian access to The Claw, located

approximately 700 feet northwest of town. The Claw is one of the world's largest log-handling grapples, and helps visitors understand the impact the logging industry once had. Tourists arriving at the harbor currently walk through the business and industrial districts of town to access The Claw. Thorne Bay's industrial area accepts transshipments for all of Prince of Wales Island. While pedestrians get a good view of a working Alaskan port, they are walking through an area of heavy equipment operation, with no designated pedestrian accommodations.

The path would be constructed of compacted D1 in log forms, with filter material at the base.



Tourists walking from the harbor to The Claw pass through Thorne Bay's industrial area. Large container trucks and forklifts also use this area, creating an unsafe mix of industrial traffic and pedestrians who are not familiar with operations.

Costs: \$180,600

CTB has requested funding through the ADOT&PF TAP grant for this project, with proposed funding:

Type of activity	Federal Amount Requested	Local Match
NEPA		\$10,000
Design		\$14,000
Construction	\$123,000	
Contract Administration		\$10,000
Construction Materials, D1&logs		\$15,000
ICAP (State oversight costs)	\$8,600	
TOTAL	131,600	\$49,000

Total project cost is estimated at \$172,000, assuming contractor construction at \$120 per foot. This cost does not include Individual Cost Allocation Plan (ICAP) costs, the funding the State of Alaska requires to oversee the project. CTB is not required to consider ICAP when calculating match. Thorne Bay's contribution, including design, NEPA, contract administration and some construction materials is \$49,000, or \$14,600 in excess of 20% match. Materials provided by Thorne Bay include D1 at an estimated \$7,000, and 6-8" round logs estimated at \$8,000.

Note that, for USFS RAC funded Port to Claw Trail, Thorne Bay has been able to reduce agency costs by providing labor and organizing volunteer construction. Additionally, design is limited to a typical section and plan view. Note that the RAC grant funds a section of the trail that includes

riprap fill improvement along Thorne Bay, requiring a more robust design effort. Thorne Bay would welcome the opportunity to provide similar efficiencies for this project.

Trail: Port to The Claw

Support documents: Thorne Bay Waterfront Plan, 2016

Scope: Enhance the undeveloped pedestrian route along Thorne Bay Road from The Port (approximately 200 feet south of the intersection with Shoreline Drive) to “the Claw,” approximately 1,000 feet.

Allen Marine makes 18 summer trips to Thorne Bay Harbor, providing clients three to six hours to explore Thorne Bay’s natural and cultural resources. Each boat will have an average of 37 guests, plus crew.

Logging is an important element of Thorne Bay’s history, and the logging town aesthetic remains today. “The Claw” is one of the world’s largest log-handling grapples, and helps visitors understand the impact the industry once had. There is a developed plaza explaining logging history and provides directions for those arriving in Thorne Bay via Thorne Bay Road. The Claw is an important cultural resource that illustrates the magnitude of the industry that this community grew up around, and the mission of the USFS is served by supporting this project and stewarding this resource.



Figure 1: Pedestrians on their way to The Claw, walking in the Thorne Bay Road travel lane (left). Vehicles enter the opposite travel way to avoid pedestrians (right).

The Claw is an attractant that pulls visitors through town, past the bank, bait shack, and café. Thorne Bay artists and business people have an outdoor market coordinated with tourist visits, where locally developed and sourced art and products are showcased and sold. These include native art, honey, soft home furnishings, wordworking, and smoked meats. The route goes through an industrial area that illustrates the activities of a working port. From there, visitors currently follow an informal pathway along the bay side of Thorne Bay Road to access The Claw.

This project would:

- Improve pedestrian safety
- Rationalize access, reducing *ad hoc* access and damage to roadsides that results
- Reduce impacts on erosion and foliage through design features



Figure 2: This picture shows a trail construction similar to that being proposed for the trail to The Claw. Four inch logs will border compacted D1.

The proposed trail would use logs to edge a built up D1 pathway, much like the one pictured below from Outer Point in Juneau, AK (Figure 2). We do not anticipate the need for retention or filter fabric under the D1 because there is good road material where the trail is proposed. A short section along the road requires riprap repair to address erosion and widen the side of the road to accommodate a trail.

CTB will provide survey, design, and contract administration, and the majority of construction materials. The value of these provisions exceeds 50% of trail development costs, and is proposed to be used as match.

CTB's Consultant Engineer will gather field survey data with Global Positioning System (GPS) equipment in order to provide topographic and right-of-way information which will be required to design the trail. The survey will include topographic data for the existing roadway, landward 20 feet from the centerline of the roadway, seaward 50 feet from the centerline of the road or to edge of water. Surveyors will locate any existing monuments located within the survey area. Surveyors will establish vertical and horizontal control which will be used for the project design.

The use of USFS funds triggers NEPA requirements. The trail would be constructed in existing right-of-way, would not cross any drainages, and doesn't remove any large trees. The proposed fill and rip rap repair is less than 0.5 acre, and is likely to be covered under a USACE NWP. Other required permits are not anticipated. The Consultant Engineers anticipate some action under the National Historic Preservation Act of 1996. The Consultant Engineers estimated \$10,000 for environmental efforts, including consultation with impacted agencies. A smooth process could cost as little as a few thousand dollars. We'd propose pursuing environmental efforts under a time and materials contract.

Design costs depend on the granting agency's requirements. Estimates below indicate minimal design: a plan view, cross section detail and rip rap detail. If the sponsor requires a profile for the entire trail, design costs will be increased.

ASSUMPTIONS:

- It is assumed that a small amount of fill will be required to construct the trail. This fill is assumed to be covered under a NWP and will not require additional permitting from the USACE.
- It is assumed that the roadway is currently owned by the CTB and that no ADOT&PF permits will be required.
- No Stormwater Pollution Prevention (SWPPP) plans will be part of this proposal.
- No wetlands delineation will be required as part of this project.
- The CTB will be the only entity which will require plan submittals.

Costs: \$69,700

CTB has received \$27,000 in USFS RAC funding for this project. This is 90% of the amount requested through the grant application.

Type of activity	USFS	CTB	Unfunded
Field work and site survey		\$ 7,200	
NEPA	*		
ESA consultation	*		
Project design and engineering	\$ 9,000	\$ 12,000	
Contract/grant administration		\$ 5,000	
Salaries	\$ 9,000		
Materials and supplies	\$ 9,000	\$ 18,500	
TOTAL	\$ 27,000	\$ 42,700	

*Endangered Species Act (ESA) consultation is not needed as there are no terrestrial T&E species in the area. Environmental requirements will be handled by the USFS.

***Materials provided by CTB

include: D1: \$3,500

Riprap: \$10,000

Fill: \$700

Log border: \$4000

Trash can: \$300

CTB labor is associated with D1 movement, riprap placement, fill placement and compaction, and trash can installation. Trail elements of log borders and D1 placement will be handled by volunteers.

Wastewater Treatment Effluent Disinfection: Contractor Lead

Support documents: Wastewater Treatment Facility Effluent Disinfection PER, May 2015

Scope: The CTB's wastewater treatment facility often violates effluent standards for fecal coliforms. To combat this problem CTB intends to introduce a disinfection step to the wastewater treatment process. The PER, May 2015, recommended UV disinfection be implemented because this disinfection process has the lowest overall life cycle costs. It also has the highest capital costs because implementation of a UV system would require retrofitting an existing chlorine contact basin that the CTB already has. If grant funds are available to help the CTB with recurring effluent violations, UV disinfection is the recommended alternative.

Costs: \$385,500

Survey: Not Needed

Environmental: Not Needed

Design: \$69,500

Construction: \$316,000

Wastewater Treatment Effluent Disinfection: CTB Lead

Support documents: Wastewater Treatment Facility Effluent Disinfection PER, May 2015

Scope: The report referenced above recommends UV disinfection, due to reduced operations and maintenance costs, a lower life cycle cost, and less chemical exposure for staff and the environment. However, this option comes with a significant capital outlay that CTB does not currently have available, and for which grant monies do not appear to be available. CTB had a gas chlorination system that was removed because it was not needed to meet permit requirements. Effluent standards for fecal coliforms are now being exceeded regularly which results in violations of CTB's Permit. Reinstitution of a variation of the chlorination system is the fastest way to address the concern, with lower immediate costs.

Rehabilitation to the system is outlined on page 14 of the PER, and will require:

- Bypass installations.
- Flow meter installation, in a man hole between the treatment basin and contact chamber, with a readout next to the skid-mounted feed system (see below).
- Baffle installation to promote mixing.
- Chemical injection pipe, if the current one is in poor condition.
- Dechlorination skid installation with metering pump, isolation valves, pressure relief valve, and calibration column.
- Storage for sodium bisulfate (dechlorination chemical). Note that a 30 day supply is anticipated to be less than a 55-gallon drum.
- Sampling port installation downstream from chlorination.

Gas chlorination systems are discouraged due to safety concerns, so the gas chlorination system that CTB has will be retrofitted for a dry calcium hypochlorite system. This will require:

- Skid mounted feed system that includes a dry pellet hopper, automated solution tank, secondary containment, isolation valves and controls. The skid (27"x52"x38" tall) would need to be installed in a building, and a water supply of 1.0 gpm at 50 psi, minimum.
- Cool, dry storage for chemicals. CTB would need to determine how much to keep on hand, assuming use of 15 lbs a day, and delivery in 50 pound 5 gallon buckets.

Costs: \$274,000

Type of activity	Materials	CTB Staff Hours	Engineering Staff Hours
Ca(ClO) ₂ System	\$118,000	800	120
ADEC Approval to Construct			80
Total hours		800	200
Estimated hourly rate (includes overhead):		\$120	\$165
TOTAL	\$118,000	\$96,000	\$33,000

Water Treatment DBP Reduction: Contractor Lead

Support documents: Water Treatment Plant Reduction of Disinfection Byproducts DSR, August 2015;
Compliance Order By Consent, 2015

Scope: CTB would contract recommended improvements to the Water Treatment Plant, in accordance with the DSR. These improvements would include:

- Installation of an air ventilation system consisting of an inlet air filter, 1,400 cubic foot per minute (CFM) blower, and ductwork for air circulation. CTB staff would need to manually turn off air ventilation system during freezing temperatures.
- Purchase and installation of a floating DBP air stripping system. The air stripper will need to be monitored as a full scale pilot test until performance is verified, and installation may need to be modified to maximize performance, and CTB staff may be asked by the contractor to assist. Note that two oxygen injectors are anticipated to be needed.
- Other improvements to meet the Compliance Order by Consent

Engineering consultant obligations would include:

- Review of bid materials for the air stripping system, the air ventilation system, pH meter and/or spectrophotometer.
- Manage bids for referenced items.
- Cursory review of contractor-proposed installations.
- Cursory review of modifications.

Costs: \$130,000

System costs are outlined in the DSR. To summarize:

Design:	\$25,000
Construction:	\$105,000*

*Assuming CTB has already installed meters

Water Treatment DBP Reduction: CTB Lead

Support documents: Water Treatment Plant Reduction of Disinfection Byproducts DSR, August 2015

Scope: CTB has a recurring problem with formation of DBPs which are a human health risk and the reason why CTB has made the EPA's list of Significant Non Compliers. Based on the availability (or lack) of grant funds, the CTB could construct some of the improvements from the DSR.

Improvements the CTB could undertake without Contractor involvement include:

- **Process Optimization:** The recommended improvements from the DSR will likely require use of mechanical contractors, the CTB could install meters ahead and independent of the mechanical contractors. Improved monitoring systems will provide improved records to CTB operators and engineering consultants which will allow for pH adjustments and other chemical addition critiques to better control DBPs proactively. The CTB could purchase and install:
 - Hach pH meter with Hach SC200
 - Hach Cl17 Cl₂ meter
 - Hach DR 6000 Spectrophotometer.

Engineering consultant obligations would include:

- Review of bid materials for the pH meter, the Cl₂ meter, and the spectrophotometer.
- Assist in evaluating installation and modifications.
- pH optimization methodologies review

Costs: \$28,240

System costs are outlined in the DSR. To summarize:

Type of material/activity	Materials	CTB Staff Hours	Engineering Staff Hours
Hach pH meter	\$2,200	16	4
Hach Cl ₂ meter	\$3,300	16	4
Hach Spectrophotometer	\$8,200	16	4
Engineering Installation Plan			40
TOTAL HOURS		48	52
Estimated hourly rate (includes overhead):		\$120	\$165
TOTAL COSTS	\$13,700	\$5,760	\$8,580

