Wrangell Institute Property Master Plan

City and Borough of Wrangell

April 26, 2017

WRANGELL — GATEWAY TO THE STIKINE — ADOPTED AUGUST 1972

Corvus Design — Landscape Architecture • Planning • Industrial Design

NorthWind Architects, LLC

R&M ENGINEERING-KETCHIKAN, INC. — ENGINEERS GEOLOGISTS SURVEYORS

Rain Coast Data

Table of Contents | Wrangell Institute Master Plan

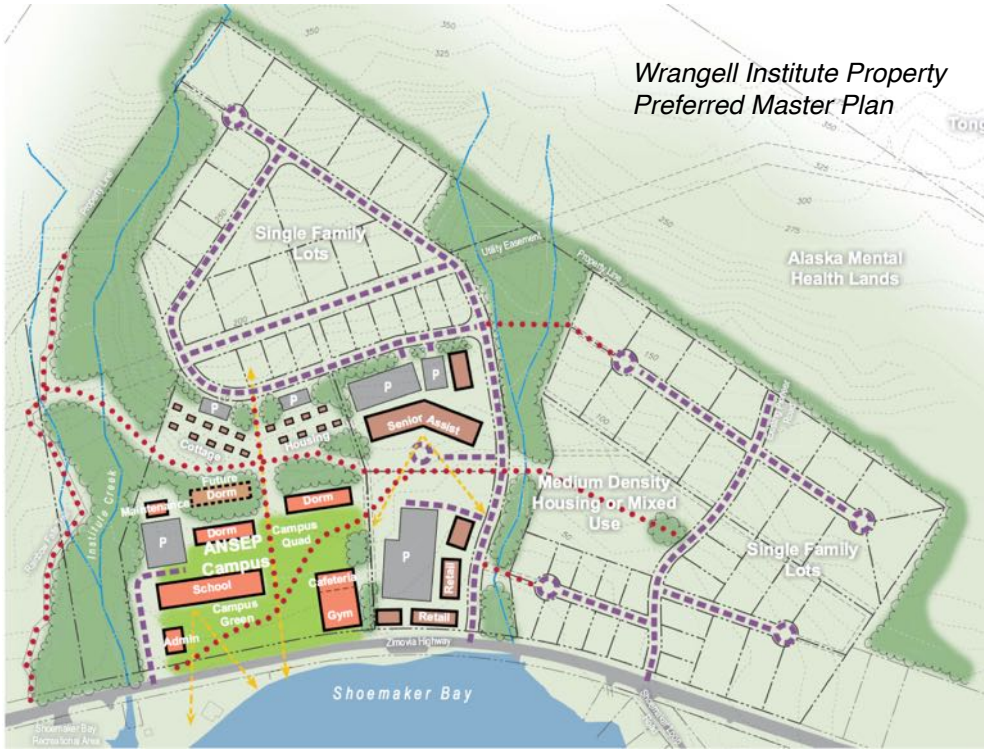
Executive Summary

History of Site and Existing Conditions

The Wrangell Institute Property is located in Wrangell, Alaska at approximately 5 mile Zimovia Highway near Shoemaker Bay Harbor. The land is adjacent to residential property and the Shoemaker Bay Recreation Area. The 134-acre site is owned by the City and Borough of Wrangell. Approximately 12 acres along the highway were previously subdivided when the former Wrangell Institute was constructed there in the 1940's. The rest of the property is forested, undeveloped land with some timber harvest. The focus of the planning effort was on creating a new and vibrant mixed-use neighborhood that could be integrated into the surrounding development and resources.

Public Outreach

This plan was developed through the input of more than 100 Wrangell stakeholders and residents throughout four community workshops, two three-day open house events, integrated design charrettes, stakeholder meetings, and intensive public outreach over a five-month period. Working with the public and local officials, the team developed 15 plans that were reduced to seven, narrowed down to three and–based on feedback and input–developed into an integrated preferred master plan.



Wrangell Institute Property Preferred Master Plan

Overview of Preferred Plan

The community's preferred master plan sets aside 20 acres for an educational campus–including a school, gymnasium, cafeteria, and green spaces. The plan also includes space for the development of a senior assisted living facility. The plan envisions vibrant self-supporting neighborhoods with room for retail and commercial development. The plan integrates these developments with existing recreation facilities including the Rainbow

Falls Trail and adjacent harbor and park, capitalizing on the adjacent location of Shoemaker Bay. Single-family housing lots will be along the Zimovia Highway and also back into the site subdivision as the market demand expands. Further residential opportunities are provided behind the education and senior care facilities in order to provide support for these developments and additional residential expansion.

Phasing

The plan is broken into seven distinct phases:

Phase I - Medium Density Residential: 5 acres, 10 lots. Roadway and utility construction = $827,576
Phase II - Medium and Low Density Residential: 15 Acres, 14 lots. Roadway and utility construction = $649,664
Phase III - Commercial / Educational / High Density Residential: 33.5 Acres, 3 lots (two smaller lots and one 20-acre parcel). Roadway and utility construction = $1,175,193
Phase IV - Low Density Residential: 9 Acres, 7 lots. Roadway and utility construction = $433,211
Phase V - Low Density Residential: 9 Acres, 9 lots. Roadway and utility construction = $693,016
Phase VI - Medium Density / Cottage Housing: 5 acres, 10 lots. Roadway and utility construction = $1,252,957
Phase VII - Low Density Residential: 22.5 acres, 18 lots. Roadway and utility construction = $4,080,424

Alternative Plan

Based on discussions with ANSEP the intent is that the campus phase of the project occurs in the near future and would be the first phase hooked to the utilities extension from Zimovia Highway and would eventually feed the rest of the site. Should the ANSEP project be delayed, there is an equal priority to provide single family housing with reasonable utility hook up costs. An alternative development plan would take the western portion of the ANSEP campus (adjacent to Institute Creek) for housing while preserving the central campus green. ANSEP was delayed and the alternative plan was subsequently selected and endorsed by the Assembly on March 28, 2017.

Fiscal Impact Analysis

It will cost an estimated $9.1 million to the develop roads and utilities associated with all phases of the plan. Lot sales and timber development of the site are expected to earn up to $3 million.

Timber Value - The majority of the site is forested. A partial cut at this time will yield just short of $400,000. A clearcut of the same site will yield approximately $760,000 in revenue.

Lot Sales – Based on a local analysis, the raw land divided into lots across the property could be sold for an estimated $2.8 million (excluding the value of the 20-acre lot). The alternative plan would provide an estimated $2.6 million in residential lot sales, in addition to 3 lots of a combined 25 acres that have no estimated value.

Property Tax – Should the lots be developed, they would increase in value and (assuming no property tax exemptions) the City and Borough of Wrangell could receive an estimated $140,000 annually in tax revenue from the area for the preferred plan, and $117,300 for the alternative plan (again excluding 3 lots from this analysis).

Funding and Feasibility

There are three clear ways in which the development of the facilities discussed in the master plan could attract economic development and bring an additional $10.6 million in direct annual economic activity to Wrangell, along with approximately 85 direct jobs. These include the development of a specialized high school campus, development of an assisted living facility for seniors, and development of housing that supports local community and business needs.

Boarding School - The Alaska Native Science and Engineering Program (ANSEP) is exploring the concept of partnering with the City and Borough of Wrangell to develop a 400 bed boarding high school, and has identified the Institute Property as the location for a new campus. ANSEP expects to fundraise for the construction of campus buildings. Funding for the school operations would come through base allocation of the Wrangell school district and a monthly rate for residential high schools. The base allocation from the state for students, plus the monthly rate for residential high schools, are estimated to total $10 million annually if and when the school is operating at full capacity. The facility would create 75 direct jobs and approximately $3 million in annual wages. Construction of such a facility would also create an additional economic boost to the community.

Assisted Living Facility – Wrangell has also prioritized the desire to meet the local and the regional needs of an aging senior population. Assuming a facility with 10 residents, total facility revenue could be $600,000 per year, and contribute 15 full-time new jobs and $300,000 in direct new annual wages in the community. (Estimates are based on an assisted living facility in Haines).

Housing – Gaps in local housing needs will be addressed through the development of a new subdivision in Wrangell. New housing will support key economic sectors of the community, including the growing maritime sector — as well as supporting potential campus or assisted living facilities, along with

potential longer term developments at the former 6 mile waterfront industrial property.

Partnerships - In order to implement the Master Plan elements, the City and Borough of Wrangell must rely on partnerships and grant funding opportunities.

•**ANSEP -** An effort to formalize the City and Borough of Wrangell's relationship with ANSEP is already moving forward. This partnership will help develop one of the most significant elements of the plan, which will in turn help identify new mechanisms to further develop the larger property. Statewide support from tribal organizations is critical for this proposal to advance.

•**Tribal Grants Opportunities** - The Tlingit Haida Regional Housing Authority (THRHA) and the Wrangell Cooperative Association (WCA) are working together to pursue funding opportunities for tribal housing developments for an assisted living facility in Wrangell. A potential outcome of this partnership could result in Indian Community Development Block Grant (ICDBG) funding that could be put toward infrastructure development in the Wrangell Institute area.

•**Public Private Partnerships -** Available funding from traditional sources may fall short of total development needs. Public-private partnerships are an important way to fund and sustain infrastructure projects. Strategic collaboration with other investment partners will enable the City and Borough of Wrangell to create a funding strategy that includes federal and state grants along with contributions from development partners. There are a number of grant options that the CBW can explore in obtaining funding for development of the utility and road work necessary to develop the project phases, including block grants if meet the eligibility requirements through the US Department of Housing and Urban Development and grants through the US Department of Agriculture.

Dedication

This plan is dedicated to Greg Scheff and Tom Siekawitch. Greg was a well loved and respected Wrangell resident, surveyor and partner of R&M Engineering, and on the planning team for this project. He died in a small airplane accident April 8, 2016 on Admiralty Island on route to a survey project in Angoon, before this plan was completed. Tom Siekawitch, Wrangell resident, employee of R&M Engineering and the individual responsible for the preliminary mapping and surveying for this project was also lost in the same plane accident.

Greg Scheff walking the Institute Property site with the project team on February 29, 2016.

Introduction

The Project

The 134-acre parcel (formerly known as the Wrangell Institute site) is the last large desirable undeveloped tract remaining in Wrangell. The Wrangell Institute Subdivision and Master Planning process resulted in a site specific master plan to guide the next stages of development for Wrangell's Institute property that will meet the needs of the community, along with providing economic opportunities.

The plan, developed through an intensive collaborative public process, promotes a mix of residential and economic opportunities for the site. It includes phased development of a variety of residential sized lots, small commercial/retail, a new education campus, an assisted living facility, open space and trail networks connecting to existing recreation facilities, and a new mixed use neighborhood that would support other development in the Shoemaker Bay area. The plan assesses and identifies utility and storm water infrastructure needs, protection of wetlands, site access, land uses, environmental issues, potential development and financial partnerships, economic opportunities, and fiscal impact analysis.

This project included significant public involvement to engage the community and allow input and help direct the planning effort. The Wrangell Institute planning team was comprised of Corvus Design, R&M Engineers (Ketchikan), Rain Coast Data, NorthWind Architects, and LEI Engineering.

Site and Historic Context

Site Location

The site is located south of downtown near 5 mile Zimovia Highway adjacent to the US Forest Service Rainbow Falls Trail, and across the street from Shoemaker Bay Park. The site is adjacent to residential property as well as lands owned by the Alaska Mental Health Trust Land Office.

The property includes 12-acres of filled previously developed and subdivided lots. Tyee hydroelectric lines cross the northeast corner of the property within an easement. Zimovia Highway separates the property from beach access. Recently, a pioneer road was constructed on the south end of the property to access timber on adjacent Mental Health Trust Lands and in the southeast corner of the subject property. The site was originally home to the former Wrangell Institute.

A historic photo of the Wrangell Institute when it served as a boarding school.

Historic Context and Uses

In 1924 the Alaska Native Brotherhood and Alaska Native Sisterhood successfully lobbied the federal Bureau of Indian Affairs to build the first Native boarding school, the Wrangell Institute. Eight years later, in 1932, the U.S. Bureau of Indian Affairs (BIA) began classes at the new Wrangell Institute with 71 high school students.

Eventually, kindergarten through high school-aged Alaska Native children were brought in from communities across the state. The campus included a large school building with a gymnasium connected by enclosed walkways to two dormitories, an apartment complex for staff, a medical clinic, garage, boathouse, and an additional log cabin for staff housing. During World War II, the campus doubled as a relocation camp for Aleut people.

By the mid-1960s approximately 260 students were enrolled in the Institute. The school operated for 43 years, ultimately closing in 1975 due to decreasing enrollment, high repair and maintenance cost considerations, and a lessening role for BIA boarding schools in Alaska. In 1978, the facility was transferred to Cook Inlet Region, Inc. and was used for housing for the Young Adult Conservation Corps by the U.S. Forest Service until 1980. Over the next 15 years, the buildings mostly languished. In 1995 ownership was transferred to the City of Wrangell. Due to the use of lead paint and asbestos in the original construction, along with the

deteriorated state of the property, all but one of the campus buildings were demolished in 2001.

The history of the BIA campus in Wrangell is contentious. While the BIA's primary objective was to educate children who didn't have schools in their villages, there were additional objectives of forced assimilation and acculturation, along with stories of physical and sexual abuse. According to the City and Borough of Wrangell's website: "While many of the former students feel they were given a golden opportunity for an education they never would have received in the 'bush'; there are an equal number still scarred by the trauma they faced as small children far from home in a completely different environment and social structure… The establishment of the Wrangell Institute is clearly the 'triumph and tragedy' of forced assimilation and government paternalism."

Historic photo of the Wrangell Institute buildings.

Zoning

The current zone for the Institute Property is "Holding" and is intended to "maintain future development options by setting aside large areas (in excess of short-term needs), by piecemeal development for possible future use."

Community Needs and the Project

Two decades ago the regional Southeast Alaska economy changed course as the timber industry abruptly declined, deeply impacting Wrangell. When the Wrangell sawmill closed in 1994 it accounted for a quarter of all local jobs, and a third of all direct local wages. Local government officials reacted quickly, developing a long-term large-scale vision for the future Wrangell economy—as a modern Southeast Alaska working waterfront maritime economy with appropriate housing options. Through excellent leadership that vision is being carefully and patiently implemented piece by piece. These deliberate and careful investments in local community infrastructure have resulted in significant changes. The Wrangell Institute Master Plan Development is the next piece in this comprehensive approach to local economic development, along with the Waterfront Industrial Property Assessment and Feasibility Analysis.

The Master Planning Team

The Wrangell Institute planning team was comprised of Corvus Design, R&M Engineering (Ketchikan), Rain Coast Data, NorthWind Architects, and LEI Engineering.

The design team led by Corvus Design Landscape Architects used extensive community involvement to identify ideas, use conflicts, potential growth, and opportunities.

Corvus Design teamed with four Southeast Alaskan firms that, like Corvus Design, have a proven track record working for the City and Borough of Wrangell.

- Corvus Design and NorthWind Architects led the overall land use planning and design effort, integrating the diverse uses, elements and needs into a unified design. They focused on guiding the design work and implementation plan to fit smoothly within the existing character of Wrangell.

- R&M reviewed this work to ensure that the concepts were feasible from an engineering and permitting standpoint, as well as providing preliminary subdivision layout and construction costs on the individual elements of the design alternatives.

- LEI Engineering took the lead in assessing potential timber revenue.

- Rain Coast Data developed an analysis of local and regional socioeconomic trends to forecast and identified the potential economic benefits to be gained from this project. This analysis informs the implementation strategy to allow the City of Wrangell to maximize the returns on the investment required for the Wrangell Institute Master Plan.

Project Goals and Process

Overview

Project Purpose

The project purpose was to develop a community-supported master plan for the Institute property that meets the current and future needs of Wrangell. Based on the master plan a preliminary subdivision plat is to be developed for the highest priority area through logical implementation.

Goals

The focus of the planning effort was to create a new and vibrant mixed use neighborhood that was integrated with surrounding development and resources, and

create an implementation plan based on needs, costs, revenue generation and construction sequencing.

Public Meetings

This project included a significant public involvement process to engage the community, allow input and help direct the Institute property planning effort.

Trip #1

Day 1: Public Workshop–Housing trends/opportunities and priority development

Day 2 and 3: Community Design Session–Develop alternative master plans

Day 3: Public Workshop–Presentation of alternative master plans and preliminary costs and financial analysis for comments

Trip #2

Day 1: Public Workshop–Presentation of alternative master plans and subdivision layouts for selection with costs, scale analysis, funding sources and strategies.

Day 2 and 3: Community Design Session–Refine preferred master plan and subdivision layout and costs, scale analysis, funding sources and strategies.

Day 3: Public Workshop–Presentation of preferred master plan and subdivision layout for comments with scale and financial feasibility recommendations.

Trip #3

Day 1 : Public Workshop and Presentation to Assembly of Final Master Plans and Report and Final Recommendations for adoption.

Up-to-date project developments were posted at: ***wrangell-institute.blogspot.com***. The project team also provided regular updates to 236 Wrangell officials, business leaders, and residents through Constant Contact email communications.

Project Schedule

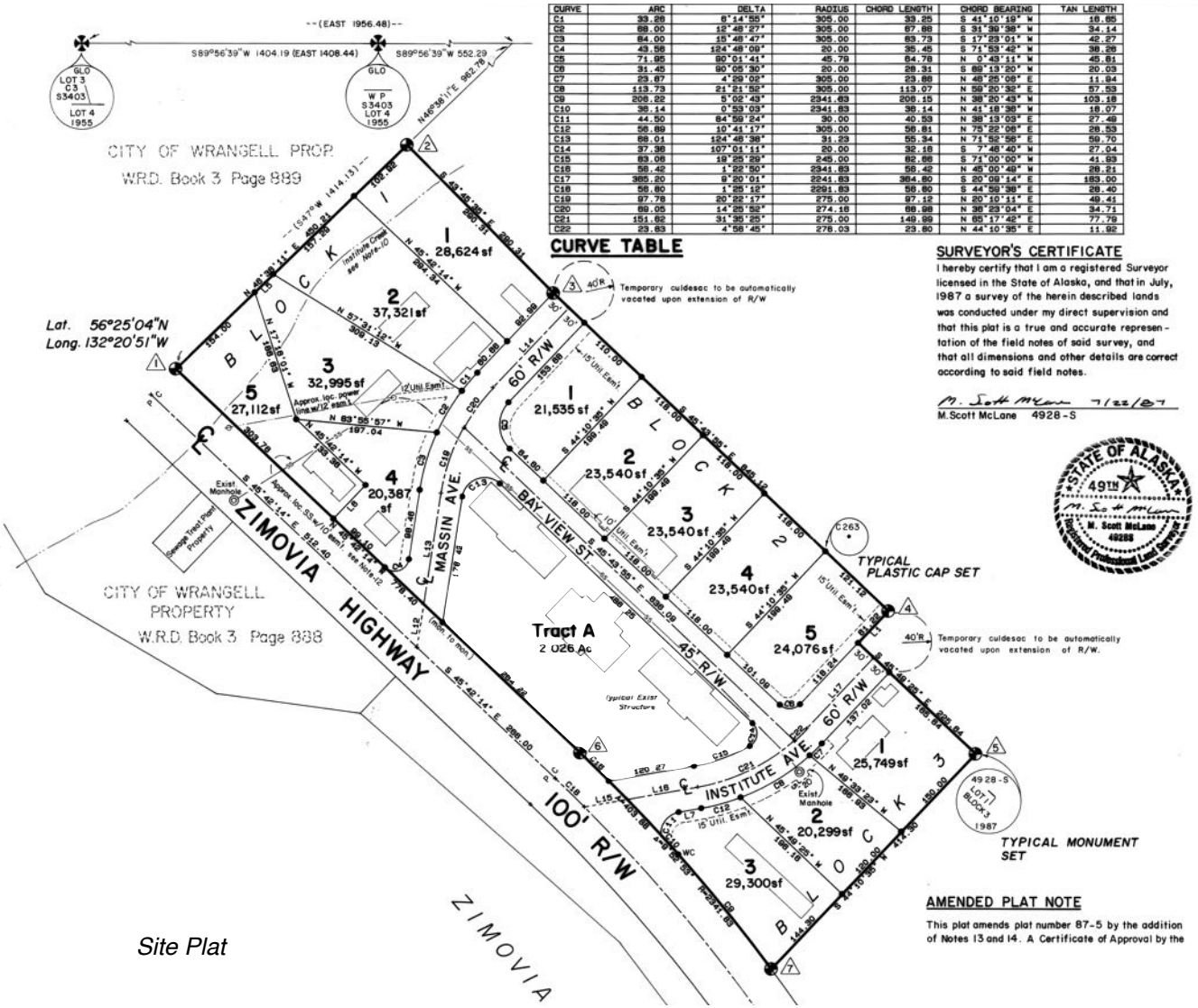
Project Kickoff
Background Research and Analysis
Public Outreach and Engagement
Master Planning
Subdivision Design
Construction Costs and Revenue Generation
Financially Feasibility
Document Preparation

Existing Conditions and Engineering Analysis and Recommendation

Existing Conditions

Site Location

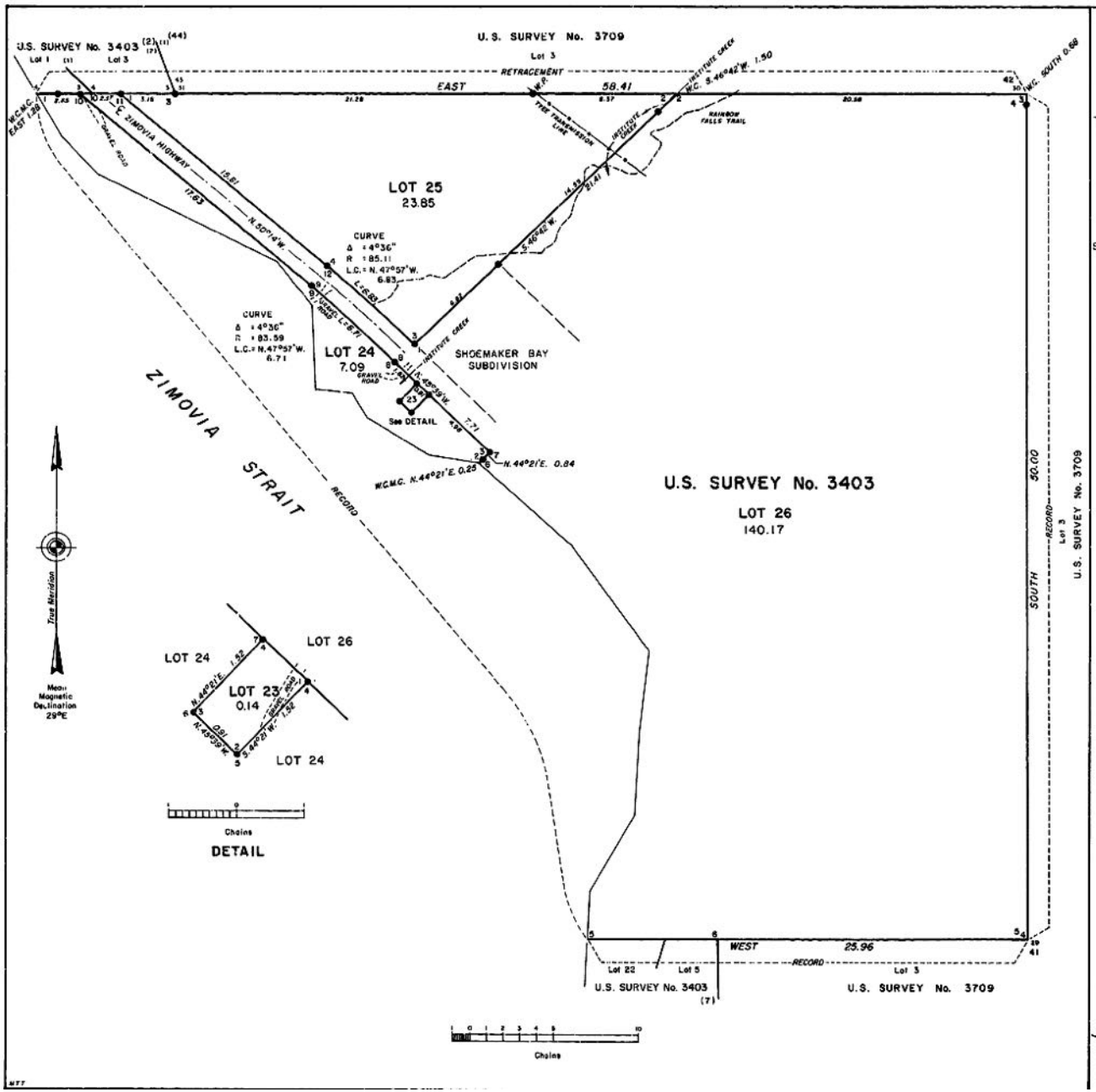
The site is located at mile 4.7 Zimovia Highway south of the City of Wrangell and is within the City and Borough of Wrangell. The project area includes Lot 26, U.S. Survey No. 3403 and all of the northerly parcels within the Shoemaker Bay Subdivision Amended, which was recorded as Wrangell Plat 87-9. The site is approximately 134 acres.



Site Plat

Officially Filed
DATE JUNE 14, 1990

ORIGINAL



U.S. SURVEY No. 3403, ALASKA

THE RETRACEMENT AND SUBDIVISION
OF
LOT 4, U.S. SURVEY No. 3403
CREATING LOTS 23 THROUGH 26
AND
THE RETRACEMENT OF A PORTION OF
U.S. SURVEY No. 3709

SITUATED ALONG BOTH SIDES OF THE ZIMOVIA HIGHWAY
APPROXIMATELY 4 MILES SOUTH

OF THE CITY OF WRANGELL, ALASKA

APPROXIMATE GEOGRAPHIC POSITION

OF

CORNER 1, LOT 24, IDENTICAL

WITH CORNER No. 3, LOT 1, BOTH MEANDER CORNERS

IS:

LATITUDE: 56°25'14" NORTH

LONGITUDE: 132°21'17" WEST

(NAD 27)

SURVEYED

BY

M. SCOTT McLANE

REGISTERED ALASKA LAND SURVEYOR NO. LS-4928

FOR

McLANE AND ASSOCIATES

AUGUST 1 THROUGH AUGUST 19, 1989

UNDER SPECIAL INSTRUCTIONS DATED

FEBRUARY 10, 1989

APPROVED FEBRUARY 27, 1989

AND CONTRACT NO. YA651-CT9-340059

AWARDED JUNE 7, 1989

Acceptance of this survey does not purport to transfer any interest in submerged lands to which the State of Alaska is entitled under the Equal Footing Doctrine and Section 6(m) of the Alaska Statehood Act, P.L. 85-508, notwithstanding the use, location, or absence of meander lines to depict water bodies.

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Anchorage, Alaska

This plat is strictly conformable to the approved field notes, and the survey, having been correctly executed in accordance with the requirements of law and the regulations of this Bureau, is hereby accepted.

For the Director

Robert H. Gundersen — 8 JUNE 1990
Date

Deputy State Director for Cadastral Survey, Alaska

Climate

Wrangell lies in the maritime climate zone and experiences cool summers, mild winters with snow, and year-round rainfall.

January/July Average Temp	30.5°F / 58.1°F
65 yr Min. / Max Recorded	-10°F / 92°F
Average Annual Rainfall / Snowfall	82.4" / 64"
Prevailing Wind Direction / Speed	SE / 5-15 mph

Geology

The geologic conditions reflected in the soils at the site began with the last major glaciation, which buried the area under 2,000' to 3,000' of ice. The ice deposited some soils directly as "glacial till" on the ice-scoured bedrock. Some soils of similar composition were deposited as sediment from meltwater as the glacier retreated 8,000 to 10,000 years past. Subsequently the regional land surface, depressed below sea level by the weight of the glacial ice rebounded, approaching pre-glacial levels. As formerly submerged land passed through the intertidal stage, beach deposits were formed over the underlying soils and were subsequently uplifted and overgrown by vegetation which in turn formed the peat which recently covered the site, as evidenced by soil conditions exposed over most of that area.

Soils

Soils noted within the study area included peat, organic muck, and silty gravel mineral soils. Peat and muck were found on most locations with gradients of less than 10%, while mineral soils were found on steeper locations. Both of these soils are listed as hydric soils, and are one indicator of wetlands. One non-hydric soil was found throughout the upland area on steeper landforms. This soil is a bright or brightly mottled mineral soil. The peat soil is composed of varying depths of saturated mosses, usually sphagnum moss. This soil is found in wetland units in the lower areas near the highway. The muck soil is found in the area behind the former Institute property and is composed of saturated decomposed organic material. Observations show it is likely that the upper portions of the watershed contribute to recharge of groundwater within the mountain talus slopes that then discharge at the base of the slope in forested wetlands.

Vegetation

The site is primarily a forested wetland with western hemlock, Sitka spruce trees, and organic muck soils; and a forested wetland with western hemlock, Alaska cedar trees, and peat soils. There are some uplands which are mostly on steep slopes, with western hemlock, Sitka spruce trees, and mineral soils. These wetlands rate high or moderate to high for such functions as: ground water discharge, riparian support, disturbance sensitive wildlife (deer), and recreation use. The wetlands and

streams in the study area likely are fed by groundwater that is charged by wetlands higher in the watershed. The 2003 Welsh/Dunn Environmental wetlands survey for the site indicates that most all undeveloped portions of the site are forested wetlands with formally developed areas (disturbed areas) and a small portion of the northern extents of the site not being wetlands.

Tectonic Activity

In Southeast Alaska, postulated subduction zones of crustal plates run predominantly from Northwest to Southeast. These zones create linear features in the earth's crust that appear to be faults or fault scars. Tectonic movement along these regions create seismic activity. Historical records show that there has not been an earthquake epicenter in the vicinity since 1788. A majority of earthquakes felt by the Wrangell region have been generated approximately 140 miles to the west along the Queen Charlotte Island-Fairweather fault system; however, no severe damage in the Wrangell region has been reported. The USGS categorizes Wrangell as Seismic Design Category B: Ss=0.248 (0.2 second), S1=0.254 (1.0 second); magnitudes of 6 or greater (Richter Scale) can be expected. From historical data, the probability of an earthquake with a magnitude of 6 or greater occurring in the Wrangell region is minimal; however, possible future seismic effects are as follows:

- Large-scale surface deformation resulting in land level changes
- Ground shaking
- Compaction
- Liquefaction
- Submarine slides
- Ground fracturing with sediment-water ejection
- Sensitive clay reaction
- Tsunamis and other wave actions (low risk due to island protection)

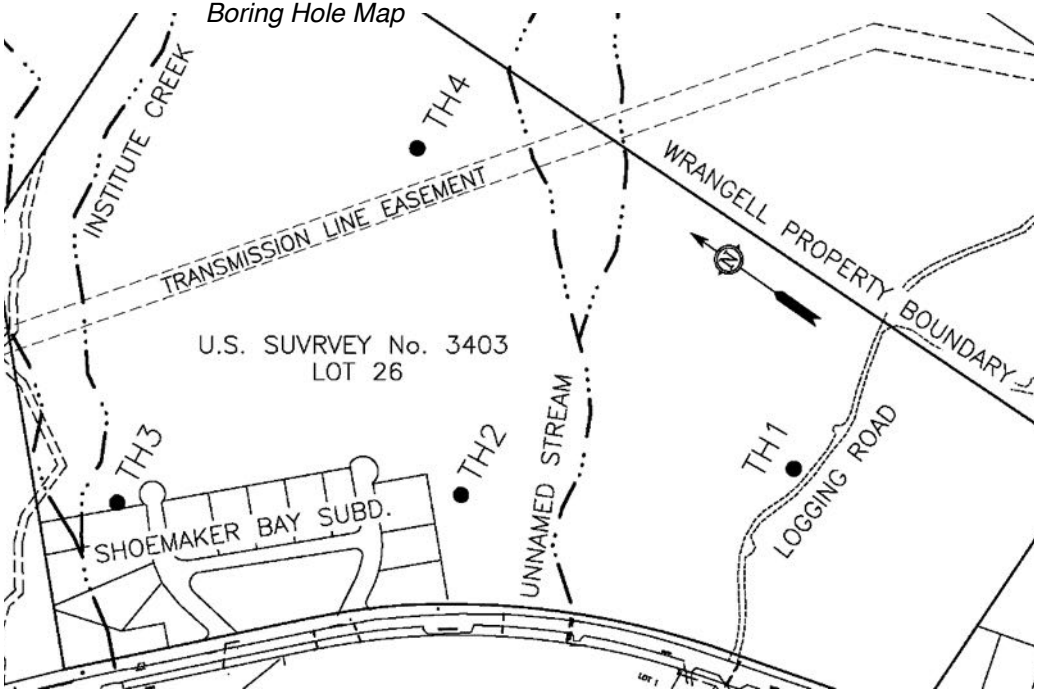
Field Exploration and Sampling

Test pit exploration was conducted on March 13, 2016, with a total of four hand-dug test holes recorded. Various samples were taken as needed to accurately represent the soil strata encountered. The purpose of this investigation was to generalize the types of soils and the extent (depth) of organic soils over the underlying more stable mineral soils present and their suitability for use in the proposed development and to assist with predicting the development costs. The soil conditions at each location are summarized on the boring logs on the following page.

Boring Hole Table

Hole Number	Location	Materials Encountered	Test Hole Depth
	Northing/ Easting	(feet)	(feet)
TH-1	1674757, 2955272	0-1 Peat 1-2 Sand >2 Gravel	3
TH-2	1675760, 2954279	>1 Mixed Clay	3
TH-3	1676433, 2953814	0-0.5 Peat 0.5-3 Silty Sand	3

Boring Hole Map



The overall material encountered in the test holes was fairly consistent. Our investigation did not include the previously developed property that housed the Institute School facility. Due to the limited nature of the investigation, refusal at bedrock was not performed. Groundwater was encountered in each of the test holes.

In general, the results of the four test pits indicate that the project site is underlain by several distinct soil layers consisting of organic topsoil (peat) and varying granular underlying soils.

Organic Soil (Peat) – This is the existing soil mantle covering the project site. It is commonly rich in organics, moist to wet in-situ condition, is very soft and has a low density. Thickness varies from 0.5 to 1.5 feet.

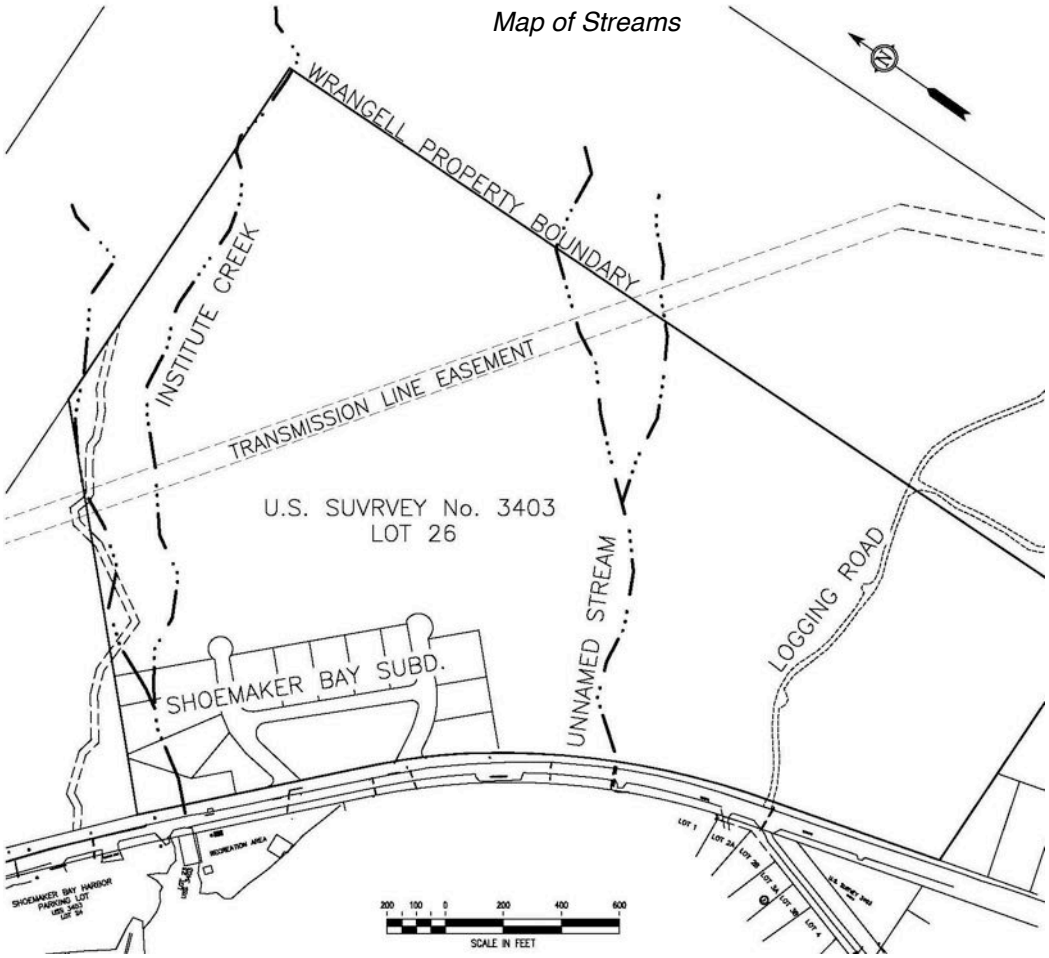
Glacial Till/Clay – This layer consists mainly of gray, clayey sands (SC). This layer is frost susceptible and generally medium dense and contains some sands, silts and clays.

Hydrology

Streams

The Institute Creek/Rainbow Falls Tributary stream system has several deeply incised channel types in the upper stretches, then in the lower gradient stretches becomes a Moderately Incised Footslope Channel, and finally in the vicinity of the Institute fill, a Narrow Shallow Contained Channel. Management concerns for this stream in the wetlands study area are low because the stream is well contained in the channel, has large rock substrate, and is not a salmon (anadromous fish) stream. However, the stream in the lower stretches does have resident fish, and fish passage through a round culvert would be difficult because of the gradient of the stream.

Map of Streams



There is a small stream located just south of the Institute fill which bisects the area proposed for development. This stream is rated as having resident fish. Although small, this stream is deeply incised in the vicinity of the power line while lowering to a shallowly to moderately incised footslope channel for the remainder of the channel, to the highway. Concern for management of large woody debris and stream bank sensitivity is moderate within the study area, while sediment retention, sideslope sensitivity, and culvert fish passage are low.

The lower gradient land on the south end of the property contains numerous intermittent and ephemeral streams less than 1 foot in width. These streams are a combination of the Palustrine Narrow Placid Flow Channel, Scrub Forest Phase and the Moderate Gradient Alluvial Fan Channel.

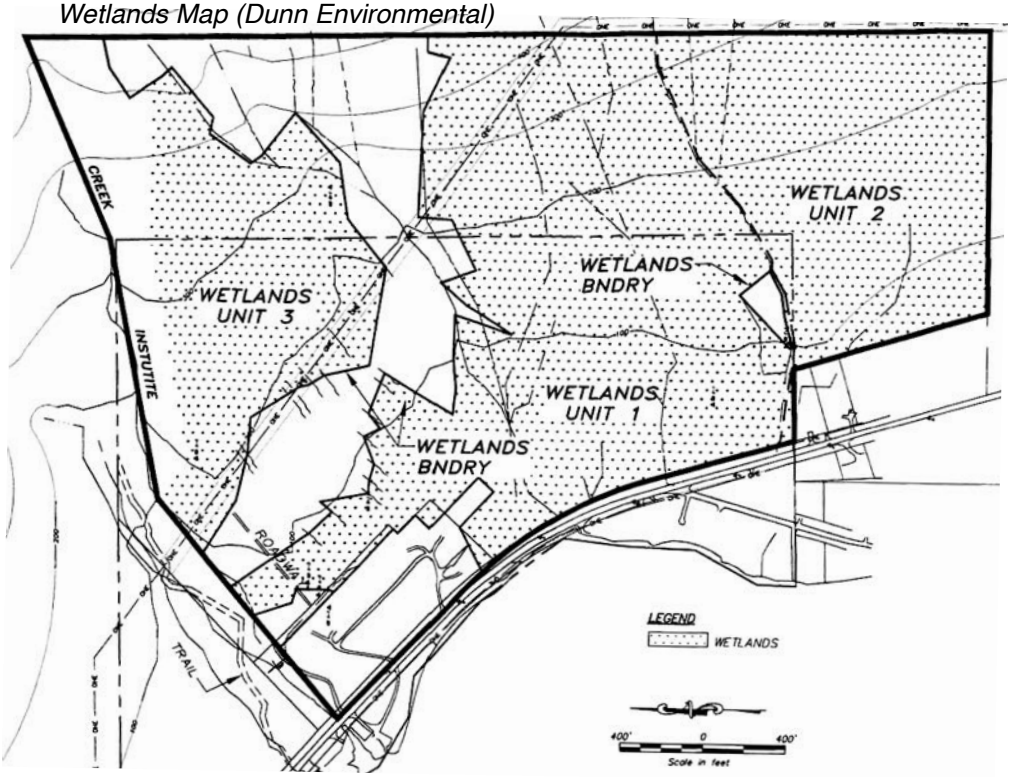
Stormwater

Stormwater concerns in Southeast Alaska arise with high precipitation events that introduce so much water into watercourses that erosion occurs. Severe events can cause significant transportation of sand, soil, rocks and trees and thus damage to property. Institute Creek endured a debris torrent in 1993. This event probably had the effect of cleaning out the debris that posed a hazard and so another torrent is less likely until more material accumulates over the years. The study area is drained by dozens of very small watercourses and this has the effect of dispersing the impact of unusual rain events. The Wrangell Institute study area, if left undeveloped, is probably safe from significant stormwater damage because it does not have any large watercourses into which sudden extreme runoff will be directed and into which large volumes of debris can build up. This situation will change if the property is developed in such a way as to channel surface flows into a smaller number of drainages.

Wetlands

A preliminary wetlands delineation was performed on the study area of approximately 206 acres by Art Dunn of Dunn Environmental Consulting in 2003. A limited investigation was performed by Greg Scheff in 2016 and confirmed the previous delineation report. Wetlands were found on most low-gradient land within the study area. Most of those wetlands were classified as Forested Wetlands, but Scrub Shrub muskeg wetlands were also found. The Preliminary Wetlands Jurisdictional

Wetlands Map (Dunn Environmental)



Delineation and Functional Analysis, which follow, detail the wetlands information. (Figure 1d, Wetlands). Mr. Dunn's report divided the site into three units. These units were distinguished by vegetation, soils, and slopes. We will summarize Mr. Dunn's findings below.

Unit 1 is located south and east of the Wrangell Institute site. It is approximately 84 acres in size and is characterized by western hemlock and Sitka spruce forest, with an understory of blueberry and huckleberry, and abundant skunk cabbage. Soils in this unit are characterized by saturated organic muck overlying saturated silty gravel. This wetland unit contains numerous small continuously flowing and intermittent streams. The unit most likely receives ground water discharge from the slopes above. Functional analysis of Unit 1 shows a moderate to high rating for ground water discharge, a moderate to high rating for riparian support (near Institute Creek and the unnamed stream bounding the south side of the unit), a high rating for disturbance sensitive wildlife (for deer habitat), and a high to moderate rating for potential recreation use (because of its proximity to the highway and large area).

Unit 2 is located south of Unit l outside of this project area on lands owned by the Mental Health Trust Land Office, and is approximately 49 acres in size. Vegetation is characterized by Alaska cedar and western hemlock, with an understory of blueberry and huckleberry, and abundant skunk cabbage. Unit 2 has peat soils, saturated to near the surface, and only a few streams by comparison. Unit 2 has a high to moderate rating for ground water discharge, a high rating for sediment/ toxicant retention, a moderate to high rating for riparian support (near resident fish streams), a high rating for disturbance sensitive wildlife (for deer habitat), a high rating for disturbance sensitive wildlife (for deer habitat), a high rating for ecological replacement cost (because of the long period of time necessary to replace peat soils), and a high to moderate rating for recreation use (because of the proximity to a highway).

Unit 3, about 33 acres in size, is located upslope of the Wrangell Institute site and is bounded by the Institute Creek gorge to the north and uplands on the remaining sides. Vegetation is characterized by Alaska cedar and western hemlock, with an understory of blueberry and huckleberry, and abundant skunk cabbage. Because of its topography, Unit 3 has different wetland function ratings than Unit 2, even though it has similar vegetation and soils. Unit 3 has high to moderate rating for both ground water recharge and discharge (recharge on the crown of land, discharge around the lower edges), a moderate to high rating for riparian support (near the Institute Creek ravine), a high rating for disturbance sensitive wildlife (again, for deer habitat), a high rating for ecological replacement cost (for peat soils again), and a high to moderate rating for recreation use.

Water quality within the Institute study area is good, with little development to alter natural water quality. Hydrologically, it appears that wetlands in the wetlands study area receive ground water discharge from slopes above the study area, and that this ground water is most likely recharged from muskeg or forested wetlands near the top of the watershed and on benches, like Unit 3.

During future stages of planning, it will be important to take into consideration such natural events such as floods, debris torrents, flooding, and habitat fragmentation.

Because the study area is small in comparison to the watershed, less than 10 percent, it is particularly important to understand and be able to predict the fate of the upper watershed. The lower watershed would be the receiving "waters/lands" for adverse events in the upper watershed, i.e. debris torrent, landslide, flooding, and erosion. At this point, the only likely development that would occur on the upper watershed is selective helicopter logging. It appears that any new logging will be above the Institute Creek watershed Rainbow Falls Creek Tributary) and not above that portion of the watershed that drains onto the study area. Logging activity, especially on Alaska Mental Health Lands and USFS-managed land, is subject to extensive conditions to prevent erosion and instability.

Recreation

A recreation trail follows the Rainbow Falls Creek drainage from near the Institute Creek Bridge at Zimovia Highway upstream to the top of the drainage in the alpine. This trail system extends north out of the watershed, and also south around the top of the watershed to the Shoemaker Overlook Shelter located on Tongass National Forest land, and maintained by the USDA Forest Service. A USDA Wrangell Island Analysis reports that this trail system "is probably the most popular trail on the island." In addition, the City maintains a small recreation area on the beach at the mouth of Institute Creek and includes a small day-use recreation facility and shelter, playground, tennis courts and a small area for camping for RV and tents.

Adjacent to the recreation area to the north is Shoemaker Harbor. The harbor includes 250 slips for small and large commercial fishing and recreational vessels and various harbor support facilities such as tidal grids, a hoist, boat launch, restrooms and work float.

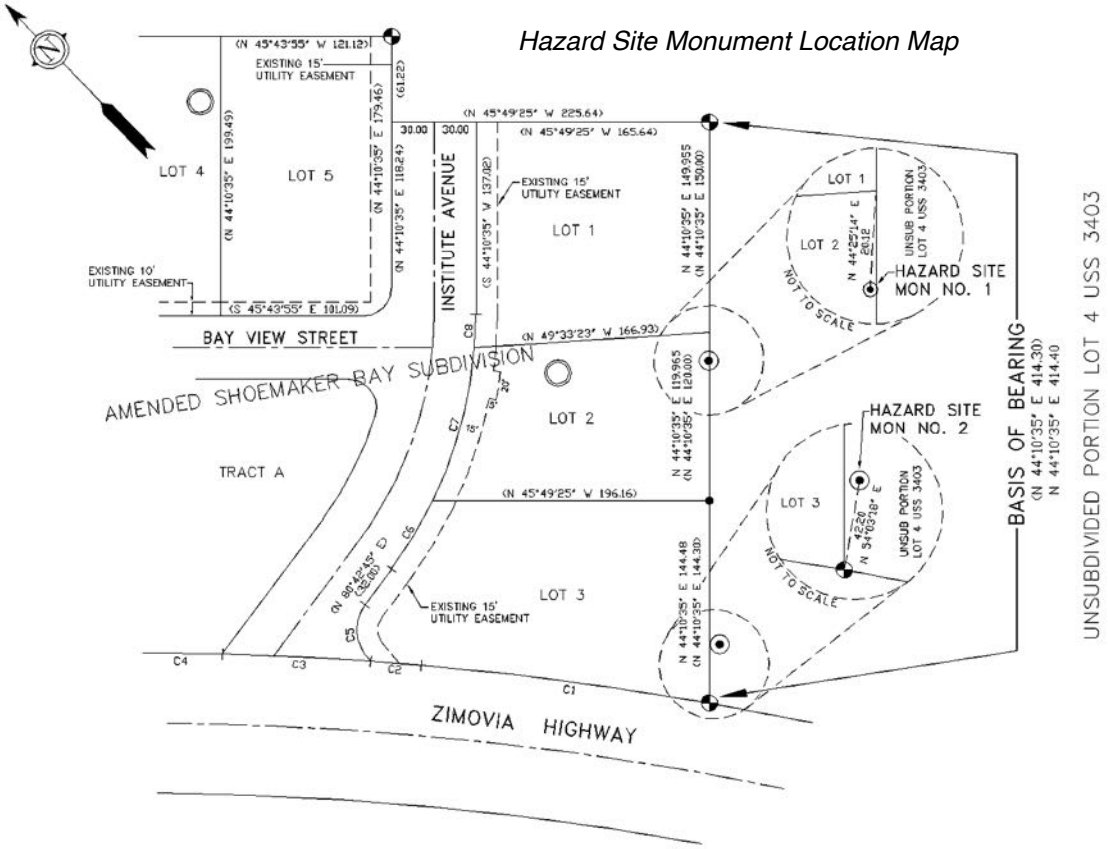
Environmental Review

The site has a history of multiple contaminated soil cleanup activities resulting from leaking underground heating oil storage tanks and leaking fuel delivery pipelines located on the southern property line of Lots 1-3 of Block 3 and the northern property line of Lot 4 of the Amended Shoemaker Bay Subdivision. Based on our research of Alaska Department of Environmental Conservation (ADEC) records for this site, the City and Borough of Wrangell (CBW) began removal of approximately 1500 cubic yards of contaminated soil in July of 2001. While completing this work CBW determined the extent of the contaminated area was far greater than originally anticipated and therefore requested assistance from ADEC to perform the additional work necessary to provide a Site Characterization Report to assess the extent of the contamination.

In October of 2003 ADEC contracted SLR Corporation to perform the fieldwork required to develop a Site Characterization Report. This field work consisted of the excavation of 52 test pits in the areas of potential contamination and hand auger test holes along the southern-side fuel supply pipeline that were accessible to track mounted excavators. From these 52 test holes 40 soil samples were taken and sent in for laboratory analysis. Based on the results of the soil samples laboratory analysis, 5 main locations were identified with hydrocarbon concentrations well above ADEC published clean up levels. It was estimated that 5,800 cubic yards of contaminated soil remained on site. In addition to digging the test pits, SLR also installed 8 groundwater monitoring wells on the site. Diesel range organics and polycyclic aromatic hydrocarbons were found in 5 of these groundwater monitoring wells.

In July of 2007, ADEC contracted with Shannon & Wilson, Inc. (S&W) to conduct a cleanup of these sites identified in the Site Characterization plan. Excavation and removal of all of the contaminated soil on the main site was completed in May of 2009 and ADEC issued a Cleanup Complete determination in October of 2009.

The cleanup determination noted two small localized areas along the southern-side fuel pipeline which were left untouched because accessing these areas would result in extensive damage to the surrounding wetland areas. Once it was determined impractical to clean up these two localized areas, S&W hired Greg Scheff & Associates to perform a survey of the remaining contaminated areas and set monuments in these areas so they could be identified in the future.



Hazard Site Monument Location Map

Finally, after interviewing Anne Marie Palmieri from ADEC, it was determined that prior to any development activities taking place in the area near the southern-side pipeline route, the proposed developer would be required to coordinate with ADEC to prepare a Site Characterization plan and to manage any contaminated soils remaining on site in accordance with the current regulations and policies.

Wetland Regulatory Requirements

If a parcel of land larger than a tenth of an acre is determined to be a wetland under the criteria set by the U.S. Army Corps of Engineers ("Corps" hereafter), then most forms of development are subject to the jurisdiction of that agency. Wetlands are legally defined as "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas." (Corps, 1980). This authority springs from the federal Clean Water Act of 1972 and several court decisions that have been made since passage of that act. The specific act that requires a permit from the Corps is the placing of fill dirt or material into the wetland. This is a very typical early step for all forms of development and is usually necessary because unfilled wetlands do not provide good support for building foundations.

Engineering Analysis and Recommendations

Site Access

The site is accessed directly from Zimovia Highway. Site distances for highway entrances in most locations along the frontage of the property meet American Association of State Highway and Transportation Officials (AASHTO) design requirements. The preliminary design alternative splits the site into two regions with access to the education and commercial areas from a separate driveway on the north near the former institute site. The access road is gently sloping with large radius curves. Access to the proposed residential areas on the south would be from an existing logging road entrance. This entrance would also be gently sloping at approximately 5% maximum gradient. The proposed roadway alignment generally follows the existing topography and gradients are generally less than 10% except where the roadway transitions from the lower commercial area to the housing area above the power lines. Most of the areas of the site can be graded to meet Americans with Disabilities Act (ADA) requirements for slope.

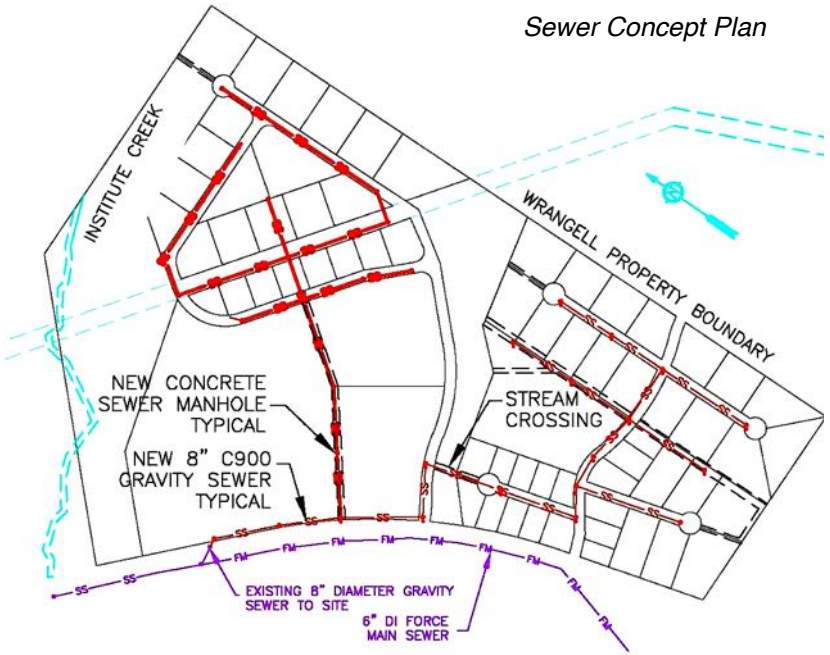
Cul De Sac Design Alternatives

All streets currently shown as cul-de-sac ends may be designed as through streets as shown in several of the early design iterations. Cul-de-sacs were picked for the preferred alternative due to the lower design costs and public comment. Adding through streets in lieu of Cul-de-sacs will add 1400 feet of street at a cost of approximately $700,000. Areas for snow retention could be added with increased public easements at the end of each street. Alternatively, the Borough could retain some land at each street for snow retention.

Utilities

Sewer

Sewer Concept Plan

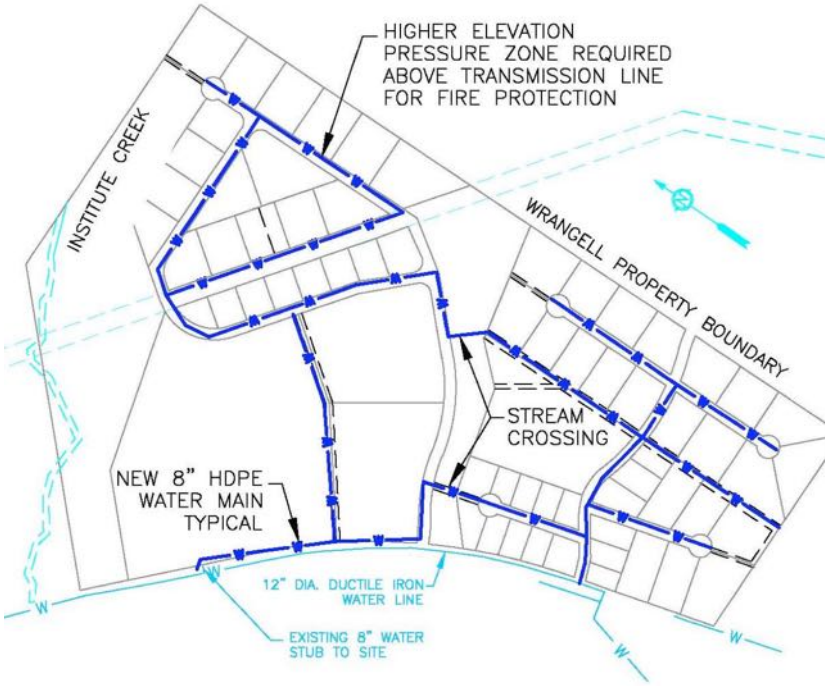


There is an existing 8-inch diameter ductile iron gravity sewer located in the Zimovia Highway near the north end of the institute property. There are no other sewer utilities within the limits of the project and all sewer lines

will need to be extended from that point. A hydraulic analysis of the existing sewer system revealed that there is ample sewer capacity in the existing system to accommodate the entire development. An 8-inch gravity sewer line would be extended for service to the commercial and education development, then further extended to the residential sites. The location of the sewer could be coordinated with the future roads to minimize impacts to the forested areas on site. Nearly all of the site is easily served with gravity sewer. 8" C900 PVC sewer main and laterals are recommended with precast concrete manholes at intersections and spaced at intervals not to exceed 400 feet. A schematic design of the proposed sewer layout is shown on the previous page.

Water

Water Concept Plan



Water service for domestic and sprinkler use will be from two locations enabling a looped system through the development. The two services will be connected with an 8-inch pipe to complete a loop of the site. Fire hydrants will be provided at the end of each street for the housing development, and at four locations within the commercial and education development. A maximum hydrant spacing of 500 feet is recommended. The looped water line shall be a minimum of 8" DR 11 HDPE and secondary lines shall be a minimum of 6" DR

11 HDPE. Dead end lines shall be avoided in the design if possible. There are currently 4 dead end lines shown which could be looped for an additional cost of $70,000 for the approximately 1000 feet of additional pipe. A schematic of the possible water line is shown below. Water pressures above the utility line easement do not meet the minimum requirements of the Uniform Fire Code without a water storage tank and a booster station to create a zone of higher pressure. This will likely make development of those areas unfeasible.

Embankment, Grading and Drainage

The most economical site development technique will be excavation of the organic materials and other unsuitable materials to hardpan and replacement with shot rock. There is a community-owned rock quarry located nearby on Zimovia Highway and several private quarries making rock cost effective to truck to the site. It is unlikely that a rock source exists within the property. Surface runoff will be collected with both curb inlet and field inlet grates and diverted via 12-inch to 24-inch HDPE culverts into established watershed runoff areas.

Surface water within the development will be collected and transferred in roadside ditches and some limited driveway culverts and stormwater collection systems with culvert sizes ranging from 12" to 24" in diameter.

The stormwater from the upper portion of the site will be collected and directed to the north into Rainbow Creek. The stormwater from the lower portions of the site will be collected and diverted into an established drainage in the middle of the property where it crosses the Zimovia Highway through an existing 48-inch culvert. The culvert appears in good condition and sized adequately for the development.

Site utilities need not be excavated to bedrock. Utilities are typically excavated to dense glacial till with approximately 24" of over-excavation for foundation rock below the pipes.

The soil conditions are generally favorable with shallow mineral soils suitable for building. Building construction will require over-excavation to remove the very loose, soft, or compressible soil prior to the placement of an engineered rock pad.

The following building site preparation methods are recommended for buildings, road and parking lots.

1. Install erosion and sediment control devices around the site prior to beginning construction.
2. Install dewatering devices, as necessary.
3. Excavate the area beneath the proposed buildings (20' outside of the building foundation wall) to a firm

foundation. Remove all material encountered to an offsite waste area.

4. Place 12" minus, non-frost susceptible (N.F.S.) shot rock borrow.
5. Place on 12" lift of N.F.S. select borrow material (3" minus)

When practical, cut and fill activities, including areas requiring non-structural fills, should not be initiated during or immediately after periods of heavy rain or snow.

Foundations

Spread footing founded on the structural fill may be designed for a maximum allowable soil bearing pressure of 2,000 pounds per square foot. This is based on the excavation and removal of organics and unsuitable fill down to undisturbed dense glacial till or bedrock. This allowable bearing pressure may be increased by one-third (1/3) when load combinations involving wind or earthquake effects are considered, where allowed by the building code. Perimeter footings for the heated structure should be founded at least 24 inches below the adjacent exterior grade. Additionally, all interior footings of heated structures should be founded at least 12 inches below the lowest adjacent grade unless constrained by the floor slab. These recommendations are predicted on the assumption that the buildings will be continually heated during the life of the structure. If unheated footings are to be used or if the building at slab elevation is not heated, the footing should be founded at a minimum depth of 32 inches.

Earthworks

Excavation: Any existing fill, peat or clay within the building footprint areas must be removed and replaced with structural fill. Any fill, peat, clay, or debris encountered at this site are not reusable as structural fill but may be incorporated into landscaped areas.

During site excavation, care must be taken to protect the bearing soils from excessive disturbance by workman and equipment, or ponding and saturation from precipitation. The excavation bottom must be kept dry. If silt and glacial till soils are allowed to become wet they will turn into unmanageable slurry, even if found to be dry originally. For this reason, large areas of exposure must be protected in some manner. Should the combination of surficial disturbance become unavoidable, covering the soil bearing with a thin (2" to 4") layer of non-frost susceptible, free draining, gravelly material is recommended.

Frozen Soils: Do not place fill or construct foundations over frozen soils. Do not fill or backfill with frozen soils.

Permanent Cut and Fill Slopes: Permanent cut and fill slopes in organic, mineral soils, and the weathered

bedrock layers above the site should not be steeper than 1.5:1. Erosion protection in the form of a rock blanket 12" in thickness constructed with uniformly graded 12" minus rock should be provided in all cut slope areas. Steeper shotrock slopes to 1:1 may be achieved if the slopes are built using Class I riprap boulders. Slopes must first be constructed slightly beyond the fill limits, and then trimmed back to the final permanent design slope.

Street and Parking Lot Design

Sub-base should be prepared in accordance with the earthwork requirements. Base course used for grading should conform to Alaska Department of Transportation and Public Facilities (ADOT&PF) Base Course D-1 according to Table 703-2 of ADOT&PF Standard Specifications for Highway Construction.

Asphalt available in the Wrangell region conforms to the ADOT&PF Type II mix design. Blended aggregate fractions must conform to the broadband for Type II Asphalt Concrete Pavement Aggregate found in Table 703-3 of ADOT&PF Standard Specifications for Highway Construction. It is our recommendation that light pavement areas are a minimum asphalt thickness of 2", and heavy pavement areas are a minimum asphalt thickness of 3". A CBR value of 9 was used for asphalt thickness selection.

Off street Parking

The planned right-of-way width was sized to accommodate both pedestrian access and off-street parking. Both of these items should be carefully considered during subdivision design as increasing the width of the roadway add significant total project cost in addition to the master planning costs. Widening the roadway for off street parking would add approximately $200,000 per phase. We would recommend a minimum width of 34' in that instance. In all cases, a minimum width of 5' shall be maintained between the edge of the roadway and the edge of the right-of-way for public safety.

Design Loads

In proportioning the footing pad under dead plus code-specified live loads, the following soil parameters may be assumed.

Lateral Bearing Value:	200 psf
Coefficient of friction:	0.30
Angle of Internal Friction:	32°
avg. soil moist unit weight:	120 pcf
Active Earth Pressure	30 psf per foot of depth
At-rest Earth Pressure	50 psf per foot of depth
Passive Earth Pressure	450 psf per foot of depth

The International Building Code (IBC) soil classification for this site, in our opinion, is Class D.

Housing and Economic Strategies Analysis

Community Needs/Economic Analysis

Several trends affecting community economics are happening concurrently in Wrangell. The community is growing—mostly due to investment in the maritime sector which has shown robust growth. Wrangell's population is aging significantly—the median age of 48 is 13.5 years older than the average Alaskan. The community is also attracting more visitors—nearly 30,000 in 2015. Each of these developments creates their own set of specific needs within the community, and each have their own housing needs.

Economic Overview and Recent Trends

The community of Wrangell has restructured its economy and identity many times over the years, and is in the process of doing so again. By the early 1990's timber industry jobs accounted for twenty percent of Wrangell's workforce, and nearly a third of all direct local wages. When the Alaska Pulp Company sawmill closed in 1994 the local economy was devastated. During the same period, salmon prices tumbled, reducing the value of the area's commercial fisheries, and the community's largest seafood processor's parent company filed for bankruptcy in 1998. Between 1994 and 2006 the population of the community fell by 19% (losing 522 residents). Immediately after the mill's closure, the community set about enhancing its locally based seafood and marine services sector and enhancing visitor infrastructure. Through twenty years of concentrated efforts, systematically obtaining and strategically using funding, and an unwavering focus on long-term goals, the community of Wrangell is emerging from this economic devastation intact, and is in many ways a shining example for the region. The analysis of Wrangell's economic indicators showed that the economic tide of the community turned in 2006, and between 2010 and 2015, nearly every economic indicator was up. In that period, population increased by 3%, jobs increased by 5%, total workforce earnings increased by 16%, while maritime jobs and wages were up by 41% and 51% respectively (excluding the self-employed). Commerce is also up. Sales tax receipts increased by 22%, and passenger arrivals increased by 32%.

The City and Borough of Wrangell represents approximately three percent of total population, jobs, and earnings for Southeast Alaska. Altogether, there were 1,225 jobs in Wrangell in 2015 with $52 million in associated wages. In 2015, maritime related wages (mostly the seafood industry) accounted for more than a third of all workforce earnings, and have outpaced government as being the top income provider in the community: maritime jobs now account for 35% of all employment earnings, versus 28% for government.

Wrangell By the Numbers

Changes in the Economy 2010 - 2015

Demographics	2010	2015	% Change
Wrangell Population	2,369	2,442	3%
65 to 79 year olds	299	390	30%
Median Age Wrangell (AK is 34.3)	46.4	47.8	3%
K-12 Students	312	274	-12%
Under 10 year olds	265	284	7%
General Economic Conditions	**Including Self-Employed Total Jobs = 1,225 Total Workforce Earnings = $52 million**		
Wage and Labor Employment (excludes self-employment)	812	855	5%
Wage and Labor Payroll (excludes self-employment)	$28,105,755	$32,520,622	16%
Wage and Labor Average Wage (excludes self-employment)	$34,613.00	$38,036	10%
Annual Unemployment Rate (2011-2013)	8.8%	7.8%	-1%
Maritime Economy	**Top Sector: 35% of employment earnings Total Jobs = 338 (includes self employed) Total Workforce Earnings = $17.8 million**		
Seafood Processing + Mariculture Jobs (excludes self employed)	84	105	25%
Processing + Mariculture Earnings (excludes self employed)	$2,967,150	$4,054,021	37%
Other Maritime (Boatbuilding, tourism, etc) (excludes self employed)	13	32	146%
Other Maritime earnings (excludes self employed)	$371,825	$994,018	167%
Port of Wrangell: Total Seafood Pounds (2010 & 2014)	4,932,410	28,493,190	478%
Commercial Fishing	Total Commercial Fishermen 2012 = 181 Earnings = $11.5 million Total Commercial Fishermen 2014 = 195 Earnings = $12.7 million		
Government	**Public Sector: 28% of all employment earnings Total Jobs = 309 Total Workforce Earnings = $14.3 million**		
Total Government Employment	318	309	-3%
Federal Employment	58	51	-12%
State Employment	23	23	0%
City and Tribal Employment	236	235	0%
Total Government Payroll	$14,148,023	$14,291,774	1%
Visitor Industry	**Key Industry: 8% of all jobs** (4% of all employment earnings) **Total Jobs = 96 Total Workforce Earnings = $2.1 million**		
Visitor Industry Employment (excludes self employed)	88	80	-9%
Total Visitor Industry Wages/Earnings (excludes self employed)	$1,413,226	$1,682,734	19%
Passenger Arrival via Jet, Cruise, Ferry	**21,781**	**28,653**	32%
Alaska Airline	10,587	12,512	18%
Large Ship plus Small Ship	3,869	10,011	159%
Alaska Marine Highway System	7,325	6,130	-16%
Other Selected Statistics	**2010**	**2015**	**% change**
Sales Tax Receipts	$2,205,839	$2,681,436	22%
Assessed Values	$121,950,067	$140,786,313	15%
Housing Starts	3	13	333%
Total MWh sold in Wrangell	27,221	34,166	26%

Housing Needs/Analysis

Based on analysis, there are several immediate housing needs the community should be addressing:

- the need for **more rentals–**especially for rentals with one or two bedrooms;
- **higher quality housing** with better **energy efficiency**;
- more **two- to three-bedroom single family homes**;
- more **short-term or summer housing options** for those involved in the maritime and tourism sectors; and
- development of an **assisted living senior housing facility.**

Housing in Wrangell has many unique characteristics that make it stand apart from other communities in the Southeast Alaska region, as well as the state as a whole, including the following:

Larger Homes–The average home size in Wrangell is 1,875 square feet, which makes it the largest, on average in Southeast Alaska. The SE average is 1,576 square feet. As a reference, Wrangell homes are more than twice the average size of homes in Hoonah. In addition, Wrangell homes are not "overcrowded." The overcrowding rate is 0.2%. Wrangell is one of the least overcrowded cities in Alaska.

Low Quality Housing–Based on available data, Wrangell homes appear to be lower in quality than other comparable communities. Wrangell has more older homes than the region as a whole. On average, 12% of homes were built pre-1940's, compared to 8% across the region. Moreover, Wrangell has the lowest percentage of homes in the region (5%) with continuous ventilation systems.

Inefficient Home Energy–There appears to be a marked lack of energy efficiency in Wrangell homes. Wrangell has the highest energy use and costs in the region: $6,590 annually. This is 2.4 times more than the cost in Anchorage, and 3.1 times more than the national average. The average annual energy cost for homes in Southeast Alaska is $5,440. This is even more remarkable due to the relatively low cost of electricity in Wrangell, which is among the lowest in the region. Even taking the larger than normal house size into account, Wrangell's energy per square foot is the second highest in the region. For occupied housing annual energy costs constitute 13% of census median area income–versus 8% for the region.

Low Percentage of Rentals–Another element that sets Wrangell apart from other housing markets is a lower than average amount of housing units available for rent. Typically rental units comprise just over one-third of the housing market–35 or 36 percent. In Wrangell, just 28% of the units are renter-occupied, while 72% are owner-occupied. Wrangell would need to have an additional

90 housing units available for rent to create a more typical balance between housing categories.

Fewer Multi Units and 2- to 3-bedroom Homes–The mix of housing types is also unique in Wrangell. Just 20% of Wrangell's homes are in multi-unit buildings, compared to 34% in Southeast Alaska as a whole. Wrangell also has more mobile homes than other areas (14% of all occupied housing units in Wrangell compare to 5% statewide, and 8% across the region.) Also in comparison to other places, Wrangell has a higher percentage of one-bedroom homes, and a smaller percentage of 2-3 bedroom homes. Nearly a quarter (22%) of Wrangell's housing units are one-bedroom, compared to 16% across the region, while 54% of Wrangell homes are 2-3 bedroom, compared to 62% across the region.

Low Rental Vacancy Rates–In 2015 Wrangell had the lowest rental vacancy rates in the state in several categories. According to the Alaska Housing Market Indicators 2015 Residential Rental Market Survey, the vacancy rates for one-bedroom apartments, three-bedroom apartments, and two-bedroom single families homes was zero. In 2014 one-bedroom apartments and two-bedroom single-family homes had vacancy rates of zero as well, and in 2013 there was a zero vacancy rate for all single-family home types listed. The 2016 data was just released showing healthier vacancy rates in most categories, but there remains a zero vacancy rate for two-bedroom single-family homes. It is also important to note that the rental surveys are conducted in spring, prior to Wrangell's busy summer season that attracts those in the seafood industry, shipyard workers, and those serving the tourism sector.

High Housing Affordability–Statewide, Wrangell is considered to have the most "affordable housing" of any community. This is measured by the "Rental Affordability Indexes" computed by the Alaska Department of Labor. The affordability index looks at how many average wage earners are required to afford the average contract rent – the amount paid to the landlord each month – assuming 24 percent of gross income is available for rent. In Wrangell, less than a single wage earner is needed to make rent (0.92), the lowest in the state. Another way to measure housing affordability is to look at the percentage of total household income that goes towards housing. In Wrangell, one-fourth of households in Wrangell spend more than 30% of total income on housing costs, which include rent, utilities, and energy costs—which means one-quarter of Wrangell households are "cost burdened" by housing. In comparison one-third of the region and state is cost burdened, while in the US the share is 37%. Finally, the regional Business Climate Survey conducted by Southeast Conference last year reported that business leaders in Wrangell were

the least likely across the region to call housing prices an economic barrier in their community.

Low Rental Prices–According to the Alaska Housing Market Indicators 2015 Residential Rental Market Survey, despite such low vacancy rates, the lowest median adjusted rents in Alaska in 2015 were in the Wrangell Borough. This was also true for two-bedroom and three-bedroom rentals. Early data shows that Wrangell remains the lowest in the state in 2016. Overall, rent in Wrangell is two-thirds the average for Southeast Alaska as a whole. By comparison Rental homes in Wrangell are half the cost of Juneau and apartments are 43% less.

Low Housing Prices–Home sales prices are also comparatively lower in Wrangell. According to the US Census, the median value of a home is just 60% that of the median value for all homes in the region. Moreover, an analysis of the Juneau and Wrangell Assessor's Database, the average single family home in Wrangell is assessed at $151,818, less than half of the average Juneau value of 361,001. A unique disadvantage to further developing housing in Wrangell is that residents are accustomed to lower price points for housing than other communities in the state and region, and the willingness to pay market rate for new and improved housing is under-developed.

Wrangell Tribal Citizen Housing Assessment–In the summer of 2016, a comprehensive survey of Wrangell's Alaska Native households was conducted, revealing the following key findings: The highest priority housing need identified was to make **current homes more energy efficient**, followed by a general call for more affordable housing. There was nearly universal agreement that Wrangell needs an **assisted living senior housing facility**, with 98% of tribal households calling this a high level or medium level need. Wrangell tribal members also want **more 2- to 3-bedroom homes**. They said Wrangell needs more rental housing—but 94% of households also said they would prefer to own a home than to rent (35% of tribal members currently rent).

Wrangell tribal members generally want to live near downtown but not in downtown. Homes located far out of town—past Shoemaker Bay—were rated very low in this analysis. Three-quarters of respondents (75%) said they had some level of interest in living in the area of the Institute property, with one in five respondents calling it their first choice of home location. When asked how much tribal members would be willing to pay per month for new homes, excluding utilities, the average was $730. When asked, only one-third of tribal members surveyed said that they would be willing to live in a small (up to 800 square foot home) in order to cut costs; 76% said that they would be willing to help build their own home in order to lower their housing costs.

Economic Opportunities

Wrangell's economy is growing. With some of the lowest electrical rates in the State, a strong maritime economy, a reemerging visitors industry, and a high level of entrepreneurship (nearly a third of all workers are self-employed), Wrangell continues to move in a positive direction. Current opportunities for the community as a whole include growing the maritime and tourism sectors, and working to attract new businesses and residents to the community. New facilities, such as a new boarding school campus or assisted living facility would provide significant economic contributions to the community - both in terms of operations and the construction phase.

Educational Campus

Potential Jobs: 75

Potential Wages: $3 million annually

If the Alaska Native Science and Engineering Program builds a new four hundred-bed facility on the Institute Property, the economic impacts would be substantial. Such a facility would include building classrooms, student and faculty housing, a cafeteria, a gymnasium and other administration and support facilities. A new high school boarding school campus would have an important impact on the overall community of Wrangell. Mount Edgecumbe—a nearby boarding school with 405 students—accounts for 75 direct jobs in Sitka. Assuming the campus would create 75 direct jobs in Wrangell with an average of $40,000 paid annually, that would be a contribution of $3 million in annual wages into the community. The impact would be a 6 percent increase in total earnings and jobs in the community. The secondary induced and indirect impacts of these new dollars in the community would also be significant.

Continue to Grow the Maritime Economy

Potential Jobs: 35 new jobs (every five years)

Potential Wages: +$1.8 million annually

Through twenty years of concentrated efforts, systematically obtaining and strategically using funding, and an unwavering focus on long-term goals, the City and Borough of Wrangell has focused on developing a robust maritime sector in the community. These efforts have clearly paid off. Between 2010 and 2015 the maritime industry became the economic leader of the community, responsible for 35% of all direct workforce earnings. During the same period, the maritime workforce grew by 40% and maritime workforce earnings grew by 50% (commercial fishermen are excluded from these growth rates). In total there are 338 ocean-focused jobs in Wrangell with total annual earnings of $17.8 million. In addition the City and Borough of Wrangell is investigating purchasing the former mill waterfront property to continue building out the industrial maritime needs of the community. Located just south of the Institute property, a recent study recommends a mix of marine-related, industrial, and

education uses as the most viable vision for redevelopment of the former sawmill property. If a focus on developing the maritime sector continues to grow at a steady but less dramatic rate, and the commercial fishing sector remains flat, this would add approximately 35 new jobs and $1.8 million in annual average wages to the economy every five years.

Housing and retail at the Institute Property could provide support for future development at the old mill site once redevelopment begins.

Assisted Living Senior Housing Facility

Potential Jobs: 15

Potential Wages: +$300,000 annually

There is need and community support to develop an assisted living senior housing facility in Wrangell. If such a facility were to be developed it might look a great deal like the Haines Assisted Living facility. Assuming a facility was developed and it housed 10 assisted living residents, there would likely be a $5,000 monthly fee. Total revenue for the operations of a senior assisted living facility would be projected at $600,000 annually. Such a facility would be expected to create 15 jobs with earnings of approximately $300,000 annually. In addition to direct revenue, an assisted living facility would also able be to attract grant dollars.

Support and Grow Visitor Industry

Potential Jobs: 20 new jobs (every five years)

Potential Wages: +$440,000 annually

Wrangell is an attractive visitor destination, although it differs from other destinations in the region in that its visitors are more likely to be independent travelers rather than off of a cruise ship. Wrangell's charm includes a "working waterfront" rather than a set of retail focused tourism shops. The areas surrounding Wrangell provide many opportunities for nature-based tours and wildlife viewing. The most popular visitor destination is Anan Wildlife Observatory, known for its world-class bear viewing. Anan, located 35 miles southeast of Wrangell, has been steadily gaining in popularity as a place to watch the grizzly and black bears that congregate between early July and late August to take advantage of Southeast's largest pink salmon spawning event. Other popular visitor activities in Wrangell include visits to the Stikine–Leconte Wilderness Area, the LeConte Glacier and Shakes Glacier, Chief Shakes Island, and Petroglyph Beach State Historic Park, which has the highest concentration of rock engravings in Southeast Alaska.

There have been two contrasting developments in Wrangell's visitor industry. The first is positive. Total visitors are up significantly into the community. Between 2010 and 2015, total passenger arrivals (including Alaska Airlines, the Alaska Marine Highway, and large

and small cruise ships) have increased by 32%. However, Wrangell has not been able to capitalize on these visitors. During the same period, total visitor industry employment decreased by nine percent. Total sales tax receipts increased 22% over the same period. While this could be an indicator that that visitors are spending money, it seems more logical that increased sales are due to a growing maritime sector that is dependent on local supplies. There appear to be artificial constraints in place that are keeping the community of Wrangell from enjoying the full impacts of a growing number of tourists to the area. Based on past research, federal government regulations have been highlighted as one of these constraints. A more focused effort to benefit from tourism is clearly an economic opportunity.

Low Electric Rates

At just over 11 cents per average megawatt hour, the City of Wrangell has one of the lowest electrical rates in the state of Alaska. Comparing all 185 Alaska communities, Wrangell's rates are the 6th lowest, enabling the community to attract business and industrial development to a degree that other communities in the state cannot. The community has clearly taken advantage of this asset. In the past five years, the amount of electricity used in Wrangell has increased by 24%. Wrangell has also managed to keep the price of electricity stable. While rates increased 20% in the region over the past decade, average rates in Wrangell grew by just 4%.

Promote Wrangell's recreation, culture, and quality of life

Wrangell itself is a draw in its own right. It is picturesquely situated. The community has direct access to highly ranked recreation areas along the Stikine River and is a popular jet boat destination for locals and visitors alike. The community is on an extensive road system on Wrangell Island that provides access to numerous and outstanding recreation opportunities not found elsewhere in the region. Hunting, camping, fishing and other activities are easily accessed by vehicle and are cost effective. As previously mentioned it has the most affordable housing in the state and some of the lowest electrical costs. It also has one of the highest overall school district test scores in Alaska.

Wrangell's 4th of July festivities are among the most elaborate in the nation, which earned the Wrangell Chamber a statewide award in 2016. It has a rich and vibrant Native Alaskan population that regularly celebrates its heritage and culture and is an important part of the community. In a recent survey, 85% of business leaders called the overall quality of life in Wrangell a benefit or significant benefit to their businesses. Continuing to promote the general attractiveness and character of the community as a

family friendly place to live would continue to attract residents and new businesses to the area.

Site photos and site map.

Public Outreach and Engagement

The following pages summarize the public outreach and engagement with the public over a five-month period that led to the creation of the adopted preferred master plan.

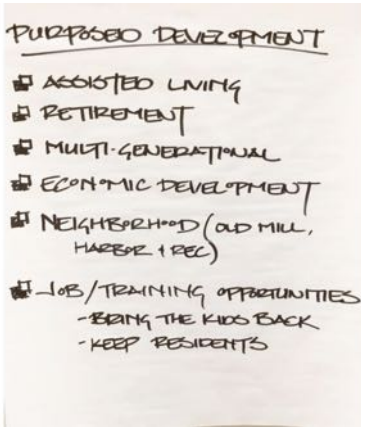
The Process

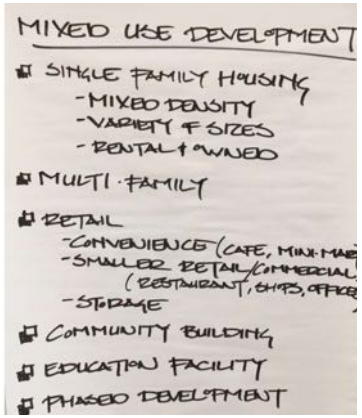
The project team developed a process for the Wrangell Institute Master Planning effort that began with a review of past planning initiatives and an analysis of the Wrangell economy and housing needs to ensure that the resulting plan would have the maximum benefit for the community. Based on initial input, initial plans were developed and, through community input, prioritization, and construction cost estimates, initial plans were distilled into a single Wrangell Institute Property Preferred Master Plan.

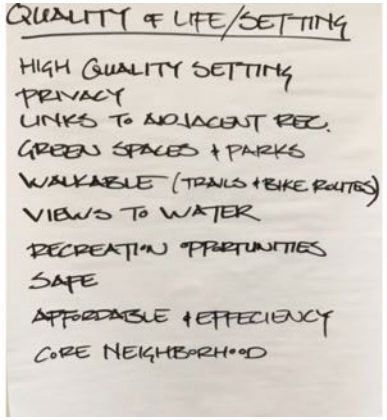
Stakeholders and Planning Partners

The Public

The Institute Property team came to Wrangell for two four-day sessions and four public meetings were conducted as part of the master planning efforts for the Institute Property project. Each session included two public meetings organized in a workshop format, a three-day open house at the Nolan Center, and targeted meetings with specific stakeholder groups and individuals. A key step in the design process is an integrated design charrette: intensive public design workshops. The purpose of the charrette was to develop a vision and plan for the property. The workshop format was predicated on a participatory iterative process, where attendees are required to participate and contribute to the discussion. In order to maximize participation, the meetings were announced in the Wrangell Sentinel, through a series of Public Service Announcements on Stikine River Radio (KSTK 101.7 FM), through a series of Facebook posts on the Wrangell Community Board, through event posters placed around the community, through Constant Contact and individual emails, and through announcements on the following websites: City and Borough of Wrangell webpage and Facebook







pages, Wrangell Chamber Facebook pages, and on the Wrangell Institute Master Plan Project Blog site *www.wrangell-institute.blogspot.com* prior to each public meeting. Turnout ranged from 20 to 40 community members at each of the meetings. Altogether, more than 100 Wrangell residents and stakeholders were involved in the process of developing the Wrangell Institute Master Plan, attending public meetings, submitting comments during the planning process, or acting as stakeholders in the process and communicating with the planning team electronically.

Carol Rushmore addresses the audience during the February 29th presentation.

Key Meeting Summaries

Below is a summary of the public exercises that occurred during the meetings combined with public feedback.

February 29, 2016

On Monday, February 29th the planning and design team made a series of presentations to the public at the Nolan Center. The presentations evaluated the existing site, identified opportunities, presented findings from the preliminary Wrangell housing needs assessment and discussed types of housing and development that might be most appropriate for the Institute Property.

The overwhelming direction was to create a mixed use development neighborhood, with a focus on a variety of housing types (including single family, medium density, and cottage). The neighborhood should be supported by small retail and commercial development, a community center and linked to existing and new recreation opportunities. There is also a strong desire to create an assisted living and senior housing development, explore opportunities for an educational facility, and support/expand the community's economy.

Following Monday's public meeting on priorities and needs for the Institute Property, the planning and design team remained in Wrangell for a two-day open studio format. During this time the team development numerous alternative master plans that were based on the priorities and needs provided by the public on Monday's meeting. During the open studio, members of the public interacted and provided input on these master plans.

The images above show a presentation and public participation in the first meeting. The pages below show a summary of public priorities and concerns from a group exercise that evening.

March 2, 2016

Seven plans were presented to the community on Wednesday, March 2nd and members of the public voted on their favorite and provided comment and input on their desires for each of the seven plans.

Community Economic Development Director Carol Rushmore takes of a photo of one of the seven plans presented to the community at the second public meeting.

June 13, 2016

Approximately 40 people gathered in Wrangell's Nolan Center to see a presentation by Alaska Native Science and Engineering Program (ANSEP) on a possible accelerated boarding high school for underserved Alaska Native children on June 13th. There was also a short introduction to the work being done on housing by the Wrangell Cooperative Association and the Tlingit Haida Regional Housing Authority. Three master plans for the Institute Property were presented to the public at this meeting.

Aaron Angerman, Tribal Administrator for the Wrangell Cooperative Association, discusses the launch of a tribal housing survey to better understand tribal housing priorities in the institute area.

June 15, 2016

On Wednesday, June 15th 2016, the planning and design team presented a phased master plan that reflected the input and comments heard during three previous public meetings, two three-day open house events, integrated design charrettes, stakeholder meetings, and public comments.

Community members provide input to the draft plans after the concepts were introduced by the project team.

Master Planning and Preliminary Subdivision Design

Fifteen Draft Alternative Master Plans

The team developed numerous alternative master plans that were based on the priorities and needs provided by the public. Fifteen plans were originally developed and reduced to seven prior to the second public meeting. All seven draft master plans are presented in the appendix. Members of the public voted on their favorite and provided comment and input on their desires for each of the plans.

Three Alternative Master Plans

Three unique master plans were developed to present a wide-variety of use arrangements. The individual studies purposefully placed mixture of different programs such as an educational development, senior assisted care facility, support retail and the range of housing options between single-family housing, cottage housing and medium/high density housing in different relationships to ensure that the broader discussions of adjacencies, assess, public and private proximities to traffic, noise, light and view were discussed.

Above: Project team leader Chris Mertl points out key differences among the seven draft alternative master plans. Below: A draft alternative plan entitled "Campus Greens" is shown.

Alternative Master Plan 1

Alternative Master Plan 1 supports an educational campus development as well as senior assisted care, neighborhood retail node, and a mixture of single family and medium density housing.

This plan would showcase the campus from a visual point of view. The plan places green space at the front of the property. In order to facilitate implementation, there is a single driveway that would come up and serve the school only so that the campus would be self contained. This plan offers centralized parking. The plan provides space for a school campus along the highway.

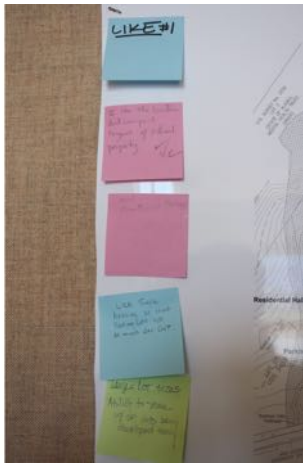
Senior assisted living care is included and the proposed site facilities take advantage of a desirable neighborhood setting coupled with an adjacent educational campus development. The proposed site for a care facility would towards the more private and quite portions of the site to create an opportunity for the desire to be in a more secluded peaceful environment.

Single-family housing lots are proposed to be developed early to meet immediate market needs in the community. Future phases are planned in adjacent areas.

Constraints of this plan compared to the other options is the lack of cottage housing options, no smaller lot sizes, and that the location for the senior assisted care facility may perhaps be too isolated.

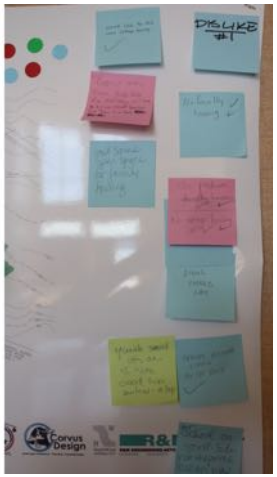
Master Plan 1 Likes

- **Location and compact layout of school property (4)**
- Single family housing developed first
- Larger lot sizes, ability to phase with single family lots being developed early.



Master Plan 1 Dislikes

- **Needs cottage housing (5)**
- **Assisted living center phase too late, too far back (4)**
- **No medium density housing (3)**
- **No faculty housing (3)**
- **Road doesn't connect through (two exits) (2)**
- **Put school on south side, not prime ocean view (2)**
- More school parking
- Open space for family housing
- No mixed housing
- Put small lots on south side



WRANGELL INSTITUTE

MASTER PLAN 1

2016/06/09

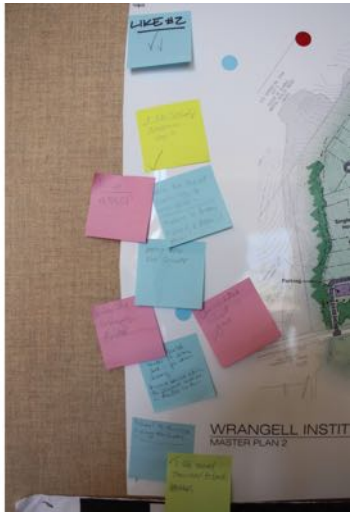
Alternative Master Plan 2

Alternative Master Plan 2 balances senior assisted living as wells as an educational campus development including a small retail location located in a primary public frontage off of Zimovia Highway. This plan has shared mixture of medium density, cottage, and single-family lots concept.

In this plan, single-family and cottage housing lots are located toward the back of the development with proposed siting at the more quiet and private areas of the subdivision. The noted attributes of this development are that senior assisted care facilities are located in a public location with a strong connection to the waterfront.

Master Plan 2 Likes

- **School layout (9)**
- **Integrating streams into school green space (2)**
- Using Assisted Living Center and school as anchors
- Ocean view for seniors
- Cottage housing privacy
- Making senior housing phase early.



Master Plan 2 Dislikes

- **Location of senior housing (7)**
- **Break up high, medium density, and single family homes (4)**
- **Educational footprint too big (2)**
- Lot size too big
- Not enough cottage housing
- No homes with ocean view in front
- Location of cottage housing
- Too much multi family (should be downtown)
- Single family homes expensive to develop
- Too much green space
- Need health center for seniors

WRANGELL INSTITUTE

MASTER PLAN 2

0 100 200 400FT

2016/06/09

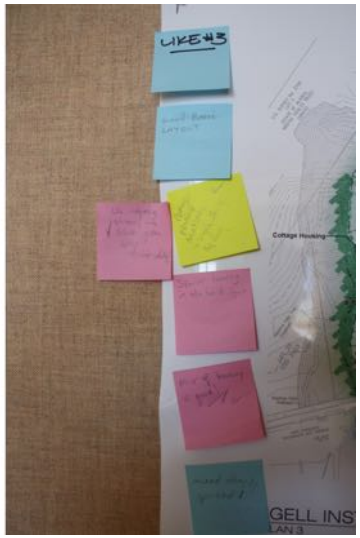
Alternative Master Plan 3

Alternative Master Plan 3 provides a more random layout of the many proposed uses. Areas along the Zimovia highway are shared between retail, educational development, faculty housing, and single-family housing. Senior care facilities and a mixture of medium density, cottage housing, and single-family homes are placed in the locations farther into the more private portions of the site.

This plan provides a good mixture of medium density, cottage and single-family lots.

Master Plan 3 Likes

- **Mix of housing types is good (6)**
- **Cottage housing location (2)**
- Single family by highway
- Senior housing in the back
- Overall layout nice



Master Plan 3 Dislikes

- **School campus too big and spread out (shouldn't straddle creek) (7)**
- **Lots are too large (3)**
- **Put retail on right side (3)**
- **leave waterfront for big homes (2)**
- **Too much green space (2)**
- Needs a more varied tract layout
- Road shouldn't be on both sides of school


Single Family Housing
Cottage Faculty
Single Family Housing
Faculty Housing
Medium Density Housing
Faculty Housing
Faculty Housing
Parking
Retail
School
Green Space
Residential Halls
Quad
Parking
Gym
Parking
Single Family Housing
Single Family Housing
Senior/Assisted Living
Medium Density Housing
Cafeteria
ZIMMOVIA STRAIT
Rainbow Falls Trailhead
Zimovia Highway R.O.W. (100')
U.S. SURVEY No. 3709 LOT 3 (STATE OF ALASKA, MENTAL HEALTH TRUST, OWNER)
SOUTH WRANGELL, ALASKA SUBDIVISION WITHIN LOT 3, USS 3709 BLOCK 1
Lot 1
Lot 2
Lot 3
0 100 200 400FT

Draft Preferred Master Plan

Based on extensive feedback, the project team synthesized the comments and preferences made regarding the three alternative master plans, and developed a preferred master plan that drew the best elements from each of the options.

Draft Preferred Master Plan

Preferred Master Plan

The preferred master plan closely reflected Alternative Master Plan 1. The Alaska Native Science and Engineering Program (ANSEP) development is proposed on the historic Institute school site. The school includes a central campus green creating a focal point, open space, and access through the property to the various components. The campus has its own access and housing for students and faculty located behind the classroom/school block. A gymnasium and cafeteria provides support for the campus and can also be used for community events and hub for the neighborhood. Senior assisted living is located with retail in close proximity to provide support and activities for the residents while capitalizing on the views from the higher elevation and separating senior residents from the busy highway. Retail and commercial is centrally located.

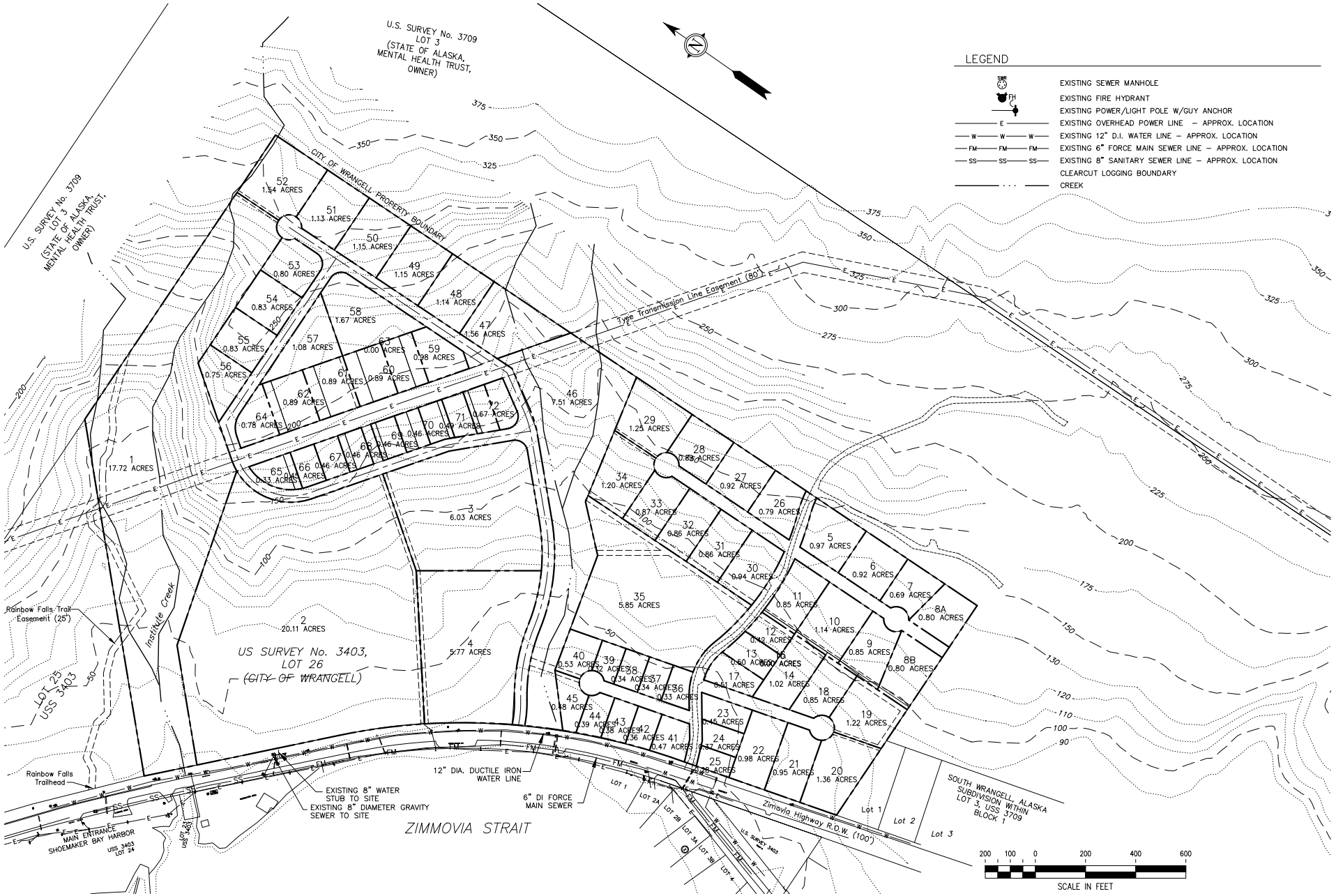
Single-family housing lots include a mix of small, medium and larger lots on east side of the property that minimizes conflicts with other uses and create easy access to these areas. The main residential road utilizes the existing pioneer road as a proposed first phase development fronting Zimovia Highway with subdivision expansion back into the site as the market demand expands.

Further residential opportunities are provided behind the educational campus and senior assisted care facility for possible support to those developments. Recreation trails link the interior of the mixed use development and neighborhood to existing surrounding recreation facilities.

Wrangell Institute Property

Preferred Master Plan

REV: 10/17/2016

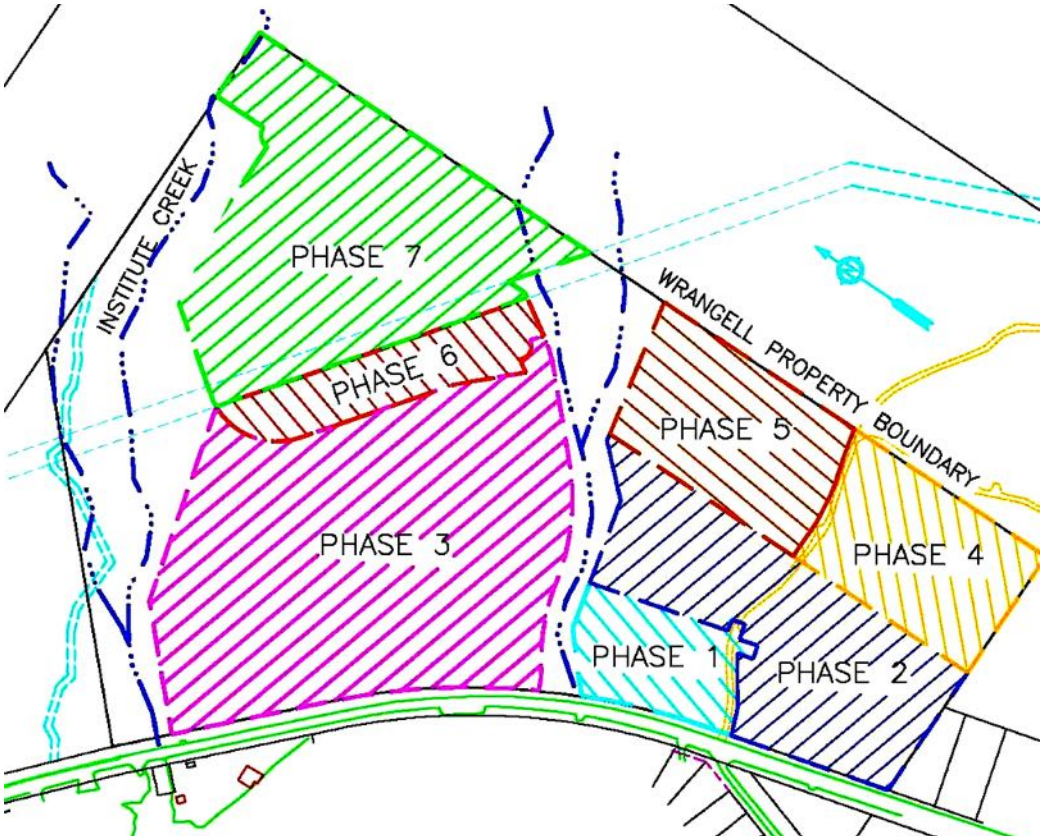

LEGEND
EXISTING SEWER MANHOLE
EXISTING FIRE HYDRANT
EXISTING POWER/LIGHT POLE W/GUY ANCHOR
EXISTING OVERHEAD POWER LINE – APPROX. LOCATION
EXISTING 12" D.I. WATER LINE – APPROX. LOCATION
EXISTING 6" FORCE MAIN SEWER LINE – APPROX. LOCATION
EXISTING 8" SANITARY SEWER LINE – APPROX. LOCATION
CLEARCUT LOGGING BOUNDARY
CREEK
U.S. SURVEY No. 3709 LOT 3 (STATE OF ALASKA, MENTAL HEALTH TRUST, OWNER)
CITY OF WRANGELL PROPERTY BOUNDARY
Tyee Transmission Line Easement (80')
US SURVEY No. 3403, LOT 26 (CITY OF WRANGELL)
Institute Creek
Rainbow Falls Trail Easement (25')
Rainbow Falls Trailhead
MAIN ENTRANCE SHOEMAKER BAY HARBOR
USS 3403 LOT 24
LOT 25 USS 3403
EXISTING 8" WATER STUB TO SITE
EXISTING 8" DIAMETER GRAVITY SEWER TO SITE
12" DIA. DUCTILE IRON WATER LINE
6" DI FORCE MAIN SEWER
ZIMMOVIA STRAIT
Zimovia Highway R.O.W. (100')
SOUTH WRANGELL, ALASKA SUBDIVISION WITHIN LOT 3, USS 3709 BLOCK 1
Lot 1
Lot 2
Lot 3
SCALE IN FEET

Phasing

This project can be logically developed with each phase building on infrastructure from the previous phases. The extensions of the sewer and the water can progress linearly once the sewer is extended through the proposed ANSEP campus to the phase 1 housing development due to the location of the existing gravity main near Shoemaker Harbor. While this will result in higher utility development costs for the first phase of housing it would maintain the preferred master plan and the inclusion of the ANSEP campus in the location shown if not developed in the near future or in conjunction of the phase 1 housing. Should funding be limited or the development of ANSEP campus unlikely or delayed long term, it may be desirable to use the "preferred master plan: alternative" where housing on the west portion of the project along Institute Creek would be the first phase of development with utilities running under the new housing road. This would be a cost savings but could negatively impact the development of the ANSEP campus if housing continues to expand within the proposed campus location and a campus is later constructed.

See page 67 for discussion of alternative plan and mapping.

Institute Property Phased Construction Approach Map



Phases I & II shown in the Phasing Map to the right are based on the immediate need of residential property. Phase 3 (ANSEP) could also be constructed first if funding is available.

A table of the areas and proposed primary uses is listed below.

Phasing Table

Phase	Area	Units	No. Lots	Use
1	5	Acres	10	Medium Density Residential
2	15	Acres	13	Medium and Low Density Residential
3	33.5	Acres	3	Commercial / Educational / High Density Residential
4	9	Acres	7	Low Density Residential
5	9	Acres	9	Low Density Residential
6	5	Acres	10	Medium / Cottage Housing
7	22.5	Acres	18	Low Density Residential

Phase I - Medium Density Residential: 5 acres, 10 lots

Phase I is adjacent to the existing logging road so a portion of the access from the highway is already constructed. A new 400' road and cul-de-sac would be required to access the lots. The lots are medium sized at 15,000 square feet and intended to be more affordable. A water main is located in the highway adjacent to both phases which makes the extension for domestic fire protection cost effective. The closest gravity sewer line is located near the former Institute property driveway which makes sewer to this phase much more expensive with nearly 2,000 feet of sewer required to serve the subdivision. There are only minor streams in this phase and surface water runoff would be collected and diverted to the stream to the north.

Phase II - Medium and Low Density Residential: 15 acres, 13 lots

Phase II is similar to Phase I with the addition of some larger (1 acre) lots mixed with medium sized lots. 500 feet of roadway and utilities would be constructed with this phase. If demand and funding is available, phase II could be developed in conjunction with phase I.

Phase III - Commercial/Educational/High Density Residential: 33.5 acres, 3 lots

Phase III includes the already developed former Institute property as well as a portion of the sloped land to the east and the land along the adjacent creek. Primary access to the Phase III property will be from a new entrance near the center of the site near the unnamed creek and a new dedicated ANSEP driveway adjacent to Institute Creek. The central new road would provide access to future Phases VI and VII also. Phase III consists of two smaller 6 acre lots and one 20 acre parcel. Gravity sewer and water would already be provided through the site from work necessary for Phase I. Water would be extended up the access road to future Phases VI & VII and extended to the southeast for a future connection to Phase V, which would loop the water system and provide greater fire flows. The topography near the northeast side of Phase III is beginning to climb and development along that side will require significant earthwork. Most of the property within this phase is gently sloping.

Phase IV - Low Density Residential: 9 acres, 7 lots

Phase V - Low Density Residential: 9 acres, 9 lots

Phases IV & V are extensions to the first two phases and are intended for residential development. These phases have very favorable topography and soils. Utilities would progress much like the previous phases with gravity sewer extensions from the property downslope. The water line at the end of Phase V would be extended to the creek to the north for a looped connection to Phase III for enhanced fire flows. Both phases have approximately 500 feet of roadway and utilities.

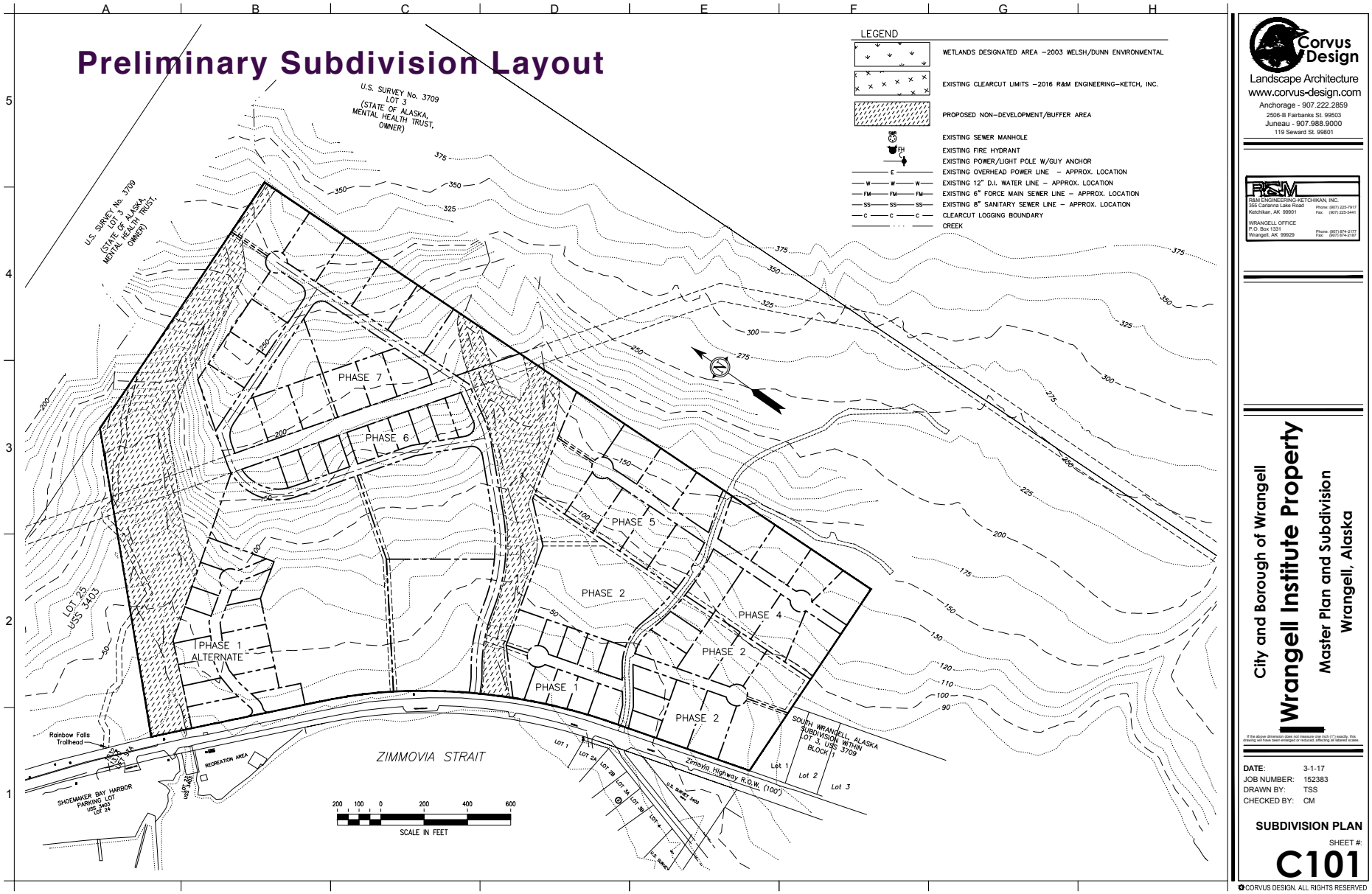
Phase VI - Medium Density / Cottage Housing: 5 acres, 10 lots

Phase VI is located on moderate to steep terrain with small lots that would overlook the proposed campus below. Access to the phase would be possible from a roadway traversing the slope below and also possible from the power line corridor above. This phase provides great view potential and close proximity to the proposed campus below but has moderate to high development costs.

Phase VII - Low Density Residential: 22.5 acres, 18 lots

Phase VII includes 16 large (1 acre) parcels above the power line easement. It is not likely that this phase will be cost effective to develop given the high cost of utilities. The largest challenge to develop this phase is the elevation, which is all greater than 200 feet above the existing highway and would require another water pressure zone to provide fire protection.

Remainder - Undeveloped Green Spaces & Streams: 26 acres



Corvus Design
Landscape Architecture
www.corvus-design.com
Anchorage - 907.222.2859
2506-B Fairbanks St. 99503
Juneau - 907.988.9000
119 Seward St. 99801

R&M ENGINEERING-KETCHIKAN, INC.
355 Carlanna Lake Road
Ketchikan, AK 99901
Phone: (907) 225-7917
Fax: (907) 225-3441

WRANGELL OFFICE
P.O. Box 1331
Wrangell, AK 99929
Phone: (907) 874-2177
Fax: (907) 874-2187

City and Borough of Wrangell
Wrangell Institute Property
Master Plan and Subdivision
Wrangell, Alaska

If the above dimension does not measure one inch (1") exactly, this drawing will have been enlarged or reduced, affecting all labeled scales.

DATE: 3-1-17
JOB NUMBER: 152383
DRAWN BY: TSS
CHECKED BY: CM

SUBDIVISION PLAN

SHEET #:
C101

Community/Neighborhood Development

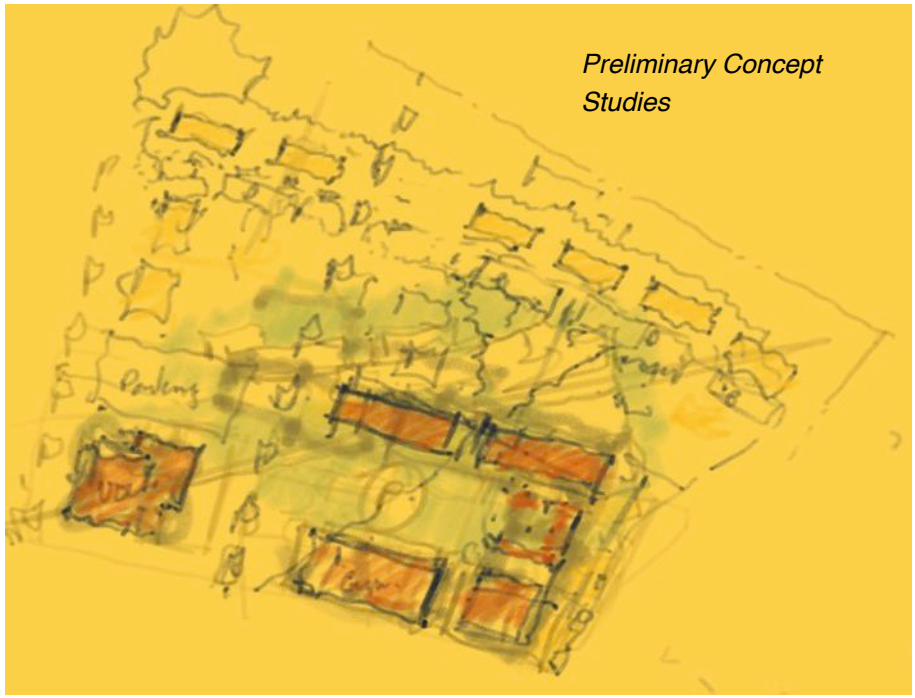
Existing Opportunities

The Institute Property provides the initial precedence for a planned neighborhood vision. The site has a strong frontage along Zimovia Highway providing immediate public access, Shoemaker Bay Recreation Area offers a wonderful park within walking distance of the site, previous development at the Institute Property provides a relatively flat and previously filled buildable area, and the existing access roads are in place to provide the basis for future roads to access further into the site.

Community and neighborhood development planning takes the existing opportunities into consideration to help establish areas within the proposed site that are suited for different types of uses. A neighborhood plan also identifies areas which the initial development makes the most sense, with future expansion leveraging the initial installations of roadways and utilities.

Vision and Neighborhood Characteristics: Great neighborhoods make great communities

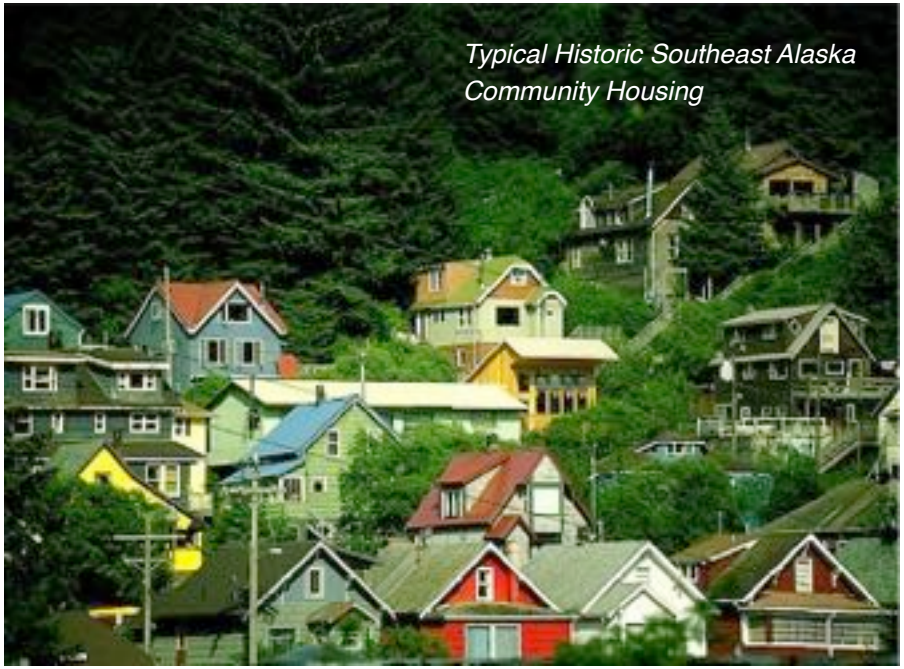
The proposed vision for the Institute Property is to develop a long-range neighborhood development plan locating different uses that will serve Wrangell's



Preliminary Concept Studies

community need supporting economic growth and housing. The proposed preferred concept presents a range of residential opportunities from large single-

Single Family Housing



Typical Historic Southeast Alaska Community Housing

family lots, low and medium density housing, cottage housing, commercial, retail, senior assisted living and an education campus.

The initial housing subdivision is closest in proximity to the highway and allows the creation of a residential neighborhood with a variety of lot sizes. Utility costs will result in higher development costs as the existing sewer terminates near the original Institute facility and would need to be extended to this area. Future expansion would continue back and further outward from the highway, leveraging the initial investments. Economic viability would become more attainable the larger the over-all development becomes.

Portions of this housing could also repurpose as potential support to an educational campus or community use development. This housing would support staff and provide support for a larger development, as well as serve families who would find it desirable to be closer to a facility such as an educational

Multi-Family/Mixed Use

campus and the future development of the Shoemaker Bay Industrial Park (old mill site).

The concepts for a proposed neighborhood development started with a general review of how different housing types sited in specific manners supported a desirable community characteristic. Discussion began by reviewing historical images of the community of Wrangell back before European and American influences, where a typical Tlingit village shared similarities with how we look at neighborhood development today. These characteristics include housing located in close proximity to each other, pedestrian ways and a relationship to the street or common path.These neighborhood characteristics coupled with different types of housing serving single and multi-family roles created rich community feel.

Characteristics of the Wrangell community over the years supported housing and building types that offered a mixture of size and uses. In order to discuss what was desirable and served the best community need, we also provided a general over-view of the typical types of housing one might find in a local neighborhood development and how the relationships of housing from single-family to multi-family, to mixed use and institutional housing, grouped in sensitive proximity, provided the basis for a rich community character.

Despite the higher than typical utility costs to access the residential development to the east portion of the site, many agreed that having a variety of housing types, lot sizes and their clustering into a neighborhood was the preferred planning option. Creating a positive residential neighborhood character supported by recreation links would help market and support future development such as an assisted and senior care facility, a regional education institution, and small scale neighborhood retail and commercial.

Next Steps: Template for a Neighborhood Use Plan

The desired neighborhood vision in the master plan creates a neighborhood developable in phases, supporting different densities, and allows for these different uses and scales of use to be harmonious in their placement. The inclusion of the two anchor developments (the ANSEP campus and senior assisted living facility) creates close proximity employment opportunities to the housing. It also provides the ability for families to live close to their family members in the assisted living facility. Complimenting this with the needed support of small commercial and retail linked by open spaces and trails connected to surrounding recreation creates a vibrant mixed use neighborhood.

This effort would in turn support a neighborhood Use Plan specific to this site that would eventually become a design guideline for the overall site development. This guideline would provide a template for long-term development identifying where certain uses should be located and how the proposed uses would be best serve to create an optimal neighborhood environment. This template would propose specific allowable use, locations for the specific types of uses within the neighborhood, the desired density of development, dimensional standards for each type of proposed use, and a method to manage parking, utilities and access.

Many communities throughout Alaska have utilized community planning such as Mixed Use zones or more complex Planned Community Development to direct desired planning strategy. As an example, the introduction of a mixed used zone for this area coupled with the adoption of the preferred master plan provides a community guideline for development.

An additional detailed master plan is recommended once actual use is proposed to help preserve and direct a desired vision for development. Communities such as Juneau have utilized a local steering committee group to direct input and clarify a desired vision, as represented by the 2016 Auke Bay Area Plan—an adopted area or neighborhood plan for the Juneau Auke Bay Community. The recommendations of that committee's work resulted in the issuance of Goals and Policies implementing amendments to their adopted

comprehensive plan designating uses that support their vision for development.

Zoning Recommendations

The Institute Property is currently zoned as holding (H) district (20.36.010) and is intended to "maintain future development options by setting aside large areas (in excess of short-term needs), by piecemeal development for possible future use. By preventing premature development at densities that under-utilize the land, relatively large parcels can be retained for major development projects (e.g., industrial use) when and if a need arises."

Review of the existing Wrangell Municipal Code, Title 20 Zoning, shows 13 zoning districts within Wrangell that include from a variety of residential, commercial, timber, industrial, waterfront, open space and others that provide guidelines on largely single use land uses and allowable development. The community currently does not have a true "mixed use" zoning district that would support the development of the Institute property as shown in the preferred master plan and the variety of desired uses to create a neighborhood environment. To support the preferred master plan of the Institute property we have made three recommendations related to zoning.

To support the Institute property and other future development in other locations within the community the first option or recommendation for Wrangell is to develop a new district, Mixed Use Neighborhood, to accommodate a mix of appropriate commercial, retail, and residential uses. The Mixed Use Neighborhood is intended to create a self-supporting neighborhood that is stable and allows flexibility and variety of uses. Multifamily residential and single family uses are allowed and encouraged as are libraries, schools, recreation, entertainment, restaurants, retail, transit, institutional care (clinics, assisted living, daycare), professional offices and other uses typically allowed in a downtown use or neighborhood district.

Many communities throughout Alaska have a Mixed Use or a Planned Community Development district that are focused on a downtown or neighborhood development pattern and include elements that integrate different desired uses. These could serve as a template for developing a new district for Wrangell.

Appropriate ordinances might include (and are not limited to):

- City and Borough of Juneau: 49.25.220 Mixed Use District
- Municipality of Anchorage: 21.04.060, D: Planned-Community- Development

A new district would identify allowable uses, conditional uses and other requirements, but does not prescribe specific uses to specific areas within the district. As a result development could occur that is not consistent with the master plan and will still meet the district requirements. Additional ordinance changes to address the adoption of the preferred master plan would further specify the allowable or preferred uses and their locations within the Institute Property.

A second option would be to zone the Institute Property as MF District – Multifamily Residential under the current Wrangell zoning ordinances and apply a Planned Unit Development overlay to the property. Wrangell currently does not have a Planned Use Development (PUD) ordinance and would need to develop one. A PUD allows varied and compatible land uses, such as housing, recreation, commercial, institutional and open space, all within one development or subdivision. This is a universal planning tool that could be overlaid onto any existing zoning to allow a variety of uses and create a neighborhood environment. This is a tool that can be used project by project as appropriate within the community. A PUD allows the following:

1. Flexibility in the use of land to promote the most appropriate use.
2. Efficient, economical and aesthetic use of land
3. Encourage quality housing and neighborhoods while limiting costs.
4. Economical design and construction of streets, utilities and common facilities.
5. Encourage innovation in design, circulation, parking, open space and mixed use developments and housing.
6. Avoidance of hazard areas and sensitive landscapes.
7. Preserve the natural and scenic qualities of open space and natural features.

Appropriate ordinances for review might include (and are not limited to):

- City and Borough of Juneau: Title 49. Article VI: Planned Unit Developments
- Matanuska Susitna Borough Chapter 17.36: Residential Planned Unit Developments
- City and Borough of Sitka, Chapter 21.28 Planned Unit Developments and Cluster Subdivisions
- Ketchikan Gateway Borough, Chapter 18.35 Planned Unit Development

A final option is the development of land use designations. Wrangell currently does not have land use designations and mapping, also known as "Comprehensive Plan Maps" and this may be a cumbersome effort for a small community. These maps provide specific land use designations for residential, commercial, industrial, natural areas, and other uses and the range of acceptable use where the intent is to promote the highest and best use of the land under consideration.

Best use examples could include higher housing densities near schools or preservation of undisturbed land subject to natural hazards like flooding. These do not have regulatory measures like zoning, as zoning district regulates how land can be used. If land use designation is enacted, Wrangell might consider a Traditional Town Center (TTC) for the Institute Property. These lands are typically characterized by high density residential and non-residential land uses around shopping centers, universities, major employment centers and public transit corridors, as well as other areas suitable for a mixture of retail, office, general commercial. A TTC is typically associated with high density residential uses at densities at 18 or more residential units per acre, which is not consistent with the master plan for the Institute Property.

A TTC typically includes residential and non-residential uses combined within a single structure, including off-street parking or ground floor retail space facing roads with parking behind the retail and housing above. This type of development is found in the Institute property master plan in a limited manner. Developing a version of a TTC that would be modified to meet the needs of the community would be another approach. However, developing community-wide land use designations may be a low priority for Wrangell and the least desirable option for zoning of the Institute property.

Any of the three zoning recommendations above needs to be developed in consultation with the City Attorney to understand the legal implications before pursuing any changes to accommodate the Institute property.

Fiscal Impact Analysis: Preferred Master Plan

Construction Costs

Total project budget for roadway and utility construction is estimated at $9.1 million using 2016 estimates.

CONSTRUCTION COST ESTIMATE
WRANGELL INSTITUTE PROPERTY

PHASE	COST	DESCRIPTION
1	$827,576	Medium Density Residential
2	$649,664	Mixed Density Residential
3	$1,175,193	Education / Commercial
4	$433,211	Low Density Residential
5	$693,016	Low Density Residential
6	$1,252,957	Med/High Density Residential
7	$4,080,424	Low Density Residential

Phased Construction Costs

The next seven tables show detailed roadway and utility construction costs for each phase of the project.

Phase I - Medium Density Residential**:** 5 acres 10 lots = $827,576

CONSTRUCTION COST ESTIMATE
WRANGELL INSTITUTE PROPERTY

PHASE 1 - ROADWAY & UTILITY CONSTRUCTION

CONSTRUCTION ITEM	UNIT	COST	QTY.	TOTAL
28' WIDE ROADWAY SUB-BASE	LF	$200	470	$94,000
RECONSTRUCT EXISTING LOGGING ROAD	LF	$100	380	$38,000
2" ASPHALT PAVEMENT	SF	$3	11280	$33,840
CURB & GUTTER	LF	$40	760	$30,400
SIDEWALK	SF	$7	1900	$13,300
18" - 24" CULVERT	LF	$50	300	$15,000
4 DIAMETER SEWER MANHOLE	EA	$6,000	3	$18,000
8" C900 SEWER PIPE	LF	$80	750	$60,000
SEWER SERVICE LATERAL	EA	$2,500	14	$35,000
8" WATER VALVE	EA	$1,500	5	$7,500
FIRE HYDRANT ASSEMBLY	EA	$3,000	3	$9,000
8" HDPE WATER PIPE	LF	$60	1100	$66,000
1" WATER SERVICE	EA	$2,500	14	$35,000
CONNECT TO EXISTING WATER	EA	$5,000	1	$5,000
OVERHEAD ELECTRICAL INSTALLATION	POLE	$10,000	4	$40,000
TRAFFIC CONTROL AND FLAGGING	LS	$5,000	1	$5,000
CONSTRCTION SURVEYING / MATERIALS TESTING	LS	$5,000	1	$5,000
STORMWATER POLLUTION PREVENTION PLAN	LS	$3,000	1	$3,000
MOBILIZATION / BONDING / INSURANCE	LS	10%	1	$51,304
SURVEYING & ENGINEERING	LS	8%	1	$45,148
ADMINISTRATION & INSPECTION	LS	7%	1	$42,664
CONTINGENCY	LS	20%	1	$130,431
Total				**$652,156**

Sewer Extension to Phase I

SEWER EXTENSION TO PHASE I CONSTRUCTION ITEM	UNIT	COST	QTY.	TOTAL
4 DIAMETER SEWER MANHOLE	EA	$ 6,000	5	$ 30,000
8" C900 SEWER PIPE	LF	$ 80	1350	$ 108,000
BACKFILL GRAVEL	CY	$ 25	800	$ 20,000
			SUBTOTAL	**$ 158,000**

Total Phase I = $810,156

Phase II - Medium and Low Density Residential:

15 Acres 14 lots = $649,664

CONSTRUCTION COST ESTIMATE
WRANGELL INSTITUTE PROPERTY

PHASE 2 - ROADWAY & UTILITY CONSTRUCTION

CONSTRUCTION ITEM	UNIT	COST	QTY.	TOTAL
28' WIDE ROADWAY SUB-BASE	LF	$200	450	$90,000
RECONSTRUCT EXISTING LOGGING ROAD	LF	$100	350	$35,000
2" ASPHALT PAVEMENT	SF	$3	10800	$32,400
CURB & GUTTER	LF	$40	600	$24,000
SIDEWALK	SF	$7	1500	$10,500
18" - 24" CULVERT	LF	$50	200	$10,000
4 DIAMETER SEWER MANHOLE	EA	$6,000	3	$18,000
8" C900 SEWER PIPE	LF	$80	800	$64,000
SEWER SERVICE LATERAL	EA	$2,500	9	$22,500
8" WATER VALVE	EA	$1,500	0	$-
FIRE HYDRANT ASSEMBLY	EA	$3,000	2	$6,000
8" HDPE WATER PIPE	LF	$60	800	$48,000
1" WATER SERVICE	EA	$2,500	9	$22,500
OVERHEAD ELECTRICAL INSTALLATION	POLE	$10,000	3	$30,000
TRAFFIC CONTROL AND FLAGGING	LS	$5,000	1	$5,000
CONSTRCTION SURVEYING / MATERIALS TESTING	LS	$5,000	1	$5,000
STORMWATER POLLUTION PREVENTION PLAN	LS	$3,000	1	$3,000
MOBILIZATION / BONDING / INSURANCE	LS	10%	1	$42,590
SURVEYING & ENGINEERING	LS	8%	1	$37,479
ADMINISTRATION & INSPECTION	LS	7%	1	$35,418
CONSTRUCTION CONTINGENCY	LS	20%	1	$108,277
Total				**$649,664**

Phase III - Commercial / Educational / High Density Residential: 33.5 Acres 3 lots = $1,175,193

CONSTRUCTION COST ESTIMATE
WRANGELL INSTITUTE PROPERTY

PHASE 3 - ROADWAY & UTILITY CONSTRUCTION

CONSTRUCTION ITEM	UNIT	COST	QTY.	TOTAL
28' WIDE ROADWAY SUB-BASE	LF	$200	1160	$232,000
2" ASPHALT PAVEMENT	SF	$3	27840	$83,520
CURB & GUTTER	LF	$40	2320	$92,800
SIDEWALK	SF	$7	5800	$40,600
18" - 24" CULVERT	LF	$50	300	$15,000
4 DIAMETER SEWER MANHOLE	EA	$6,000	4	$24,000
8" C900 SEWER PIPE	LF	$80	1000	$80,000
SEWER SERVICE LATERAL	EA	$5,000	3	$15,000
8" WATER VALVE	EA	$3,000	4	$12,000
FIRE HYDRANT ASSEMBLY	EA	$5,000	2	$10,000
8" HDPE WATER PIPE	LF	$75	1100	$82,500
8" WATER SERVICE	EA	$5,000	3	$15,000
CONNECT TO EXISTING WATER	EA	$5,000	1	$5,000
OVERHEAD ELECTRICAL INSTALLATION	POLE	$10,000	5	$50,000
TRAFFIC CONTROL AND FLAGGING	LS	$5,000	1	$5,000
CONSTRCTION SURVEYING / MATERIALS TESTING	LS	$5,000	1	$5,000
STORMWATER POLLUTION PREVENTION PLAN	LS	$3,000	1	$3,000
MOBILIZATION / BONDING / INSURANCE	LS	10%	1	$77,042
SURVEYING & ENGINEERING	LS	8%	1	$67,797
ADMINISTRATION & INSPECTION	LS	7%	1	$64,068
CONTINGENCY	LS	20%	1	$195,865
Total				**$1,175,193**

Phase IV - Low Density Residential:

9 Acres 7 lots = $433,211

CONSTRUCTION COST ESTIMATE
WRANGELL INSTITUTE PROPERTY

PHASE 4 - ROADWAY & UTILITY CONSTRUCTION

CONSTRUCTION ITEM	UNIT	COST	QTY.	TOTAL
28' WIDE ROADWAY SUB-BASE	LF	$200	500	$100,000
2" ASPHALT PAVEMENT	SF	$3	12000	$36,000
18" - 24" CULVERT	LF	$50	100	$5,000
4 DIAMETER SEWER MANHOLE	EA	$6,000	1	$6,000
8" C900 SEWER PIPE	LF	$80	450	$36,000
SEWER SERVICE LATERAL	EA	$2,500	7	$17,500
8" WATER VALVE	EA	$1,500	0	$-
FIRE HYDRANT ASSEMBLY	EA	$3,000	1	$3,000
8" HDPE WATER PIPE	LF	$60	500	$30,000
1" WATER SERVICE	EA	$2,500	7	$17,500
OVERHEAD ELECTRICAL INSTALLATION	POLE	$10,000	2	$20,000
TRAFFIC CONTROL AND FLAGGING	LS	$5,000	1	$5,000
CONSTRCTION SURVEYING / MATERIALS TESTING	LS	$5,000	1	$5,000
STORMWATER POLLUTION PREVENTION PLAN	LS	$3,000	1	$3,000
MOBILIZATION / BONDING / INSURANCE	LS	10%	1	$28,400
SURVEYING & ENGINEERING	LS	8%	1	$24,992
ADMINISTRATION & INSPECTION	LS	7%	1	$23,617.44
CONTINGENCY	LS	20%	1	$72,201.89
Total				**$433,211**

Phase V - Low Density Residential:

9 Acres 9 lots = $693,016

CONSTRUCTION COST ESTIMATE
WRANGELL INSTITUTE PROPERTY

PHASE 5 - ROADWAY & UTILITY CONSTRUCTION

CONSTRUCTION ITEM	UNIT	COST	QTY.	TOTAL
28' WIDE ROADWAY SUB-BASE	LF	$200	635	$127,000
2" ASPHALT PAVEMENT	SF	$3	15240	$45,720
CURB & GUTTER	LF	$40	600	$24,000
SIDEWALK	SF	$7	1500	$10,500
18" - 24" CULVERT	LF	$50	200	$10,000
4 DIAMETER SEWER MANHOLE	EA	$6,000	4	$24,000
8" C900 SEWER PIPE	LF	$80	1100	$88,000
SEWER SERVICE LATERAL	EA	$2,500	9	$22,500
FIRE HYDRANT ASSEMBLY	EA	$3,000	3	$9,000
8" HDPE WATER PIPE	LF	$60	635	$38,100
1" WATER SERVICE	EA	$2,500	9	$22,500
OVERHEAD ELECTRICAL INSTALLATION	POLE	$10,000	2	$20,000
TRAFFIC CONTROL AND FLAGGING	LS	$5,000	1	$5,000
CONSTRCTION SURVEYING / MATERIALS TESTING	LS	$5,000	1	$5,000
STORMWATER POLLUTION PREVENTION PLAN	LS	$3,000	1	$3,000
MOBILIZATION / BONDING / INSURANCE	LS	10%	1	$45,432
SURVEYING & ENGINEERING	LS	8%	1	$39,980.16
ADMINISTRATION & INSPECTION	LS	7%	1	$37,781.25
CONTINGENCY	LS	20%	1	$115,502.68
Total				**$693,016**

Phase VI - Medium Density / Cottage Housing:

5 acres 10 lots = $1,252,957

CONSTRUCTION COST ESTIMATE
WRANGELL INSTITUTE PROPERTY

PHASE 6 - ROADWAY & UTILITY CONSTRUCTION

CONSTRUCTION ITEM	UNIT	COST	QTY.	TOTAL
28' WIDE ROADWAY SUB-BASE	LF	$200	1200	$240,000
2" ASPHALT PAVEMENT	SF	$3	28800	$86,400
CURB & GUTTER	LF	$40	2400	$96,000
SIDEWALK	SF	$7	6000	$42,000
18" - 24" CULVERT	LF	$50	300	$15,000
4 DIAMETER SEWER MANHOLE	EA	$6,000	4	$24,000
8" C900 SEWER PIPE	LF	$80	1000	$80,000
SEWER SERVICE LATERAL	EA	$2,500	10	$25,000
8" WATER VALVE	EA	$1,500	4	$6,000
FIRE HYDRANT ASSEMBLY	EA	$3,000	3	$9,000
8" HDPE WATER PIPE	LF	$60	2000	$120,000
1" WATER SERVICE	EA	$2,500	10	$25,000
OVERHEAD ELECTRICAL INSTALLATION	POLE	$10,000	4	$40,000
TRAFFIC CONTROL AND FLAGGING	LS	$5,000	1	$5,000
CONSTRCTION SURVEYING / MATERIALS TESTING	LS	$5,000	1	$5,000
STORMWATER POLLUTION PREVENTION PLAN	LS	$3,000	1	$3,000
MOBILIZATION / BONDING / INSURANCE	LS	10%	1	$82,140
SURVEYING & ENGINEERING	LS	8%	1	$72,283
ADMINISTRATION & INSPECTION	LS	7%	1	$68,308
CONTINGENCY	LS	20%	1	$208,826
Total				**$1,252,957**

Phase VII - Low Density Residential: 22.5 acres 18 lots = $ 4,080,424

CONSTRUCTION COST ESTIMATE
WRANGELL INSTITUTE PROPERTY

PHASE 7 - ROADWAY & UTILITY CONSTRUCTION

CONSTRUCTION ITEM	UNIT	COST	QTY.	TOTAL
28' WIDE ROADWAY SUB-BASE	LF	$200	3000	$600,000
2" ASPHALT PAVEMENT	SF	$3	72000	$216,000
18" - 24" CULVERT	LF	$50	800	$40,000
4 DIAMETER SEWER MANHOLE	EA	$6,000	9	$54,000
8" C900 SEWER PIPE	LF	$80	3100	$248,000
SEWER SERVICE LATERAL	EA	$3,500	18	$63,000
8" WATER VALVE	EA	$3,000	6	$18,000
FIRE HYDRANT ASSEMBLY	EA	$5,000	5	$25,000
8" HDPE WATER PIPE	LF	$75	3000	$225,000
1" WATER SERVICE	EA	$2,500	18	$45,000
WATER BOOSTER STATION & WATER TANK	LS	$1,000,00	1	$1,000,000
OVERHEAD ELECTRICAL INSTALLATION	POLE	$10,000	10	$100,000
TRAFFIC CONTROL AND FLAGGING	LS	$5,000	4	$20,000
CONSTRCTION SURVEYING / MATERIALS TESTING	LS	$5,000	3	$15,000
STORMWATER POLLUTION PREVENTION PLAN	LS	$3,000	2	$6,000
MOBILIZATION / BONDING / INSURANCE	LS	10%	1	$267,500
SURVEYING & ENGINEERING	LS	8%	1	$235,400
ADMINISTRATION & INSPECTION	LS	7%	1	$222,453
CONTINGENCY	LS	20%	1	$680,071
Total				**$4,080,424**

Preferred Master Plan: Alternative

Based on discussions with ANSEP the intent is that the campus phase of the project occurs in the near future and would be the first phase hooked to the utilities extension from Zimovia Highway and would subsequently feed the rest of the site. Should the ANSEP project be delayed, there is an equal priority to provide single family housing with reasonable utility hook up costs. An alternative development plan would take the western portion of the ANSEP campus (adjacent to Institute Creek) for housing while preserving the central campus green. If the ANSEP campus is later developed these housing units could become facility housing and maintain the campus environment, if desired. This alternative plan would allow cost effective utilities to access the site with short run connections to the single family housing. If ANSEP is further delayed and there is a demand for more housing, the housing would be extended to the east along the northern portion of the old Institute facility towards the proposed housing on the eastern half of the site as shown on the preferred master plan.

The Alternative Subdivision Plan was selected and endorsed by the Wrangell Assembly on March 28, 2017. Staff was directed to proceed with the steps necessary to begin development of Alternative Phase 1. Alternative Phase 1 is less costly from the utility infrastructure development aspect, but still allows development of the ANSEP or other potential opportunity should one arise.

Alternative Phase I Construction Cost Estimates

PHASE 1 - ROADWAY & UTILITY CONSTRUCTION

Total project budget for roadway and utility construction for the alternative phase one is estimated at $575,835.

R&M ENGINEERING-KETCHIKAN, INC.
ENGINEERS GEOLOGISTS SURVEYORS

355 CARLANNA LAKE ROAD, SUITE 200, KETCHIKAN, ALASKA 99901
PHONE (907) 225-7917 FAX (907) 225-3441 EMAIL: RNMMain@rmketchikan.com

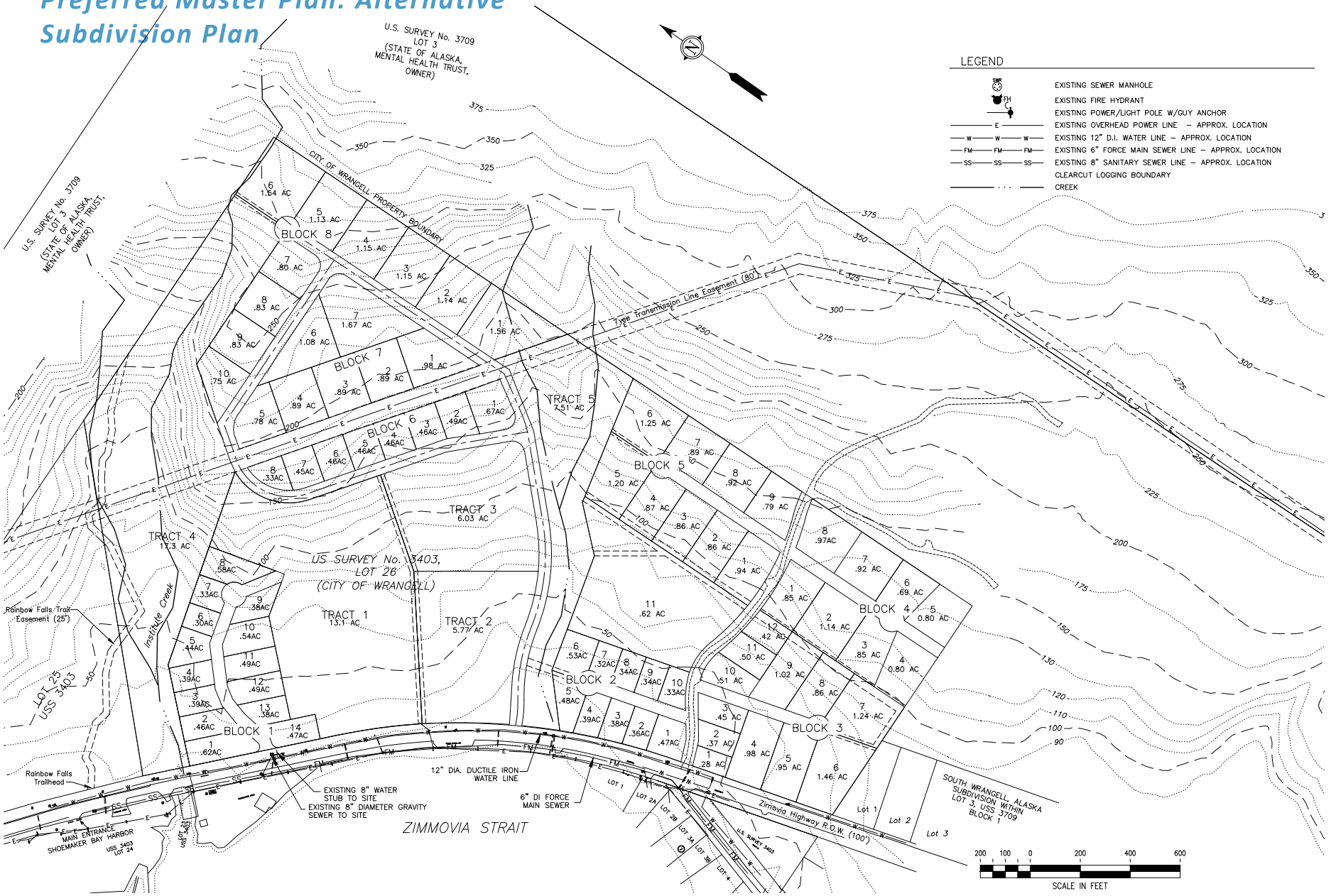
CONSTRUCTION COST ESTIMATE **1/17/2017**
WRANGELL INSTITUTE PROPERTY

ALTERNATIVE PHASE 1 - ROADWAY & UTILITY CONSTRUCTION

PHASE I CONSTRUCTION ITEMS

CONSTRUCTION ITEM	UNIT	COST	QTY.	TOTAL
28' WIDE ROADWAY SUB-BASE	LF	$ 200	500	$ 100,000
2" ASPHALT PAVEMENT	SF	$ 3	12000	$ 36,000
CURB & GUTTER	LF	$ 40	1000	$ 40,000
SIDEWALK	SF	$ 7	2500	$ 17,500
18" - 24" CULVERT	LF	$ 50	300	$ 15,000
4 DIAMETER SEWER MANHOLE	EA	$ 6,000	3	$ 18,000
8" C900 SEWER PIPE	LF	$ 80	700	$ 56,000
SEWER SERVICE LATERAL	EA	$ 2,500	14	$ 35,000
8" WATER VALVE	EA	$ 1,500	3	$ 4,500
FIRE HYDRANT ASSEMBLY	EA	$ 3,000	2	$ 6,000
8" HDPE WATER PIPE	LF	$ 60	700	$ 42,000
1" WATER SERVICE	EA	$ 2,500	14	$ 35,000
CONNECT TO EXISTING WATER	EA	$ 5,000	1	$ 5,000
OVERHEAD ELECTRICAL INSTALLATION	POLE	$ 10,000	3	$ 30,000
TRAFFIC CONTROL AND FLAGGING	LS	$ 5,000	1	$ 5,000
CONSTRCTION SURVEYING / MATERIALS TESTING	LS	$ 5,000	1	$ 5,000
STORMWATER POLLUTION PREVENTION PLAN	LS	$ 3,000	1	$ 3,000
MOBILIZATION / BONDING / INSURANCE	LS	10%	1	$ 45,300
SURVEYING & ENGINEERING	LS	8%	1	$ 39,864
ADMINISTRATION & INSPECTION	LS	7%	1	$ 37,671
CONTINGENCY	LS	20%	1	$ 115,167
			SUBTOTAL	**$ 575,835**

Preferred Master Plan: Alternative Subdivision Plan



Revenue Generation

Three revenue generation concepts are discussed below, including revenue generated through timber sales, revenue generated through lot sales, and revenue generated through property tax collection.

Timber

Economic opportunities related to generating revenue on the Wrangell Institute Property by clearcutting the site in preparation for all the subsequent construction phases are listed below. Phases 1 through 7 have a combined acreage of approximately 99 acres. The inventory cruise that was performed in 1995 stated that the "timber is a mixed stand of Western Hemlock, Sitka Spruce, Western Red Cedar and Alaska Yellow Cedar." In 2010 there were additional stand exams of the adjoining federal timber lands that identified lodgepole (beach) pine present as well. The merchantable volume of Beach Pine was negligible in this survey and is assumed to be the same on the Institute Property.

The 1995 timber cruise identified approximately 93 acres of merchantable timber on the property with a net scale of 2.1 million board feet (MMBF). Of the 2.1 MMBF, approximately 750 thousand board feet (MBF) were Sitka Spruce sawlogs. The remaining 1.35 MMBF is broken down into: 1.25 MMBF Western Hemlock, 50 MBF Alaska Yellow Cedar and 50 MBF Western Red Cedar. The cruise report also went on to say that approximately 50 percent of the standing Western Hemlock volume was utility or in this case pulp. Since there are no longer pulp mills operating in the southeast Alaska area, the only market for pulp is small pellet mill manufacturers. The very small use of pellet heat in southeast Alaska means that there is very little demand for this product at this time. Consequently, logging costs will be incurred during harvest operations, but the end product will have no value. The financial analyses below reflect this loss of volume and cost associated with harvest activities.

As timber matures older stems, especially Western Hemlock, will continue to degrade while younger trees will continue to mature and sustain the standing volume on the ground. There was a recent section of timber that blew down in a windstorm that is located in all of phase IV and about 25% of Phase V. This accounts for approximately 11 acres of blowdown on the Institute property. Salvage of the blow down timber was completed in early 2016. The Borough received $20,000 for the salvage sale.

The latest release from the United States Forest Service (USFS) on sawlog values here in Southeast Alaska was compiled and released in August of 2015, and is shown in an abbreviated form below:

Species Product	Tongass End Product Selling Value 2015
Sitka Spruce – Old Growth Sawn	$1,579.15
Hemlock – Old Growth Sawn	$434.76
Western Red Cedar - Sawn	$966.49
Sitka Spruce – Export Old Growth	$693.80
Hemlock – Export Old Growth	$655.47
Alaska Yellow Cedar - Export	$942.27
Western Red Cedar – Lower 48 Sales	$797.04
Sitka Spruce – Export Young Growth	$651.05
Hemlock – Export Young Growth	$630.11
Sitka Spruce – Young Growth Sawn	$373.24
Hemlock – Young Growth Sawn	$318.05

According to the report, felling & bucking is approximately $48.27/MBF for clearcut. This cost increases by approximately $7.00/MBF when partial cutting. Logging prices in this report are listed for helicopter, cable and ground-based methods. For overall simplicity we will assume that the entire site would be logged with ground-based methods, known locally as "shovel-logging".

The site has been characterized within the 1995 cruise and this report as having a grade of 30 percent or less along the fall line of the slope. Shovel logging activities can be carried out on ground up to 40 percent and for short pitches to 50 percent. The recent report by the USFS breaks down the cost of logging further by placing it into two groups. These groups are partial cut (PC) or clear cut (CC). The best economic recovery comes from clear cut. It is very difficult to partial cut while downhill logging. Consequently, we will use the costs associated with clearcut logging downhill using ground-based methods. The table on the following page uses 4 of the 11 categories above to the left. Using the mill south of town on Wrangell Island as the purchaser leads us to the assumption that all log products will be milled domestically.

Cost centers in the tables below are a combination of USFS appraisal costs and those costs obtained from local contractors in the Southeast Alaska area.

Financial Analysis by Selling Values and Cost Centers for Clearcut Methods					
	Analysis Items	Quantity	Units	Unit Cost/ Value ($/unit)	Cost/ Value ($)
Selling Values (Pond)	Sitka Spruce Saw Log	709	Mbf	$1,579.15	$1,119,61
	Western Redcedar Saw Log	47	Mbf	$966.49	$45,425
	Alaska Yellow Cedar Saw Log	47	Mbf	$942.27	$44,287
	Western Hemlock Saw Log*	590	Mbf	$434.76	$256,726
	Subtotal Selling Values				$1,466,055
Cost Centers	Fell and Buck CC	2,100	Mbf	$48.27	$101,367
	Stump-to-Truck Ground CC	2,100	Mbf	$85.00	$178,500
	New Temporary Road Construction**	0.2	miles	$250,000.00	$50,000
	Truck Haul***	2,100	Mbf	$65.00	$136,500
	Mobilization	1	Lump	$100,000.00	$100,000
	Subtotal Cost Centers				$566,367
	Harvest Option Value				**$899,688**
	Reduced by due to blowdown to $758,000				

Unit costs and values taken from current USFS FASTR spreadsheets
** Western Hemlock was determined to be 50 percent utility (pulp) in the 1995 cruise and 50 percent of the Western Hemlock will be unmarketable which accounts for an overall reduction of the total Western Hemlock available for purchase in the table above.*
*** Unit road construction costs include landings at the end of short spurs off of Zimovia Highway.*
**** Trucking is assumed to be to the mill at the end of the paved road in Wrangell.*

The harvest option financial analysis in the table to the left assumes:

- Single side logging production of 50 Mbf/day.
- Lump sum mobilization cost of $100,000 for operator equipment. This value was taken from a small canvas of Southeast Alaska operators.
- Logging operations costs and log pond values as defined in the most recent Region 10 FASTR spreadsheets.
- Temporary road construction cost of $100,000/mile plus the cost of landing construction bringing the average weighted cost for road and landing construction to $250,000/mile in this analysis.
- No barging would be required.
- All timber would be shipped to the mill on Wrangell Island.
- A 60 percent split of hemlock, 2 percent red cedar, 2 percent yellow cedar and 36 percent Sitka spruce was used for estimating volumes and timber economics. This was based upon the 1995 timber cruise performed by Curran Consulting, Incorporated.

Financial Analysis by Selling Values and Cost Centers, for Partial Cut Methods					
	Analysis Items	Quantity	Units	Unit Cost/ Value ($/unit)	Cost/ Value ($)
Selling Values (Pond)	Sitka Spruce Saw Log*	375	Mbf	$1,579.15	$592,181
	Western Redcedar Saw Log*	25	Mbf	$966.49	$24,162
	Alaska Yellow Cedar Saw Log*	25	Mbf	$942.27	$23,557
	Western Hemlock Saw Log*	625	Mbf	$434.76	$271,725
	Subtotal Selling Values				$911,625
Cost Centers	Fell and Buck CC	1050	Mbf	$55.00	$57,750
	Stump-to-Truck Ground CC	1050	Mbf	$150.00	$157,500
	New Temporary Road Construction**	0.2	miles	$250,000	$50,000
	Truck Haul	1050	Mbf	$65.00	$68,250
	Mobilization	1	Lump	$100,000	$100,000
	Subtotal Cost Centers				$433,500
	Harvest Option Value				**$578,125**
	Reduced by due to blowdown $397,846				

Unit costs and values taken from current USFS FASTR spreadsheets

** Log volumes are exactly half of the cruise volume in 1995. This will account for leaving undesirable trees standing, but will increase yarding costs by approximately 76 percent over the baseline which is clearcut.*

***This assumes two short spurs off of Zimovia Highway with a constructed Landing at the end.*

The harvest option financial analysis, in the table to the left, assumes:

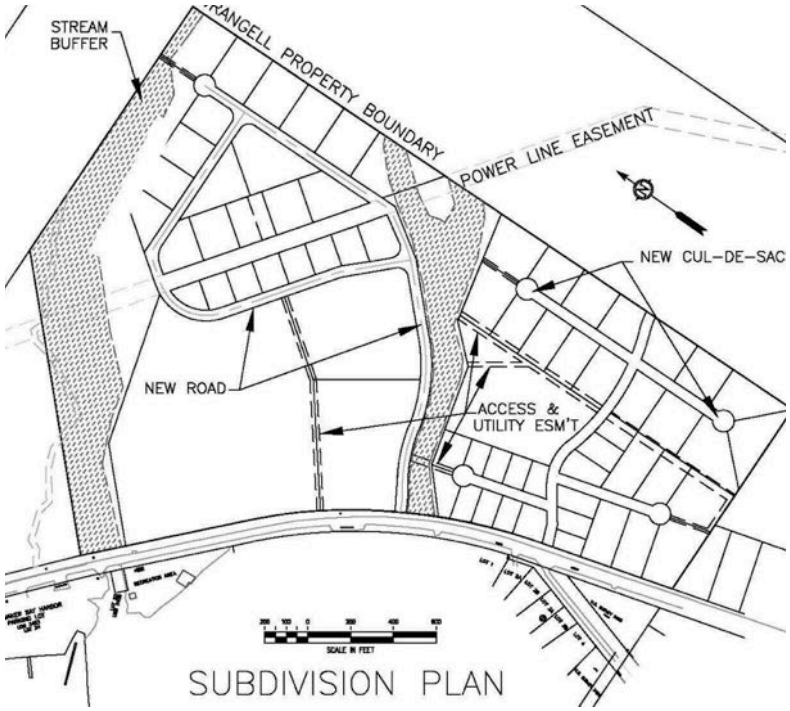
- Single side logging production of 50 Mbf/day.
- Lump sum mobilization cost of $100,000 for operator equipment. This value was taken from a small canvas of Southeast Alaska operators.
- Logging operations costs and log pond values as defined in the most recent Region 10 FASTR spreadsheets.
- Temporary road construction cost of $100,000/mile plus the cost of landing construction bringing the average weighted cost for road and landing construction to $250,000/mile in this analysis.
- No barging would be required.
- All timber would be shipped to the mill south of town on Wrangell Island.
- A 60 percent split of hemlock, 2 percent red cedar, 2 percent yellow cedar and 36 percent Sitka spruce was used for estimating volumes and timber economics. This was based upon the 1995 timber cruise performed by Curran Consulting, Incorporated.
- Right-of-ways will be cleared and used for skidding corridors and phased lots in general will have 50% percent removed for building pad construction.
- Felling and bucking costs have gone up to account for additional care in the directional felling process.

Should the Institute property undergo timber harvest to move forward with the construction phases outlined within this report, the most economical solution would

be to clearcut all phases of construction at once. If partial cut is preferred, it will be much more difficult to minimize residual tree damage within the remaining stand during yarding, especially on the upper slopes which tend to be steeper. Temporary logging roads to access the timber could be coordinated with the proposed road layouts found in the preferred master plan, resulting in future development project cost savings.

Furthermore, it would be prudent to cruise the standing timber prior to sale in order to update the data. As the market progresses, timber values rise and fall. Six years ago, this same timber was worth less than half of what it is today. There is economy in harvesting the site at one time and also working with both logging operators and mill owners to obtain the best return on the available resources onsite.

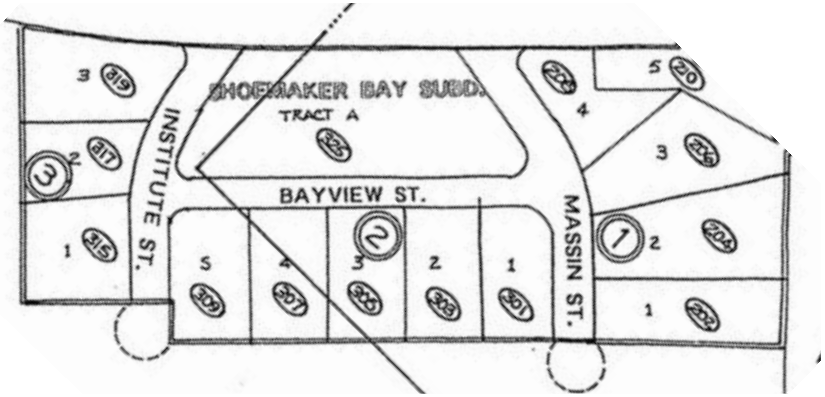
A partial cut at this time will yield just short of $400,000. A clearcut of the same site will yield approximately $760,000. Re-establishing a new stand of timber onsite that works with the proposed structures would ensure landscaping that would be less likely to damage the structures during severe windstorms. The largely decadent stand left behind in a partial cut would be susceptible to ongoing blowdown in this area. Consequently, we would recommend clearcutting the site in preparation for construction. Multiple entries would likely end up with a negative return on resources located on the Institute Property. This would largely be driven by multiple mobilization charges to the project.



Lot Sales

An additional revenue option for the City and Borough of Wrangell is the sale of lots associated with the Institute property. Much of the area has already been assessed, although market values appear to currently be 11.5 percent higher than the assessed valued. Generally previously assessed lots are 0.466 to 0.857 acres with an average market value of $23,400 per half-acre lot (excluding Tract A).

The map below corresponds to the lot values on the right.

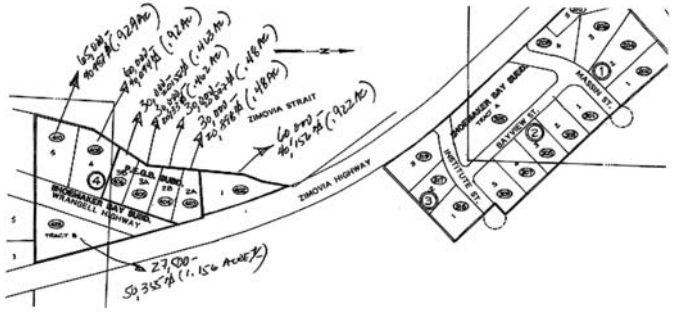


Current Institute Property Subdivision Assessments

Location	Current assessed value	Acreage	Market value is plus 11.5%
Block 1			
LT 1	$24,200	0.657	$26,983
LT 2	$27,500	0.857	$30,663
LT 3	$26,400	0.757	$29,436
LT 4	$25,300	0.468	$28,210
LT 5	$22,000	0.622	$24,530
Block Two			
LT 1	$22,000	0.494	$24,530
LT 2	$30,000	0.54	$33,450
LT 3	not valued	0.54	
LT 4	$22,000	0.54	$24,530
LT 5	$22,000	0.54	$24,530
Block Three			
LT 1	$24,200	0.591	$26,983
LT 2	$22,000	0.466	$24,530
LT 3	$27,500	0.673	$30,663
Tract A	$60,000	2.026	$66,900

However, since this assessment does not include full utilities, perhaps a better standard would be the assessed value of lots in the Shoemaker Bay Subdivision located across Zimovia Highway. Generally these lots, which do have full utilities, are between half an acre and an acre, with an average market value of $34,750 per half-acre lot.

The map below corresponds to the lot values on the right. It also shows where the lots are located compared to the Institute Property (across the highway and on the waterfront).



Current Shoemaker Bay Waterfront Assessments

Shoemaker Bay Subdivision	Current assessed value	Acreage	Market value is plus 11.5%
410-5	$65,000	0.929	$72,475
408-4	$60,000	0.92	$66,900
406-3B	$30,000	0.463	$33,450
405-3A	$30,000	0.462	$33,450
404-2B	$30,000	0.48	$33,450
403-2A	$30,000	0.48	$33,450
402-1	$60,000	0.922	$66,900
425 Tract B	$50,355	1.156	$56,146

Again, there are limits to how useful these assessments are as these represent waterfront lots, as opposed to lots located across the highway. In lieu of a full valuation of the Institute area lots, there is much to be derived from the City and Borough of Wrangell Assessors Database. It is important to understand land valuation in Wrangell for lots of a similar size, as well as lots that are sold without a house currently on it. Here the "average" half-acre lot in Wrangell is currently assessed at $38,350. For an "unimproved lot" that figure drops to $28,820. Assuming an 11.5 percent increase for market value, this means that the average market value for an empty lot in Wrangell is currently $32,140 per half acre.

Average land value in Wrangell, Based on Tax Roll

Lot Size	Average Assessed Value in Wrangell for lot of this size	Average Assessed value for lot of this size with no structures	Market value is plus 11.5% (no structures)
1/3 acre	$32,570	$24,140	$27,000
½ acre lot	$38,350	$28,820	$32,140
One acre lot	$33,150	$30,000	$33,400
5 acre lot	$36,900	$40,500	$45,150
20 acre lot	$28,264	$34,443	$38,404

A side-by-side comparison of lot sales estimates based on overall Wrangell averages (based on actual lot sizes), current Zimovia waterfront assessed values (based on calculated lot size), and Wrangell Institute values (based on calculated lot size) is presented below, increased to reflect market value.

Comparisons of Valuations

Lot Size	Average Wrangell Assessed Rate +11.5%	Wrangell Waterfront Assessed Rate +11.5%	Current Institute Subdivision Assessment + 11.5%
1/3 acre	$26,917	$23,162	$15,237
½ acre lot	$32,137	$34,743	$22,855
One acre lot	$33,434	$64,602	$45,710
5 acre lot	$45,150	$127,672	unknown
20 acre lot	$38,404	Unknown	unknown

Since there are so many unknowns for calculating actual assessments for a future Institute Subdivision Assessment, an average of all three calculations shown above is used as a proxy for a valuation estimation below.

Estimated Value of Land Sales in Phases I through VII of the Master Plan

Phase	Area	Per lot sales price range
1	10 1/3 acre lots	$217,717
2	6 1/3-acre lot, 8 1-acre lots	$513,953
3	2 5-acre lots; 20-acre lot (value unknown)	$172,822
4	9 1-acre lots	$431,238
5	7 1-acre lots	$335,407
6	10 ½-acre lots	$299,118
7	18 1-acre lots	$862,475
	Potential Total Sales Value of Institute Lots (excluding 20 acre lot)	**$2.8 million**

Property Tax

Once the lots are developed and improved, they would increase in value to the average lot value in the Wrangell Assessors database. The average single family home, according to the assessors database is $116,463. Assuming an increase in lot value and a single house on each lot, the total value of taxable property in the institute would be $11 million in 2015 dollars. (Note, this estimate only calculates the construction of single family homes).

Based on a current mill rate of 12.75, and assuming no exemptions of seniors or disabled veterans (both groups are currently exempt from the first $150,000 of assessed value), then the City and Borough of Wrangell would receive approximately $140,000 annually in property tax from the area.

Estimated Value of Property Tax for Phases I through VII of the Master Plan Following Lot Sales

Phase	Area	Potential Lot Value
1	10 1/3 acre lots	$1,453,823
2	6 1/3-acre lot, 8 1-acre lots	$2,060,341
3	2 5-acre lots (20-acre lot value unknown)	$986,947
4	9 1-acre lots	$1,336,553
5	7 1-acre lots	$1,039,541
6	10 ½-acre lots	$1,437,704
7	18 1-acre lots	$2,673,106
	Potential Total Taxable Value for New Housing on Institute Property	**$10,988,017**
	Potential Total Property Tax Annual Revenue	**$140,097**

Alternative Subdivision Plan and Revenue Generation

The alternative plan subdivides the institute property into 84 lots and tracts totaling 112 acres, as shown below:

Alternative Subdivision Detailed Tract and Lot Descriptions

Block	Lot	Area (s.f.)	Area (A.C.)	Zoning
	Tract 1	570,636	13.1	Education
	Tract 2	251,341	5.77	Commercial
	Tract 3	262,667	6.03	High Density Residential
	Tract 4	753,588	17.3	Green Belt
	Tract 5	327,136	7.51	Green Belt
1	1	27,007	0.62	Medium Density Residential
1	2	20,038	0.46	Medium Density Residential
1	3	16,988	0.39	Medium Density Residential
1	4	16,988	0.39	Medium Density Residential
1	5	19,166	0.44	Medium Density Residential
1	6	13,068	0.30	Medium Density Residential
1	7	14,375	0.33	Medium Density Residential
1	8	25,265	0.58	Medium Density Residential
1	9	16,553	0.38	Medium Density Residential
1	10	23,522	0.54	Medium Density Residential
1	11	21,344	0.49	Medium Density Residential
1	12	21,344	0.49	Medium Density Residential
1	13	16,553	0.38	Medium Density Residential
1	14	20,473	0.47	Medium Density Residential
2	1	20,473	0.47	Medium Density Residential
2	2	15,682	0.36	Medium Density Residential
2	3	16,553	0.38	Medium Density Residential

Block	Lot	Area (s.f.)	Area (A.C.)	Zoning
2	4	16,988	0.39	Medium Density Residential
2	5	20,909	0.48	Medium Density Residential
2	6	23,087	0.53	Medium Density Residential
2	7	13,939	0.32	Medium Density Residential
2	8	14,810	0.34	Medium Density Residential
2	9	14,810	0.34	Medium Density Residential
2	10	14,375	0.33	Medium Density Residential
2	11	254,826	5.85	High Density Residential
3	1	12,197	0.28	Medium Density Residential
3	2	16,117	0.37	Medium Density Residential
3	3	19,602	0.45	Medium Density Residential
3	4	42,689	0.98	Low Density Residential
3	5	41,382	0.95	Low Density Residential
3	6	63,598	1.46	Low Density Residential
3	7	54,014	1.24	Low Density Residential
3	8	37,462	0.86	Low Density Residential
3	9	44,431	1.02	Low Density Residential
3	10	22,216	0.51	Medium Density Residential
3	11	21,780	0.50	Medium Density Residential
3	12	18,295	0.42	Medium Density Residential
4	1	37,026	0.85	Low Density Residential
4	2	49,658	1.14	Low Density Residential
4	3	37,026	0.85	Low Density Residential
4	4	34,848	0.80	Low Density Residential

Block	Lot	Area (s.f.)	Area (A.C.)	Zoning
4	5	34,848	0.80	Low Density Residential
4	6	30,056	0.69	Low Density Residential
4	7	40,075	0.92	Low Density Residential
4	8	42,253	0.97	Low Density Residential
5	1	40,946	0.94	Low Density Residential
5	2	37,462	0.86	Low Density Residential
5	3	37,462	0.86	Low Density Residential
5	4	37,897	0.87	Low Density Residential
5	5	52,272	1.20	Low Density Residential
5	6	54,450	1.25	Low Density Residential
5	7	38,768	0.89	Low Density Residential
5	8	40,075	0.92	Low Density Residential
5	9	34,412	0.79	Low Density Residential
6	1	29,185	0.67	Medium Density Residential
6	2	21,344	0.49	Medium Density Residential
6	3	20,038	0.46	Medium Density Residential
6	4	20,038	0.46	Medium Density Residential
6	5	20,038	0.46	Medium Density Residential
6	6	20,038	0.46	Medium Density Residential
6	7	19,602	0.45	Medium Density Residential
6	8	14,375	0.33	Medium Density Residential
7	1	42,689	0.98	Low Density Residential
7	2	38,768	0.89	Low Density Residential
7	3	38,768	0.89	Low Density Residential

Block	Lot	Area (s.f.)	Area (A.C.)	Zoning
7	4	38,768	0.89	Low Density Residential
7	5	33,977	0.78	Low Density Residential
7	6	47,045	1.08	Low Density Residential
7	7	72,745	1.67	Low Density Residential
8	1	67,954	1.56	Low Density Residential
8	2	49,658	1.14	Low Density Residential
8	3	50,094	1.15	Low Density Residential
8	4	50,094	1.15	Low Density Residential
8	5	49,223	1.13	Low Density Residential
8	6	67,082	1.54	Low Density Residential
8	7	34,848	0.80	Low Density Residential
8	8	36,155	0.83	Low Density Residential
8	9	36,155	0.83	Low Density Residential
8	10	32,670	0.75	Low Density Residential

Using the same methodology of averaging the three land valuations (Institute Property Subdivision assessments; Shoemaker Bay Waterfront assessments – both increased by 11.5% to reflect current sales rates; and average land value in Wrangell based on tax roll data) were used to determine sales values as a proxy for a full assessment of these properties.

Estimated Value of Land Sales in Blocks I through VIII of the Alternative Plan

Block	Total Lots	Total Acres	Projected total sales value
1	14	6.26	$346,430
2	11	9.79	$282,853
3	12	9.04	$400,855
4	8	7.02	$296,451
5	9	8.58	$350,183
6	8	3.78	$212,566
7	7	7.18	$281,753
8	10	10.88	$460,105
Total	**79**	**62.53**	**$2,631,195**

According to this analysis, the 79 lots in the alternative subdivision plan containing 62.65 acres are expected to have a total sales value of $2.6 million.

In addition, there are 5 tracts totaling 50 acres. These tracts are more difficult to value without a full assessment. The green belt tracks would not be sold. Given the unique locations of these tracts, and the much smaller numbers of tracts involved in the average valuation, is impossible to estimate without a more in-depth land appraisal. Given the previous analysis, together

these lots could sell for a combined $204,000. The 13-acre education tract is even more tricky.

Tract	Acres	Zoning	Projected total sales value
1	13.1	Education	unknown
2	5.77	Commercial	unknown
3	6.03	High Density Residential	unknown
4	17.3	Green Belt	na
5	7.51	Green Belt	na
Total	**48.71**		**unknown**

Despite the unknowns, it can be said that the total alternative subdivision land sales will result in up to $3 million in land sales, should all of the lots and tracts sell.

In order to calculate annual property tax, a few more calculations must occur. Once lots are purchased and improved, the land value increases. For this estimate, value was increased at the average rate of the community as a whole according to lot size (35% for a 1/3 acre lot, 28% for a 0.7 to 2.7 acre lot). The construction of a house on the property also increases the total property tax assessment. For the purposes of this estimate, one house per lot with an average value of $116,463 was assumed.

Estimated Value of Property Tax for Blocks I through VIII of the Alternative Plan (After Development)

Block	Total Lots	Potential Land Value
1	14	$1,630,482
2	11	$1,281,093
3	12	$1,397,556
4	8	$931,704
5	9	$1,048,167
6	8	$931,704
7	7	$815,241
8	10	$1,164,630
Total	**79**	**$9,200,577**
Potential Property Tax Annual Revenue		**$117,300**

Once sold and developed, the total taxable value of the land would be approximately $9.2 million (assuming no tax exemptions). Based on a current mill rate of 12.75, the City and Borough of Wrangell would receive approximately $117,300 annually in property tax from the area for blocks 1-8 once developed. Tracts 1-3 would generate additional property tax. While an assessment needs to be completed to understand the value of these tracts, assuming a $1.8 million taxable value for these tracts, the total annual property tax revenue for the alternative subdivision plan could increase to approximately $140,000.

Funding and Financial Strategies:
Implementation Strategies, Partnerships, and Funding Opportunities

The development and phasing of the master plan was done in accordance with an implementation strategy that would permit the area to be developed with lowest level of obstacles, both in term of design and financial partnerships.

Economic Development

There are several interesting ways that the Institute property could positively impact the economy of Wrangell. The most obvious of these at the moment are confined to three areas: 1) the development of an educational campus that would bring jobs and new revenue streams into the community; 2) the development of a senior assisted living facility that would retain seniors in the community and create employment in connection with the facility; 3) providing focused housing to address several housing challenges the community is currently facing that are hindering economic development.

Alaska Native Science and Engineering Program Boarding School

A new Alaska Native Science and Engineering Program accelerated high school boarding school campus would have an important impact on the overall community of Wrangell. According to the ANSEP presentation to the Wrangell community, the school will save the State of Alaska $5.9 million annually (based on 400 students) mostly due to the accelerated nature of program that results in students finishing high school in three years, instead of the standard four-years. Assuming the campus would create 75 direct jobs in Wrangell paid an average of $40,000 annually, it would be a contribution of $3 million in annual wages into the community. The construction of the facility would have economic impacts in addition to these impacts, and would be a multi year project that would bring short term jobs and spending to the community.

Assisted Living Senior Housing Facility

There is clearly a demand based need and community support to develop an assisted living senior housing facility in Wrangell. Wrangell's population is the second oldest in the oldest region of the state. Such a facility could be located in the Institute Property.

To better understand the potential economic impact of such a facility, the team looked at national studies. A "typical" assisted living facility (US average) consists of

80 units with an occupancy rate of 93 percent or 74 residents. Total revenue for this "typical" assisted living facility is $3.2 million per year, which equates to 74 residents paying an average monthly service fee of $3,550, or $42,600 per year. This includes base rents, additional direct-care tiered pricing charges for moderate acuity residents, and all other costs. Assisted living communities typically employ an average of 0.5 full-time equivalent (FTE) employees per total unit count –in this case a total of 40 FTE employees. Labor rates, which include wages and salaries only, can vary widely. In this example, MDS calculates approximately $1 million in salaries and wages ($25,000 per worker).

In Wrangell, these figures will obviously differ. Haines is a similar sized community with similar demographics, and has an assisted living facility for ten. This facility also has an additional five one-bedroom subsidized apartments to very-low-income elders who live independently attached to the facility. In Haines the monthly service fee is $4,700-$5,100, depending on the level of care. With 10 residents and a $5,000 monthly fee total revenue for the operations of a senior assisted living facility would be projected to be $600,000 annually. Assuming a similar staff to the Haines facility, there would be 15 employees (full and part time). Total earnings directly tied to assisted living in Haines is approximately $300,000 annually. In addition to direct revenue, the Haines facility is also able to attract government grants (including $2 million in grants in 2014). The $4.3 million facility in Haines was funded through eight grants and private donations–and took seven years for the fundraising.

Housing

There are several ways in which the lack of a proper housing being developed to meet demand is limiting the ability of the Wrangell economy to expand. There will also be a need for increased housing should the boarding school or assisted living facility be constructed.

Referencing the Master Planning and Preliminary Subdivision Design, phasing could allow for initial housing to emerge meeting an identified initial market need. Housing could be developed that would meet current need of the community, along with meeting the increased needs developed by the creation of an academic campus and an assisted living facility. Families could have the option to live close by extended family members under senior care to allow for close family proximity. The benefits of this could be marketed as a highly desirable feature to attract development interest in people looking for this type of relationship characteristic. Site infrastructure such as utilities, roadway construction, drainage, pathways, parking and common public spaces could be initially developed close to the existing development along the Zimovia

Highway corridor. As housing needs grow, extending these items could follow investment realized from the emerging markets.

For both facilities there is also the opportunity to attract new citizens to Wrangell either through specialized employment or to become residents at the senior assisted living facility. A priority of the community is to keep seniors in the community by locally providing the needed facilities and care, rather than having seniors live elsewhere and away from family. Students at the ANSEP campus would also attract family members to Wrangell for short term visits while their children are attending the school.

Funding Opportunities

Alaska Native Science and Engineering Program Boarding School

ANSEP is currently working with the Wrangell School District to develop a partnership in which Dr. Herb Schroder of ANSEP will take the lead on fundraising to build the school itself.

Funding to operate the school will come through base allocation of the Wrangell school district, plus a monthly rate for residential high schools. According to ANSEP this would be approximately $10 million annually–estimates are based on what Mount Edgecumbe in Sitka, Alaska currently receives from the State.

Housing

Indian Community Development Block Grant

The Tlingit Haida Regional Housing Authority (THRHA) and the Wrangell Cooperative Association (WCA) are working together to pursue funding opportunities for the tribal housing in Wrangell. Collaboratively these groups are considering applying for the Indian Community Block Grant (ICDBG). WCA has explored options for land to build housing and has determined that the City and Borough of Wrangell may provide the best option to acquire land.

The ICDBG Program provides eligible grantees with direct grants for use in developing Alaska Native Communities. The ICDBG program can provide funding for recipients in the following categories:

Housing: Housing rehabilitation, land acquisition to support new housing construction, and under limited circumstances, new housing construction.

Community Facilities: Infrastructure construction, such as roads, water and sewer facilities; and, single or multipurpose community buildings.

Economic Development: A variety of commercial or industrial projects which may be recipient owned and

operated or which may be owned and/or operated by a third party.

In FY16, approximately $60,000,000 was appropriated for the ICDBG program.

A potential outcome of this partnership is that the WCA/THRHA will apply and receive ICDBG funding. If the grant is funded, and the CBW partners with the tribe, funding received could be put toward infrastructure development in the Wrangell Institute area.

HUD Community Development Block Grant (direct to community)

Another option is applying for a Community Development Block Grant (CDBG) Entitlement Program provides annual grants on a formula basis to entitled cities and counties to develop viable urban communities by providing decent housing and a suitable living environment, and by expanding economic opportunities, principally for low- and moderate-income persons. Similar to ICDBG fund, CDBG funds may be used for construction of public facilities and improvements, such as water and sewer facilities, streets, neighborhood centers, and the conversion of school buildings for eligible purposes. Unfortunately in 2016, Wrangell is no longer considered as 51 percent low moderate income (LMI) community, an eligibility criteria. Because the LMI percentage is just shy of the 51 percent (at 46.4 percent) Wrangell is considering conducting a statistically valid survey in order to determine eligibility.

HUD State Community Development Block Grants

HUD makes CDBG grants to states for re-granting to communities. Eligible uses include construction of public facilities and improvements, including water and sewer facilities, streets, and neighborhood centers. Other potential uses include the conversion of school buildings for eligible purposes and activities relating to energy conservation and renewable energy resources.
https://www.hudexchange.info/programs/cdbg-state/state-cdbg-program-eligibility-requirements/

Other funding options

In order to develop additional elements needed in the various phases of the plan, there are several funding opportunities. While by no means an exhaustive list, below presents several funding options that may or may not be applicable to the development of the property:

Opportunity: Rural Community Development Initiative Grants, USDA
Eligibility: Public entities, non-profits, federally recognized tribes in rural areas. Note: USDA gives priority to projects that support multi-jurisdictional strategic economic and community development plans (see SECD program page).

Use of Funds: To improve housing, community facilities, and community and economic development projects in rural areas.
Type of Funding: Grants ($50,000 - $250,000), match requirement equal to amount of grant.
www.rd.usda.gov/programs-services/rural-community-development-initiative-grants

Opportunity: Community Facilities Loans and Grants, USDA
Eligibility: Public entities, non-profits, federally recognized tribes in rural areas with populations up to 20,000. Note: USDA gives priority to projects that support multi-jurisdictional strategic economic and community development plans (see SECD program page).
Type of Funding: Low interest direct loans, guaranteed loans, grants.
Use of Funds: Development of essential community facilities (not private, commercial, or business): purchase, construct, enlarge, improve facilities for health care, public safety, education, and other community and public services.
www.rd.usda.gov/programs-services/community-facilities-direct-loan-grant-program
www.rd.usda.gov/programs-services/community-facilities-guaranteed-loan-program

Opportunity: Rural Business Enterprise Grant Program (RBEG), USDA
Eligibility: Public entities, non-profits, federally recognized tribes in rural areas with populations up to 20,000.
Type of Funding: Grants ($10,000 to $500,000).
Use of Funds: To benefit small and emerging businesses in rural areas: includes land and right of way acquisition, building construction or renovation, access streets and roads, parking areas, utilities, rural transportation improvement, and project planning.
www.rd.usda.gov/programs-services/rural-business-development-grants

Opportunity: Transportation Investments Generating Economic Recovery (TIGER) (DOT)
Eligibility: State, local, tribal governments, other government subdivisions.
Type of Funding: Grant.
Use of Funds: Infrastructure projects that have a significant impact on the nation or region that promote economic competitiveness, improve energy efficiency, reduce greenhouse gas emissions and improve safety, quality-of-life and working environments in communities.

Opportunity: Federal Lands Access Program (FLAP)

Eligibility: The goal of this Federal Highways program is to improve transportation facilities that provide access to, are adjacent to, or are located on federal lands.
Type of Funding: Grant.
Use of Funds: Trail connections to USFS land and trails. The program supplements state and local funds for public roads, transit systems, trails, and other transportation facilities with an emphasis on high-use recreation sites and economic generators.
http://flh.fhwa.dot.gov/programs/flap/

Opportunity: USDA High Energy Cost Grants
Eligibility: State and local government, tribal entities, and non-profits (including cooperatives), as well as for-profit businesses. Any applying entity must be located in an area where average annual household energy costs exceed 275% of national benchmarks.
Type of Funding: Grant.
Use of Funds: Electric generation, transmission and distribution facilities, natural gas distribution and storage facilities, petroleum product storage and handling facilities, renewable energy facilities, including solar, wind, hydropower or biomass technologies used for on- or off-grid and backup or emergency power generation or energy storage technology, including generation equipment installed on consumer premises.
https://www.rd.usda.gov/programs-services/high-energy-cost-grants

Opportunity: Periodic grant offerings through the HUD-DOT-EPA Sustainable Communities Partnership
Type of Funding: Grant
Use of Funds: Dependent on program. Many component programs are individually listed above. However, given the comprehensive nature of the proposed Wrangell Institute development, monitoring this specific initiative may be of value.

Public-Private Partnerships
Available funding from traditional sources are likely to fall short of the investment needs. Public-private partnerships are an important way to fund and sustain infrastructure projects. Strategic collaboration with other investment partners will enable the City and Borough of Wrangell to create a multi-pronged funding strategy including federal and state grants in economic development along with contributions from development partners. Unfortunately the economic strength of state government has been collapsing, and federal funding remains uncertain at this time. Three identified primary proposed uses have been supported that allow for partnerships an educational use could partner by adjacent and readily available residential resources to house faculty, interested family associations and to provide a shared characteristic of use; education could be deigned to have a desired compatibility to nearby housing and nearby housing could, in turn, developed a welcomed neighborhood characteristic.

Senior Assisted Care and Senior Housing partners well with an educational facility that could support senior care training and support the housing needs of staff. Families could have the option to live close by extended family members under senior care to allow for close family proximity. The benefits of this could be marketed as a highly desirable feature to attract development interest looking for this type of relationship characteristic.

Other Financing Options

Opportunity: Direct Energy Development Loans—Alaska Industrial Development and Export Authority (AIDEA) Sustainable Energy Transmission and Supply Development Fund (Energy Financing)
Eligibility: Sole Proprietorship, Cooperative, Corporation, Firm, Partnership, or other association of persons organized in any manner, for any credit worthy business purpose.
Type of Funding: Direct Energy Development Loans, up to one-third of total project cost, not to exceed $20 million without legislative authorization.
Use of Funds: Eligible uses include transmission, generation, conservation, storage, or distribution of heat or electricity, as well as distribution or storage of refined petroleum products. Other uses related to natural gas distribution detailed on the program website.
http://www.aidea.org/Programs/EnergyDevelopment.aspx

Opportunity: Loan Participation—Alaska Industrial Development and Export Authority (AIDEA) Sustainable Energy Transmission and Supply Development Fund
Eligibility: Sole Proprietorship, Cooperative, Corporation, Firm, Partnership, or other association of persons organized in any manner, for any credit worthy business purpose.
Type of Funding: Loan participation by AIDEA in a project financed by a financial institution such as a bank or credit union. AIDEA can purchase up to 90% of a loan, not to exceed $25 million.
Use of Funds: Eligible uses include transmission, generation, conservation, storage, or distribution of heat or electricity, as well as distribution or storage of refined petroleum products. Other uses related to natural gas distribution detailed on the program website.
http://www.aidea.org/Programs/EnergyDevelopment.aspx

Opportunity: Loan or Bond Guarantee—Alaska Industrial Development and Export Authority (AIDEA) Sustainable Energy Transmission and Supply Development Fund
Eligibility: Sole Proprietorship, Cooperative, Corporation, Firm, Partnership, or other association of persons organized in any manner, for any credit worthy business purpose.
Type of Funding: AIDEA provides loan or bond guarantees, allowing borrowers to access lower rates or fees in private markets.

Use of Funds: Eligible uses include transmission, generation, conservation, storage, or distribution of heat or electricity, as well as distribution or storage of refined petroleum products. Other uses related to natural gas distribution detailed on the program website. http://www.aidea.org/Programs/EnergyDevelopment.aspx

Financial Feasibility

Final recommendations and Implementation

The team has several recommendations at this time:

Short Term Recommendations

1) **Logging**: Move forward with logging the Institute property site in order to monetize the timber value before additional blow downs reduces the value of timber. Have timber cruised and protect timber resources within riparian, recreation and other areas identified on the preferred master plan.

2) **Campus:** Continue to work with Alaska Native Science and Engineering Program on formalizing a partnership and exploring the development of an educational campus. This opportunity is the highest economic use of the property with the highest return. Work with ANSEP, School District, Wrangell Cooperative Association as well as other regional and statewide organizations to develop partnerships to incentivize the project and make this a high priority for the City and Borough of Wrangell.

3) **Senior Assisted Living:** Develop a local senior assisted living committee under the authority of the City and Borough to explore private/public partnership similar to Juneau. Conduct a senior assisted living market/demand study to determine needs, best location, and create a feasibility study. Look for investment interest partners that would take the lead on developing a facility to serve the community's aging population. This opportunity is the second highest economic use of the property and meets immediate community needs.

4) **Tribal Partnerships:** Work with tribal organizations to explore shared housing needs at the Institute Property. Wrangell Cooperative Association and Tlingit and Haida Regional Housing Authority have expressed interests in housing opportunities at the project area. Work with both to explore shared housing priorities and to access Tribal funding for road, utility, site and housing development.

5) **Zoning:** Direct city staff to develop zoning language appropriate for the Institute property and move the property from holding to the new designation. If needed further develop zoning overlays within the Institute Property to set specific stipulations related

to viewsheds, right of ways, setbacks, recreation corridors and open space that support desired development characteristics for the project area. Develop basic design guidelines that support a desired neighborhood vision/character without being overly restrictive.

6) **Housing:** Prepare initial ten residential lots for sale. This includes the five acres called for in phase I of the plan. Use a mixture of grant funding, city savings, and timber sales receipts to pay for the roadway and utility construction of $827,576. Housing focus should be for year-round residents to meet demand for reasonable priced lots. RFPs could be released to private developers, sold as single family lots (either as raw land or construction ready with utilities and site preparation work completed and paid for by the City).

Mid to Long Term Recommendations

1) **Financing:** Continue working to secure funding for the additional $4.2 million to develop the road and utilities associated with plan phases II through VI.

2) **Facility Driven Development:** Let the longer term development of a high school campus or assisted living facility focus areas of development and clarify funding opportunities.

3) **Former 6 Mile Mill:** Coordinate development of the Institute property phases with development and long-term needs of the 6 mile waterfront industrial property.

4) **Business Incentives:** Investigate incentives for retail and commercial establishments to develop businesses in the area.

5) **Finalize:** Complete plan by developing phase VII.

Conclusion

Based on the community input and prioritization from the three alternative options, along with construction cost estimates, the planning and design team developed the single preferred master plan. This Preferred Master Plan was endorsed by the public at the conclusion of the June 15, 2016 meeting.

However, work toward the placement of the ANSEP Accelerated School in Wrangell did not progress as quickly as initially expected. The Alternative Subdivision Plan was subsequently selected and endorsed by the Wrangell Assembly on March 28, 2017. Staff was directed to proceed with the steps necessary to begin development of Alternative Phase 1, as Alternative Phase 1 is less costly from the utility infrastructure development aspect, but still allows development of the ANSEP or other potential opportunity should one arise.