THE STATE of ALASKA
GOVERNOR MIKE DUNLEAVY

Department of Environmental Conservation
DIVISION OF WATER
Engineering Support and Plan Review

610 University Avenue
Fairbanks, Alaska 99709
Main: 907.451.2177
Fax: 907.451.2188
www.dec.alaska.gov

June 30, 2021
Benjamin Schiller, P.E.

Plan Tracking No.: 28786
ADEC File No.: 1525.45.001

RE: West Woodbury Subd. Sanitary Sewer Extension
West Woodbury Subd. Lot 3
430 linear feet of sewer main
Approval to Construct

Greetings Mr. Schiller,

On May 20, 2021 the Alaska Department of Environmental Conservation (ADEC or Department) received a submittal requesting construction approval for the subject project located in Sitka, AK. The information was reviewed in accordance with Wastewater Disposal Regulations 18 AAC 72 and **construction approval is granted**. Enclosed is the Construction and Operation Certificate with the Approval to Construct section signed.

Project Description

The approved project includes installation of approximately 430 linear feet of 8" PVC sewer main and 3 F&I Type A Sanitary Sewer Manholes on the subject property. This sewer extension will connect with the existing collection infrastructure and be discharged into the City and Borough of Sitka's Wastewater Treatment Plant.

Approval to Operate Requirements

This construction approval includes a 90 day interim approval to operate provided that construction substantially complied with the approved design drawings. In order to receive final operational approval, please submit the following information within 60 days of the completion of this project:

1. Written request for operational approval that includes a statement regarding any changes made during construction
2. Record drawings prepared (signed and dated) by the engineer responsible for observing the construction of this project (The Department prefers drawings that are no larger than 11" x 17".)
3. Certification of Construction form complete with signatures from the Owner, Construction Contractor, and Engineer (A copy of this form may be downloaded and printed from the Department of Environmental Conservation website http://dec.alaska.gov/water/wwdp/onsite/pdf/construction.pdf or a copy will be provided upon request.)

If the approval to operate requirements cannot be met within 90 days of construction completion, an extension of the interim approval to operate must be requested at least 30 days in advance.

Disclaimers and Appeals Process

Approval of submitted plans is not approval of omissions or oversights by this office or noncompliance with any applicable regulation. The Department's construction approval does not guarantee correctness or the functionality of the design, or waive the owner's responsibility for continued compliance with state regulations. Deviations from approved plans which affect capacity, flow, pressure, operation, compliance, or materials of major system components must be approved by this Department prior to their construction or implementation.

This approval is valid for two years from the date of this letter. If the applicant fails to construct, alter, install, or modify the system, the approval is void and plans must be resubmitted for department review and approval according to 18 AAC 72.200.

This approval is contingent upon your receipt of any other state, federal, or local authorizations which are required for your project. You are required to obtain all other necessary authorizations before proceeding with your project. This approval does not imply the granting of additional authorizations nor obligate any state, federal, or local regulatory body to grant required authorizations.

Any person who disagrees with this decision may request an adjudicatory hearing in accordance with 18 AAC 15.195- 18 AAC 15.340 or an informal review in accordance with 18 AAC 15.185. **Informal review requests** must be delivered to the Division of Water Director, 555 Cordova Street, Anchorage, AK 99501, within 20 days of this decision. **Adjudicatory hearing requests** must be delivered to the Commissioner of the Department of Environmental Conservation, PO Box 111800, Juneau, AK 99811, within 30 days of this decision. If a hearing is not requested within 30 days, the right to appeal is waived. More information on the Department's administrative appeals process can be found at http://dec.alaska.gov/commish/review-guidance/.

If you have questions please contact me at 907-456-5167 or by e-mail at raymond.zimmer@alaska.gov

Sincerely,

Raymond Zimmer Digitally signed by Raymond Zimmer
Date: 2021.06.30 10:08:24 -08'00'

Raymond Zimmer
Eng. Associate

Enclosures: Construction and Operation Certificate

STATE OF ALASKA
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
CONSTRUCTION AND OPERATION CERTIFICATE
FOR
DOMESTIC WASTEWATER DISPOSAL SYSTEMS

A. APPROVAL TO CONSTRUCT

Plans for the construction or modification of the **West Woodbury Subd. Lot 3** domestic wastewater system, located at **Sitka, Alaska**, submitted in accordance with 18 AAC 72.200 through 18 AAC 72.235 by **Benjamin Schiller, P.E.** have been reviewed and are

☒ **approved as submitted** ☐ **conditionally approved (see attached conditions)**

Raymond Zimmer — Digitally signed by Raymond Zimmer, Date: 2021.06.30 10:12:18 -08'00'
By: Raymond Zimmer

Engineering Associate I (Title)

6/30/2021 (Date of Approval)

If applicant fails to construct, alter, install, or modify the system within two years of the date of approval to construct, approval is void, and plans must be resubmitted for Department review and approval.

B. APPROVED CHANGE ORDERS

Change (contract order number or descriptive reference)

(Reviewing Engineer) (Title) (Date of Approval)

C. APPROVAL TO OPERATE

The **"Interim Approval to Operate"** or **"Final Approval to Operate"** section must be completed and signed by the Department to continue to use this system beyond 90 days following the construction completion date.

Interim Approval to Operate:

The construction of the above referenced domestic wastewater disposal system was completed on _____. The system is hereby granted an extension of the ***INTERIM APPROVAL TO OPERATE*** until _____ date. It is illegal to operate the domestic wastewater disposal system beyond this date without **Final Approval to Operate** from the Department.

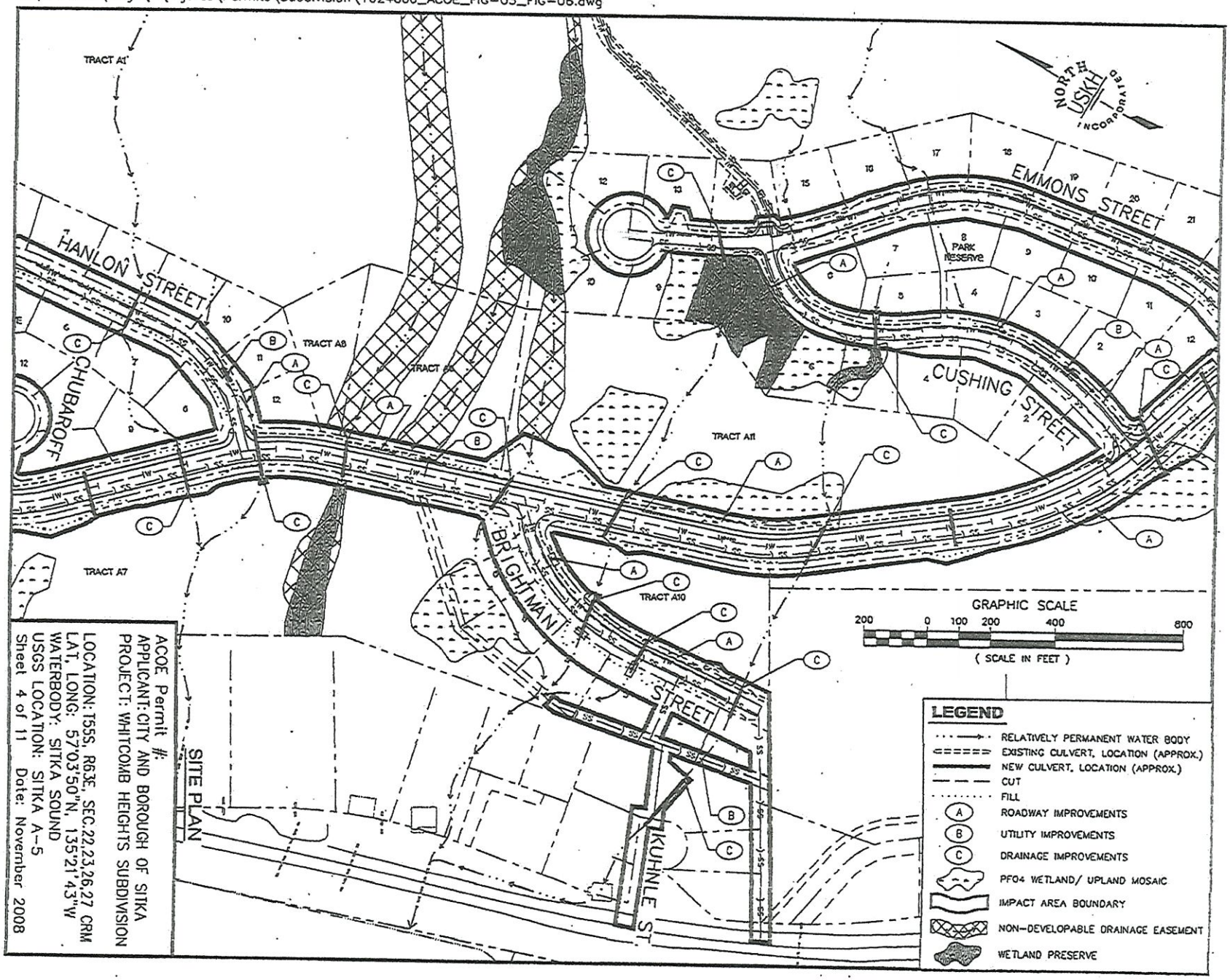
(Reviewing Engineer) (Title) (Date of Approval)

Final Approval to Operate:

Record drawings and other documents submitted to the Department, or an inspection by the Department, has confirmed that the domestic wastewater disposal system was constructed in substantial conformance with the approved plans. The system is hereby granted ***FINAL APPROVAL TO OPERATE***.

(Reviewing Engineer) (Title) (Date of Approval)

I:\1024000\Dwgs\N\Figures\Permits\Subdivision\1024000_ACOE_FIG-03_FIG-06.dwg



ACOE Permit #:
APPLICANT: CITY AND BOROUGH OF SITKA
PROJECT: WHITCOMB HEIGHTS SUBDIVISION

LOCATION: T55S, R63E, SEC.22,23,26,27 CRM
LAT, LONG: 57°03'50"N, 135°21'43"W
WATERBODY: SITKA SOUND
USGS LOCATION: SITKA A-5
Sheet 4 of 11 Date: November 2008

Parcel C Major Sub.

CERTIFICATE OF OWNERSHIP AND DEDICATION

WE HEREBY CERTIFY THAT WE ARE THE OWNERS OF THE PROPERTY SHOWN AND DESCRIBED HEREON AND THAT WE HEREBY ADOPT THIS PLAN OF SUBDIVISION WITH OUR FREE CONSENT AND DEDICATE ALL STREETS, ALLEYS, WALKS, PARKS AND OTHER OPEN SPACES TO PUBLIC OR PRIVATE USE AS NOTED.

DATE_____

ARLEN S. REYMAN

NOTARY'S ACKNOWLEDGMENT

U.S. OF AMERICA
STATE OF ALASKA
CITY AND BOROUGH OF SITKA

THIS IS TO CERTIFY THAT ON THIS____DAY OF_____, 20____, BEFORE ME, THE UNDERSIGNED A NOTARY PUBLIC IN AND FOR THE STATE OF ALASKA, DULY COMMISSIONED AND SWORN, PERSONALLY APPEARED_____ TO ME KNOWN TO BE THE IDENTICAL INDIVIDUAL(S) MENTIONED AND WHO EXECUTED THE WITHIN PLAT AND_____ ACKNOWLEDGED TO ME THAT_____ SIGNED THE SAME FREELY AND VOLUNTARILY FOR THE USES AND PURPOSES THEREIN SPECIFIED.

WITNESS MY HAND AND NOTARY SEAL THE DAY AND YEAR IN THIS CERTIFICATE FIRST HEREIN WRITTEN.

NOTARY PUBLIC IN AND FOR THE STATE OF ALASKA

MY COMMISSION EXPIRES_____

CERTIFICATE STATE OF ALASKA
(FIRST JUDICIAL DISTRICT)ss

I, THE UNDERSIGNED, BEING DULY APPOINTED AND QUALIFIED, AND AN ACTING ASSESSOR FOR THE CITY AND BOROUGH OF SITKA, HEREBY CERTIFY, THAT ACCORDING TO THE RECORDS IN MY POSSESSION, THE FOLLOWING DESCRIBED PROPERTY IS CARRIED ON THE TAX ACCORDS OF THE CITY AND BOROUGH OF SITKA, IN THE NAME OF

_____

AND THAT ACCORDING TO THE RECORDS IN MY POSSESSION, ALL TAXES ASSESSED AGAINST SAID LANDS ARE PAID IN FULL THAT CURRENT TAXES FOR THE YEAR 20____ WILL BE DUE ON OR BEFORE AUGUST 15, 20____ DATED THIS____ DAY OF_____

_____
ASSESSOR CITY AND BOROUGH OF SITKA

CERTIFICATE OF APPROVAL BY THE PLANNING COMMISSION

I HEREBY CERTIFY THAT THE SUBDIVISION PLAT SHOWN HEREON HAS BEEN FOUND TO COMPLY WITH THE SUBDIVISION REGULATIONS OF THE CITY AND BOROUGH OF SITKA PLANNING COMMISSION, AND THAT SAID PLAT HAS BEEN APPROVED BY THE COMMISSION BY PLAT RESOLUTION NO._____ DATED_____ 20____ AND THAT THE PLAT SHOWN HEREON HAS BEEN APPROVED FOR RECORDING IN THE OFFICE OF THE DISTRICT MAGISTRATE, EX-OFFICIO RECORDER, SITKA, ALASKA.

DATE_____ CHAIRMAN, PLANNING COMMISSION

SECRETARY

CERTIFICATE OF APPROVAL BY THE ASSEMBLY

I HEREBY CERTIFY THAT THE SUBDIVISION PLAT SHOWN HEREON HAS BEEN FOUND TO COMPLY WITH THE SUBDIVISION REGULATIONS OF THE CITY AND BOROUGH OF SITKA ASSEMBLY AS RECORDED IN MINUTE BOOK_____ PAGE_____ DATED_____ 20____ AND THAT THE PLAT SHOWN HEREON HAS BEEN APPROVED FOR RECORDING IN THE OFFICE OF THE DISTRICT COURT, EX OFFICIO RECORDER, SITKA, ALASKA.

DATE_____ MAYOR, CITY AND BOROUGH OF SITKA
ATTEST:

_____
CITY CLERK

LEGEND

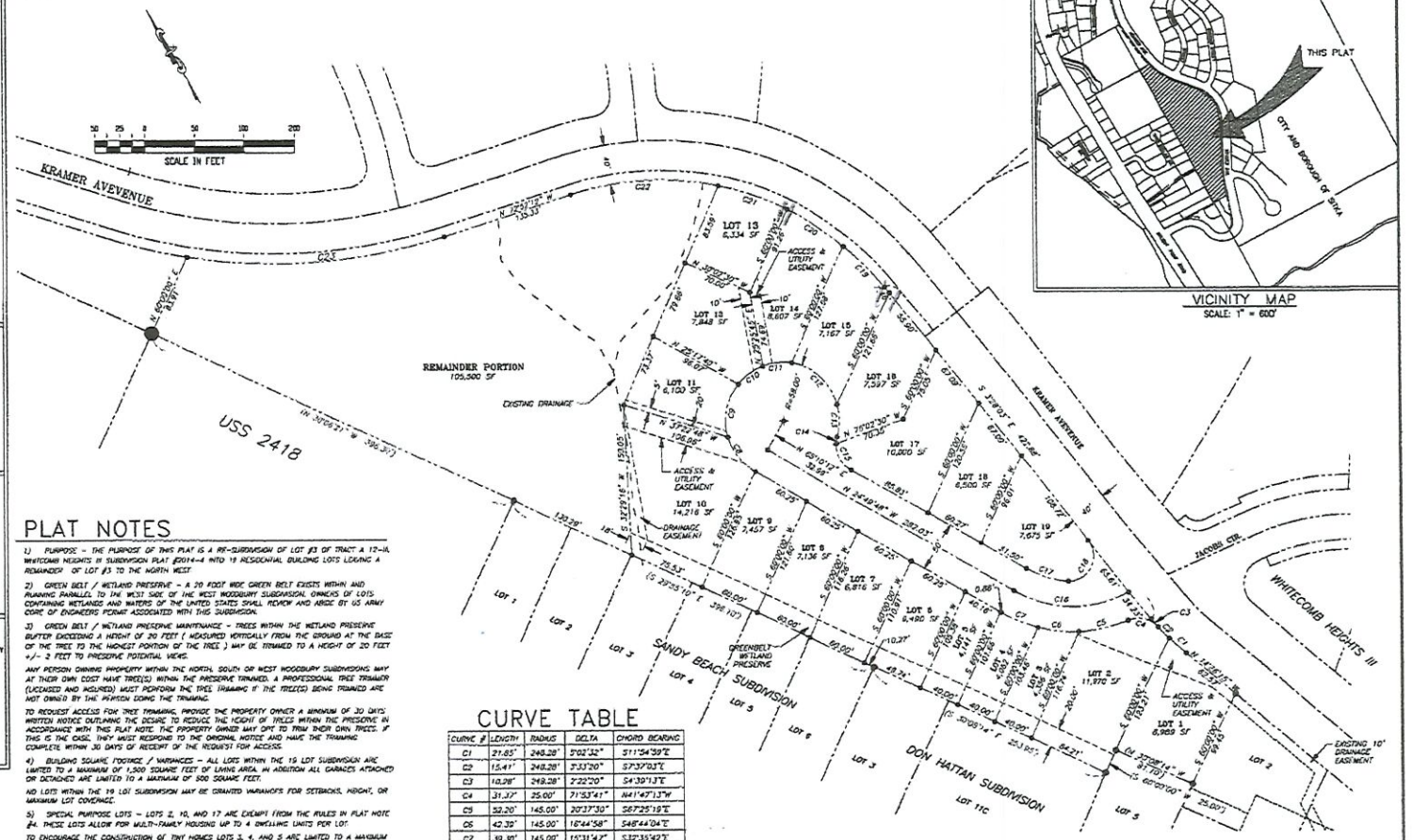
- ● CLO BRASS CAP MONUMENT RECOVERED
- ● MONUMENT RECOVERED
- • REBAR AND ALUMINUM CAP SET THIS SURVEY
- (S 21°22'45" E 208.71) EXISTING DATA OF RECORD
- S 21°21'24" E 208.67 DATA MEASURED OR CALCULATED

CLIENT: SOUND DEVELOPMENT, LLC
PO BOX 1401
SITKA, ALASKA 99929

DRAWN BY: TJS
CHECKED BY: GCS
DATE PLATTED:
DATE SURVEYED:
SCALE: 1"=50'
SURVEYOR: GREGORY C. SCHOTT
PROJ NO.: 102232

SURVEYOR'S CERTIFICATE

_____



VICINITY MAP
SCALE: 1" = 600'

PLAT NOTES

1) PURPOSE – THE PURPOSE OF THIS PLAT IS A RE-SUBDIVISION OF LOT #3 OF TRACT A 12-B, WHITCOMB HEIGHTS III SUBDIVISION PLAT #2014-4 INTO 19 RESIDENTIAL BUILDING LOTS LOCATED A REMAINDER OF LOT #3 TO THE NORTH WEST.

2) GREEN BELT / WETLAND PRESERVE – A 20 FOOT WIDE GREEN BELT EXISTS WITHIN AND RUNNING PARALLEL TO THE WEST SIDE OF THE WEST WOODBURY SUBDIVISION. OWNERS OF LOTS CONTAINING WETLANDS AND WATERS OF THE UNITED STATES SHALL REVIEW AND ABIDE BY US ARMY CORP OF ENGINEERS PERMIT ASSOCIATED WITH THIS SUBDIVISION.

3) GREEN BELT / WETLAND PRESERVE MAINTENANCE – TREES WITHIN THE WETLAND PRESERVE BUFFER EXCEEDING A HEIGHT OF 20 FEET (MEASURED VERTICALLY FROM THE GROUND AT THE BASE OF THE TREE TO THE HIGHEST PORTION OF THE TREE) MAY BE TRIMMED TO A HEIGHT OF 20 FEET +/- 2 FEET TO PRESERVE POTENTIAL VIEWS.

ANY PERSON OWNING PROPERTY WITHIN THE NORTH, SOUTH OR WEST WOODBURY SUBDIVISIONS MAY AT THEIR OWN COST HAVE TREE(S) WITHIN THE PRESERVE TRIMMED. A PROFESSIONAL TREE TRIMMER (LICENSED AND INSURED) MUST PERFORM THE TREE TRIMMING IF THE TREE(S) BEING TRIMMED ARE NOT OWNED BY THE PERSON DOING THE TRIMMING.

TO REQUEST ACCESS FOR TREE TRIMMING, PROVIDE THE PROPERTY OWNER A MINIMUM OF 30 DAYS WRITTEN NOTICE OUTLINING THE DESIRE TO REDUCE THE HEIGHT OF TREES WITHIN THE PRESERVE IN ACCORDANCE WITH THIS PLAT NOTE. THE PROPERTY OWNER MAY OPT TO TRIM THEIR OWN TREES. IF THIS IS THE CASE, THEY MUST RESPOND TO THE ORIGINAL NOTICE AND HAVE THE TRIMMING COMPLETE WITHIN 30 DAYS OF RECEIPT OF THE REQUEST FOR ACCESS.

4) BUILDING SQUARE FOOTAGE / VARIANCES – ALL LOTS WITHIN THE 19 LOT SUBDIVISION ARE LIMITED TO A MAXIMUM OF 1,500 SQUARE FEET OF LIVING AREA, IN ADDITION ALL GARAGES ATTACHED OR DETACHED ARE LIMITED TO A MAXIMUM OF 500 SQUARE FEET.

NO LOTS WITHIN THE 19 LOT SUBDIVISION MAY BE GRANTED VARIANCES FOR SETBACKS, HEIGHT, OR MAXIMUM LOT COVERAGE.

5) SPECIAL PURPOSE LOTS – LOTS 2, 10, AND 17 ARE EXEMPT FROM THE RULES IN PLAT NOTE #4. THESE LOTS ALLOW FOR MULTI-FAMILY HOUSING UP TO 4 DWELLING UNITS PER LOT.

TO ENCOURAGE THE CONSTRUCTION OF TINY HOMES LOTS 3, 4, AND 5 ARE LIMITED TO A MAXIMUM OF 1,000 SQUARE FEET OF LIVING AREA. IN ADDITION ALL GARAGES ATTACHED OR DETACHED ARE LIMITED TO A MAXIMUM OF 400 SQUARE FEET.

6) MUNICIPALITY – THE MUNICIPALITY IS A PARTY TO ALL EASEMENTS AND PLAT NOTES. THEY SHALL NOT BE MODIFIED WITHOUT PRIOR APPROVAL OF THE PLATTING BOARD.

7) INFORMATION – PROPERTY OWNERS MAY BE REQUIRED BY THE MUNICIPALITY TO INSTALL WATER PRESSURE REDUCING VALVES PRIOR TO THE CONSTRUCTION OF ANY STRUCTURE ON THE LOTS IN THIS SUBDIVISION.

8) ROOF & DRIVEWAY DRAINAGE – ALL STORM WATER RUNOFF FROM THE ROOFS AND DRIVEWAYS FOR LOTS 3 – 18 SHALL BE DIRECTED INTO THE ROAD SIDE DITCHES IN THE STREET RIGHT OF WAY.

CURVE TABLE

CURVE #	LENGTH	RADIUS	DELTA	CHORD BEARING
C1	21.85'	248.28'	5°02'32"	S11°54'39"E
C2	15.41'	248.28'	3°33'20"	S7°37'03"E
C3	10.28'	249.28'	2°22'20"	S4°30'13"E
C4	31.37'	25.00'	71°53'41"	N41°47'13"W
C5	32.20'	145.00'	20°27'30"	S67°25'19"E
C6	42.39'	145.00'	16°44'58"	S48°44'04"E
C7	39.10'	145.00'	15°31'47"	S32°35'42"E
C8	44.72'	58.00'	44°10'36"	S2°44'30"E
C9	55.23'	58.00'	54°33'44"	S46°37'40"W
C10	30.34'	58.00'	29°58'05"	S86°53'35"W
C11	30.24'	58.00'	29°52'35"	N61°11'05"W
C12	86.08'	58.00'	85°16'47"	N13°38'28"W
C13	32.56'	58.00'	32°09'49"	N35°06'53"E
C14	6.75'	29.00'	13°20'10"	S44°31'43"W
C15	31.73'	29.00'	62°41'25"	S6°30'39"W
C16	129.31'	120.00'	58°33'54"	S54°01'45"E
C17	45.09'	95.00'	27°11'45"	S38°25'41"E
C18	57.35'	25.00'	131°26'30"	N62°15'12"E
C19	57.16'	284.93'	11°29'37"	N8°12'31"W
C20	68.82'	284.93'	13°50'18"	N21°52'49"W
C21	73.86'	284.93'	14°39'05"	N36°07'30"W
C22	146.30'	284.93'	29°25'07"	N58°09'37"W
C23	259.29'	551.24'	26°57'04"	S59°23'48"E

SITKA RECORDING DISTRICT

No.	Date	Revisions Description

RSM ENGINEERING-KETCHIKAN, INC.
303 Calhoun Lake Road
Ketchikan, AK 99901
Phone: (907) 225-3117
Fax: (907) 225-3491

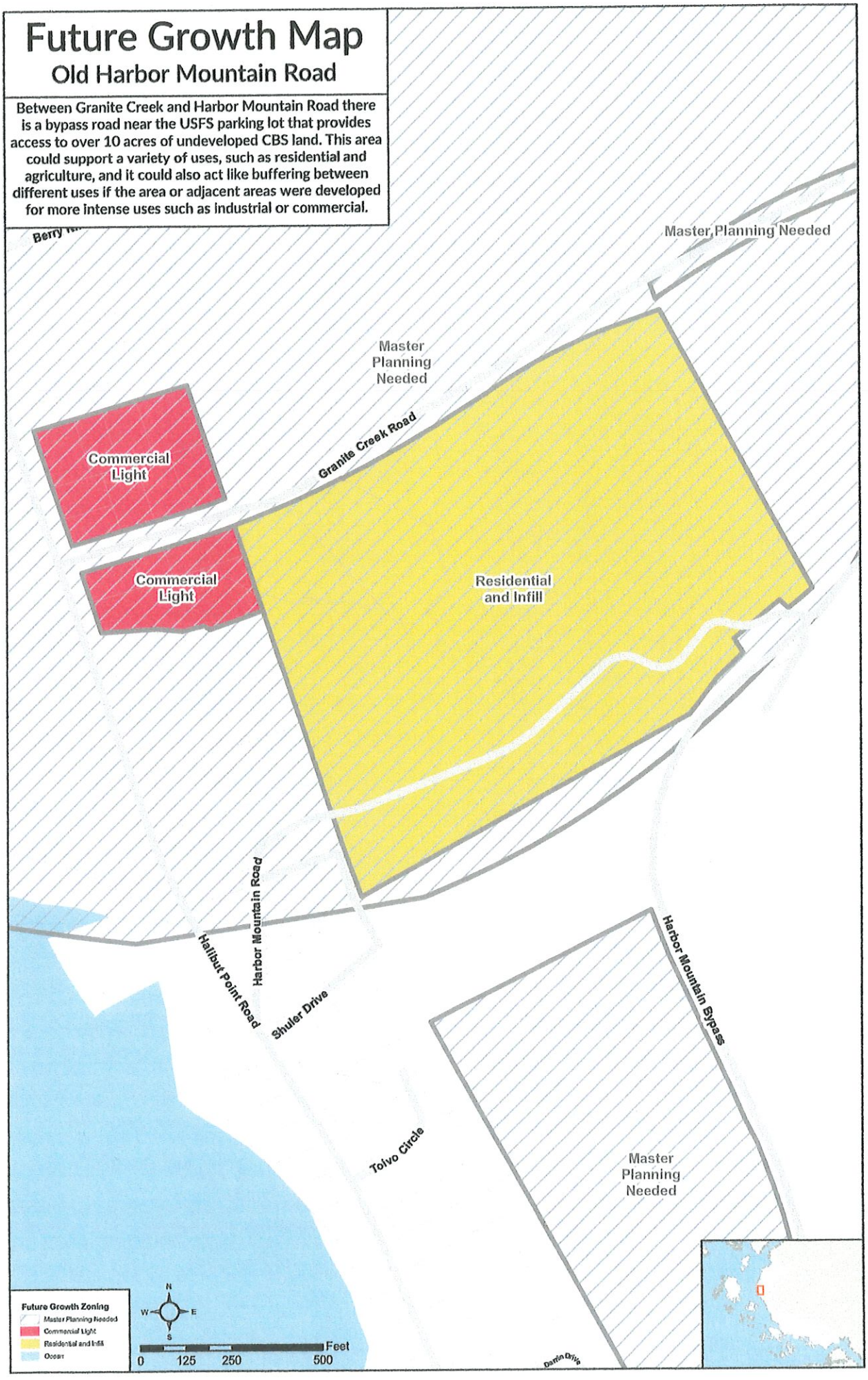
SITKA OFFICE
P.O. BOX 1331
SITKA, AK 99929
Phone: (907) 874-2177
Fax: (907) 874-2787

PROJECT:
WOODBURY WEST
RE-SUBDIVISION NO. 1
THE SUBDIVISION OF LOT 3 TRACT A 12-B, WHITCOMB HEIGHTS III SUBDIVISION PLAT (2014-4 SITKA) THE CITY AND BOROUGH OF SITKA

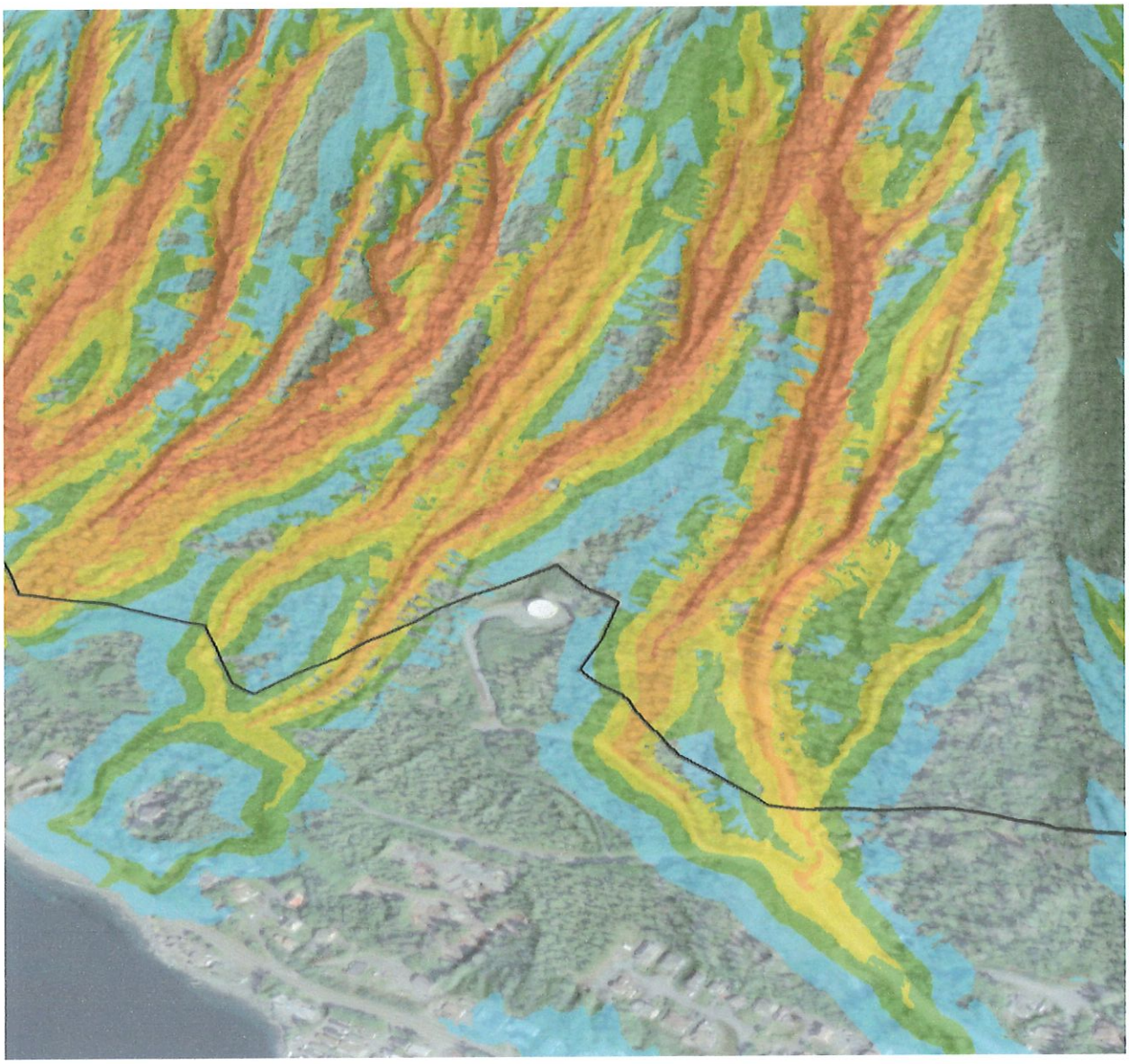
Future Growth Map

Old Harbor Mountain Road

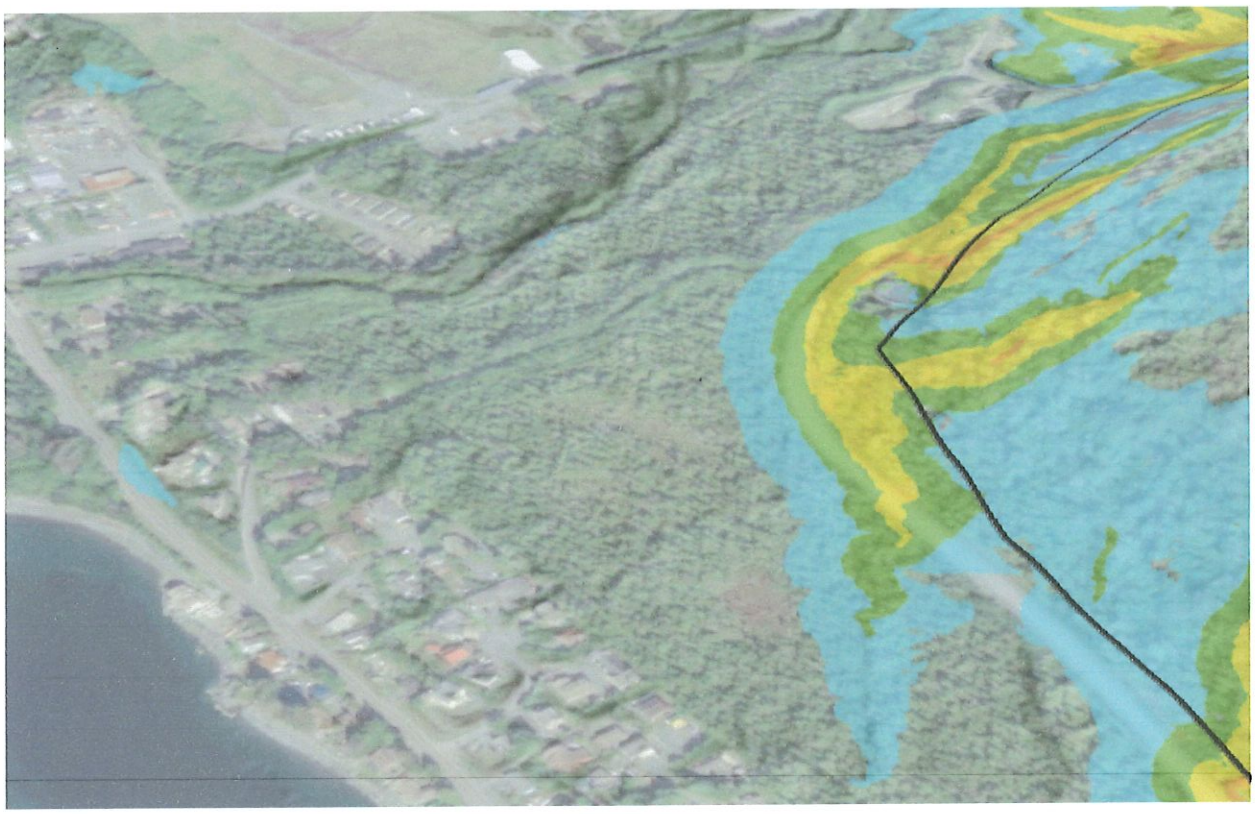
Between Granite Creek and Harbor Mountain Road there is a bypass road near the USFS parking lot that provides access to over 10 acres of undeveloped CBS land. This area could support a variety of uses, such as residential and agriculture, and it could also act like buffering between different uses if the area or adjacent areas were developed for more intense uses such as industrial or commercial.



Terrain Works landslide susceptibility mapping.



Parcels C and D Benchland sites.



Proposed old Harbor Mountain road Development site.

LINK:

https://terrain-works.maps.arcgis.com/apps/Cascade/index.html?appid=679cadeb7c304edc8fc121d125e95871

October 12, 2020 NGE-TFT Project # 4349-16

Andrew Friske
210 Kramer Ave
Sitka, Alaska 99835

RE: EVALUATION OF KRAMER LANDSLIDE RECURRENCE INTERVAL IN SITKA, ALASKA.

Andrew,

We (Northern Geotechnical Engineering, Inc. *d.b.a.* Terra Firma Testing) have completed our evaluation of the landslide recurrence interval for the Kramer Avenue Landslide (hereafter referred to as the Kramer Landslide) in Sitka, Alaska that occurred on August 18, 2015.

Shannon and Wilson, Inc. (SWI) conducted an overview study of the Kramer Landslide, evaluating the debris flow impacting several residential lots along Kramer Avenue and resulted in the loss of three lives (See Figure 1 for debris path and location). SWI's study of the landside is titled *South Kramer Avenue Landslide: Jacobs Circle to Emmons Street, Sitka, Alaska,* dated February 2, 2016. SWI's report separated their study area into three hazard zones (high, medium, and low). SWI's hazard zones were based on computer modeling, field reconnaissance, assessment of LiDAR hill shades, and professional judgement. Based on our field reconnaissance, assessment of LiDAR hill shades and our professional judgement, we believe that SWI very well defined the hazard zones associated with potential landslides in the same area. The North Tributary is in SWI's landslide high hazard zone.

The purpose of this study is to determine an estimated risk (recurrence interval) associated with the high hazard zone areas delineated in the SWI report and propose mitigation to alter the high zone area. Our report does not calculate a well-defined recurrence interval as we feel the data available and a scientific understanding of the landslide mechanism from which a determination could be made does not exist.

1.0 Introduction

The purpose of this study was to compare the estimated recurrence interval of the Kramer Landslide to the potential landslide area in the tributary immediately north of the Kramer

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Landslide (hereafter referred to as the North Tributary). The information that we believe is missing and will never be available for evaluation of the Kramer landslide in order to expand upon and further define the recurrence interval of the landslide is the orographic effect to precipitation, microburst potential, and the variation of precipitation at the top of the ridge that appears to be the event that induced the slide.

Orographic concentration of precipitation is influenced by numerous factors, including slope inclination of the terrain, slope orientation, and static equilibrium of the atmosphere in the region. (Figure 2). Orographic effect occurs when the prevailing winds absorb moisture (in this case most likely from the ocean) and drive the moist air up the mountain where the temperature is significantly cooler. The colder air then causes the condensation of the moisture which leads to precipitation that occurs predominately on the ocean side of the mountain range. This is supported by the locations of the landslides that occurred throughout Sitka as all of them occurred on the ocean side.

A microburst is a localized column of sinking air (downdraft) within a storm and is usually less than 2.5 miles in diameter. Microbursts start with the water droplets/hailstones being suspended within the updraft and are followed by cooling (sinking air) and therefore weakening of the updraft. Afterwards the updraft is no longer capable of holding the large core of rain/hail up and results in the core plummeting to the ground. As it hits the ground it spreads out in all directions. The location in which the microburst first hits the ground experiences the highest winds and greatest damage. (See Figure 3) Microbursts can cause extensive damage at the surface, and in some instances, can be life-threatening. We believe a microburst may have contributed to the Kramer landslide and could be a possible explanation as to why the North Tributary that has such similar characteristics did not trigger during the Kramer slide.

Given the number of factors and limited ability to account for them we established a baseline preliminary recurrence interval for the North Tributary with the currently available information which is expected produce a mud/debris flow in the North Tributary similar to the Kramer Landslide based on the rainfall data closest to the slide location.

Our Efforts include:

1. study of the rainfall event and history that is believed to be the primary contributing factor that ultimately caused the Kramer Landslide
2. exploration of the soils within the North Tributary feature that would be the source of the debris
3. an evaluation of information needed to accurately define the recurrence interval of a mud/debris flow event, sourcing from the North Tributary

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4. risk assessment evaluation
5. possible landslide return intervals; and
6. potential mitigation measures.

1.1 Risk

Risk can never be eliminated from any engineered system. Multiple risk assessment measures were evaluated including the International Building Code/International Residential Code (IBC/IRC) residential structural design probabilities, Federal Emergency Management Agency (FEMA) flood design events, and American Society of Civil Engineers (ASCE) seismic design categories. The International Building Code/International Residential Code (IBC/IRC) is currently based on a 2% of an event occurring in a 50-year period. The structural aspects of the code have reduction factors, depending upon the importance of the facility. For residential structures, the reduction factors increase the risk. The factors increase the probability to about a 5% of an event occurring within a 50-year period (which was the probability in older versions of the code). This equates to a recurrence interval of about 475 years.

To account for weather and natural phenomenon related events, the FEMA design events classifications were considered. For FEMA classification of individual facilities (bridges, dams, flood plains, etc) are typically designed to 100-year, 500-year, or some other site-specific recurrence interval, depending upon its importance and potential risk for public use. By combining both the FEMA design events for a rare event and the IBC acceptable risk for recurrence we believe a recurrence interval of 500 years would be appropriate to use for the landslide event.

1.2 Potential Contributing Factors

Interpretation of future landslide recurrence intervals requires an understanding of the surrounding conditions and the processes driving the initiation of a landslide event. The components necessary to assess landslide risk in the project area include the following: past history, slope steepness, bedrock depths, and total precipitation, including orographic and microburst effects. Indications that can be used to measure these factors are usually obtained indirectly by looking at vegetation, slope orientation, runout zones, historical weather data, or precipitation zones. Further analysis of these factors is discussed below in section 2.

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2.0 Analysis of Risk Factors

2.1 Sitka Rainfall

The southeast coast of Alaska provides a significant storm barrier on the northeastern Pacific Ocean boundary. As such, precipitation is frequent and sometime quite intense. A majority of the precipitation occurs during the winter months. Due to the rapid elevation changes on the coast, many times the winter precipitation consists of rain at sea-level and snow at the higher elevations with greater precipitation at higher elevations.

When moist air is forced to raise in elevation (e.g. mountain side), the temperature of the air can be lowered to the point of condensation and precipitation; this precipitation is called orographic precipitation. This effect causes the intensity and volume of precipitant to be highly variable over short distances, both vertically and laterally. Additionally, the high intensity areas are not consistent between events.

With the orographic effects and snow precipitation in the winter, the potential impact within a potential landslide zone and risk of heavy precipitation in the summer is different than the winter. To evaluate the Kramer Landslide precipitation in terms of a recurrence interval we compared the precipitation records prior to the Kramer Landslide to historic data, both during the same calendar interval and to the annual data.

National Oceanic and Atmospheric Administration (NOAA) presents precipitation frequency data for two weather stations located in Sitka. One weather station (Sitka Japonski AP) is located on Japonski Island at the airport and the second weather station (Sitka Magnetic OBSY) is located on Harbor Drive in Sitka, Alaska. Precipitation frequency data that we present in this report is from the Sitka Magnetic OBSY Station as it is the most inland of the two either stations. See Figure 1 for the location map.

2.1.1 2015 Rainfall

We present the average and 2015 precipitation depth along with the largest rainfall in 24 hours for each month in Table 1 of this report (Weatherunderground, 2019). The rainfall for 45 days prior to the Kramer Landslide was 13.0 inches with a large rainfall event of 0.99 inches in a 24-hour period; 3 days prior to the Kramer Landslide. This heavy rainfall is attributed to the cause of the Kramer Landslide, however what is not known is the actual the rainfall quantity at the head of Kramer Landslide as the Sitka is collected approximately 2.5 miles and over 1300 feet lower in elevation from the head of Kramer Landslide. We currently do not have any actual precipitation data at the head of the Kramer Landslide.

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Table 1: Precipitaion Data from Sitka Magnetic OBSY Weather Station

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
AVERAGE PRECIPITATION (IN)	8.39	6.50	6.14	4.33	4.21	2.87	4.13	6.85	11.73	12.95	9.76	8.86
2015 PRECIPITATION (IN)	14.28	5.49	7.73	9.8	0.34	4.5	10.63	12.78	17.17	10.59	15.14	N/A[2]
2015 LARGEST 24-HR PRECIPITATION (IN)	3.50	2.16	1.43	2.02	0.19	0.87	1.62	2.66 2.56[1]	4.37	1.06	1.86	N/A[2]

*NOTES:
1: Value from August 1, 2015 to August 15, 2015
2: Data was not available.
3: Data from weatherundergournd, 2019

The recurrence interval charts from NOAA Precipitation Frequency Estimates (NOAA, 2017) were reduced to 25% to account for the yearly average amount of rain occurring during this time period and the June 15 through August 15 precipitation was plotted on Figure 4. As shown on Figure 4, the 60 days prior to the Kramer Landslide had a precipitation level with a recurrence interval of about 500 years. Similarly, for the 45 days prior to the Kramer Landslide, the recurrence interval was about 800 years, and for the 30 days prior to the Kramer Landslide, the recurrence interval was about 1000 years.

2.1.2 30-Year Rainfall Analysis

The rainfall data prior to the Kramer Landslide indicates a prolonged period of greater than normal rainfall. For the 30-year data set available to us, July 2015 had the most rain recorded in July and August 2015 was the second highest rainfall for that month (August 2014 recorded 0.67 inches more than August 2015). Combining July and August; 2015 recorded the highest rainfall for the 2-month period. For approximately 75 days prior to the Kramer Landslide, the precipitation average more than twice the normal precipitation. Longer term, the cumulative precipitation for 2015 compared to normal is plotted on Figure 4. From January 1 until the Kramer Landslide, the cumulative precipitation averaged 50% above normal. Excluding January; 2015 was 33% above normal for the 6.5 months.

2.1.3 Regional Data

In addition to these data sets, an attempt was made to correlate regional data using a modified regression analysis. Truncation of rainfall events occurring more often than 10 times in one year

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were analyzed using logarithmic, exponential, polynomial, and power best fit lines with the optimal fit for the data being the regression analysis similar to the one used by NOAA. This led to trend lines much more realistic for the 100 to 1000-year events but still showed the events leading up to the landslide as not particularly rare. These correlate fairly close to the data provided by NOAA 24-hour graphs used (without the reduction factor).

The seasonal range of precipitation were used to further refine the data the with the assumption that the snow/frozen ground conditions would not contribute to the slide. A defined start and end date of the useable precipitation year by the seasonal freeze probabilities is given by the western region climate center with a 90% probability.

In order to properly evaluate the saturation potential of the mountain side the rate at which an atmospheric variable (normal temperature in Earth's atmosphere) falls with altitude or "lapse rate" should be considered. The correlation of lapse rate is important due to the relative location of the weather station data to the elevation of the landslide data. The elevation at the top of the slide according to the USGS TNM elevation data (longitude -135.360622, Latitude 57.082044) is given to be 1339 feet. The elevation datum for the Sitka Airport station used is 70 feet according to the station metadata at the western region climate center. As the slide was on the windward side of the mountain an annual lapse rate of 4.55 C/km (8.27 F/1000ft) was used. This corresponds with the lapse rates found in a similar study done in the Cascade Mountains.

The approximate elevation difference of 1300' between the weather station and near the top of the Kramer slide yields an average temperature difference of approximately 8 degrees. Using this 8-degree temperature difference between the station and slide area, the 90% spring 'Freeze' probability was moved from May 23rd to June 17th and the 90% fall 'Freeze probability' was moved from November 1st to September 24th. Only rainfall data between these two dates were considered in the probability analysis as the landslide would most likely not occur under freezing conditions.

Using the above-mentioned date range, the rainfall event that caused the landslide does not appear to be a particularly unusual event in the region. This is clearly contradicted by the evidence of 200+ year old tree growth in the Kramer Landslide and further leads to the conclusion that the orographic effects and potential microburst conditions at the top of the mountain were significantly greater than those shown at any of the local weather stations.

2.1.4 Orographic Microbursts

Due to the nature of the surrounding topography of the Sitka area we believe that orographic and microbursts may have contributed to several of the slides in the area. An analysis of the wind

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data from the day of the Kramer landslide shows that the wind during that day was above average but not unusually high. The above-average wind further adds to the possibility that orographic microbursts many have contributed to triggering the slide.

2.2 Kramer Landslide Debris

The North Tributary, which is currently intact has a similar length and height as the Kramer Landslide area. The North Tributary is wider, not as deep and does not have as well of a well-defined bottom channel compared to the Kramer landside. A total of 10 test probes were advanced in three cross-sections in the North Tributary. We present the approximate locations of the probe sections in Figure 5 of this report and the cross sections in Figure 6 of this report. From the test probes we believe the soil depths in the North Tributary are less than the Kramer Landslide

2.2.1 Soil/Bedrock Depths

At this time, we feel that the soils data obtained in the North Tributary indicates both similarities and differences which we are not able to resolve. In general, we do not see obvious differences that would lead us to believe that a debris flow from the North Tributary would be significantly larger than that of the Kramer Landslide, and some of the data indicates the volume of debris would be less, especially considering that there will be little to no contribution to the volume from the area below the confluence of the two gullies.

Both the Kramer Landslide and the North Tributary are natural depressions in the mountainside topography. This suggests that debris flows may have occurred in both locations prehistorically or could be due to erosion only. We did not consider the potential of previous slide activity in our evaluation.

In addition to attempting to correlate the local weather station rainfall frequency data with the land slide recurrence frequency another approach was taken to possibly determine the landslide recurrence frequency interval. Using the data available from the Shannon and Wilson Report a general profile of the soil was created. The profile created consisted of a layer of organics with an average thickness as determined by the bole logs done in January of 2019. Next would be a layer of silty sand with trace clay from ash fallout, followed by a layer of till and then weathered bedrock.

Using this profile and an average void space of 18% as determined by a dry bulk density of 135 lbs/ft^2 and an assumed specific gravity of 2.65. With an average depth of soil in the gully estimated to be 8 feet, and a saturation level of 75%, only about 4.5 inches of rain would be

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needed to completely saturate the soil, which is plausible. More testing would be needed to determine the percolation and absorption rates of the soils to determine how much moisture is retained from the previous days during multi-day heavy rainfall events and to estimate the potential for over-saturation.

2.2.2 Vegetation Observation

Following a landslide event there will be a recovery time before trees will begin to regrow. This recovery time is estimated to be 100 to 200 years. It was also noted that the trees in the Kramer Landslide debris were approximately 200 years of age. Given that the previous landslide area has a 100 to 200-year recovery time and approximately 200-year-old trees re-vegetate the landslide suggest the recurrence interval for the Kramer Landslide event is at least 300 to 400 years.

2.3 Historical Data

With a precipitation recurrence interval of about 1000 years, and a vegetation recovery interval in the order of 400 years, the precipitation recurrence interval governs. A landslide did not occur in the North Tributary when the Kramer Landslide occurred. Both the Kramer Landside and North Tributary would be subject to the same precipitation data, but not necessarily subject to the same orographic or microburst effects. If the orographic effect area is small only impacting one potential landslide area, then there would be a recurrence interval for the orographic effect to be in the correct place. This recurrence would be in addition to the precipitation recurrence interval.

3.0 Conclusions

Following the Kramer landslide, the City of Sitka enacted an ordinance that is intended to minimize the risk in the event of a future landslide that impacts developed areas. In part, the ordinance reads:

20.01.030

D. The restricted landslide area designation may be removed from a lot or a portion of a lot if the owner(s) submits to the city a geotechnical evaluation which demonstrates to the satisfaction of the municipal administrator that such property is not subject to a moderate or high risk from landslide or other significant movement.

Given that there is no definition of what constitutes moderate or high risk, the conclusions presented below provide insight as to what the return interval other hazards define regarding risk levels.

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Given the variations in the physical configuration of the topography, isolated concentrated precipitations, wind driven orographic/microbursts, and soil conditions overlaying the bedrock, a repeatable accurate risk analysis contains too many variables to produce definitive results. Considering this variability, the following risk assessment chart and discussion is based primarily on engineering judgement founded on the risk factors discussed and existing code requirements.

		Design Event		
		Seismic	Flood	Wind
Magnitude of Design Event / Associated Risk	Very Large Event/ Very Low Risk	2475 Years	Determined on site specific basis	125 Years
	Large Event/ Low Risk	475 Years	Determined on site specific basis	100 Years
	Medium Event / Medium Risk	72 Years	500 Years	75 Years
	Small Event/ High Risk	25 Years	100 Years	50 Years

Given the return intervals provided for the risk categories above from FEMA, we have determined that recurrence interval for the 30-day (July 15, 2015 to August 15, 2015) precipitation event prior to the Kramer Landslide is approximately 1000 years, 800 years for the 45-day period (July 1, 2015 to August 15, 2015) and 500 years for the 60-day recurrence interval (June 15, 2015 to August 15, 2015). We believe that the lowest recurrence interval should be applied to the high hazard zones identified in the SWI's report and indicate less risk than the IBC/IRC implied risk and less risk than is used for most weather and geologic impacted public structures. Additionally, the orographic amplification that may also have occurred could increase the recurrence interval. It is our professional opinion that the 30-day precipitation event prior to August 18th, 2015 ultimately created the Kramer Landslide and corresponds with a low to medium risk level under the above design events and criteria.

For our conclusions, we use the City of Sitka's 'moderate risk' correlating to medium risk and high risk being the same. As such, the Kramer landslide falls into the large or very large event category. We also conclude that a landslide event originating in the North Tributary would also fall into the large event or very large event category, therefore having a low risk potential.

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4.0 Engineering Judgement Decision

Ultimately, the decisions regarding development of the area below the North Tributary adjacent to the Kramer slide should be based on a consensus of understanding between the property owners, engineering assessment, and regulatory authorities.

Based on the above evaluation, the risk of another landslide similar to the one that occurred on August 18, 2015 appears less than the risk generally associated with the governing codes and emergency management agencies.

Mitigation to further reduce the risk of property damage and life-safety concerns should be seriously considered as a part of the requirements for development of the area impacted by the Kramer landslide. Currently, because the soil and vegetation have been removed in the Kramer landslide path, water flows in the path are intense with large rainfall events causing deep, fast-flowing runoff. Additionally, removing water from a debris flow similar to that which occurred for the Kramer landslide will reduce how far the debris will flow. For both of these conditions, development of temporary water storage basins, creation of alternating flat and steep sections, and design for a deposition area above the development area can help mitigate the risk associated with the North Tributary.

The design will need to consider rainfall flow volumes (not associated with a slide event), potential slide debris volumes, potential debris flow paths (with potential for training structures to help divert flow to the deposition area, and outfall paths for the rainfall and slide water. Beyond the engineering, property ownership, construction and maintenance costs, and property value need to be considered.

5.0 REFERENCES CITED

Weatherunderground. (2019) "Sitka Climate History."
<https://www.wunderground.com/history/daily/us/ak/sitka/PASI/date/2019-5-29?cm_ven=localwx_history> (May 2019)

National Oceanic and Atmospheric Administration, Office of Water Prediction. (2017) "NOAA ATLAS 14 Point Precipitaiton Frequnecy estimates: AK"
<https://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_ak.html> (May 2019) <
<https://www.weather.gov/bmx/outreach_microbursts> (August 2020)

National Oceanic and Atmospheric Administration, (2017) "Mircobursts"
<https://www.weather.gov/bmx/outreach_microbursts> (August 2020)

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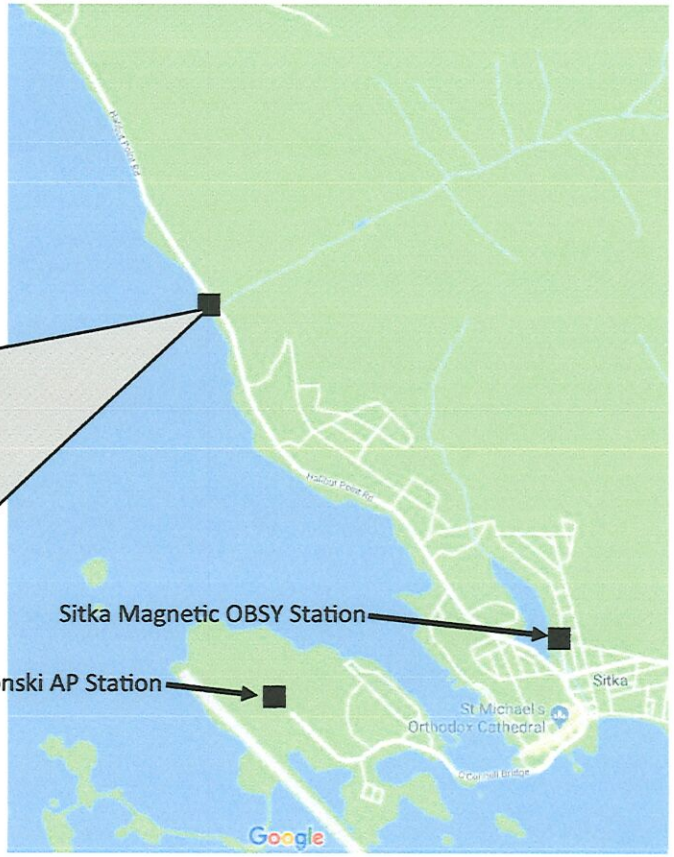
We greatly appreciate the opportunity to provide you with our professional service. Please contact us directly with any questions or comments you may have regarding the information that we present in this letter, or if you have any other questions, comments, and/or requests.

Sincerely,
Northern Geotechnical Engineering, Inc. *d.b.a.* Terra Firma Testing,

Keith F. Mobley, P.E.
President

REPORT
FIGURES



NORTHERN GEOTECHNICAL ENGINEERING, INC.
TERRA FIRMA TESTING

FIGURE TITLE: PROJECT SITE LOCATION		
PROJECT NAME: LANDSLIDE RETURN INTERVAL LETTER		PROJECT ID: 4349-16
PROJECT LOCATION: ANCHORAGE, ALASKA		FIGURE NUMBER: 1

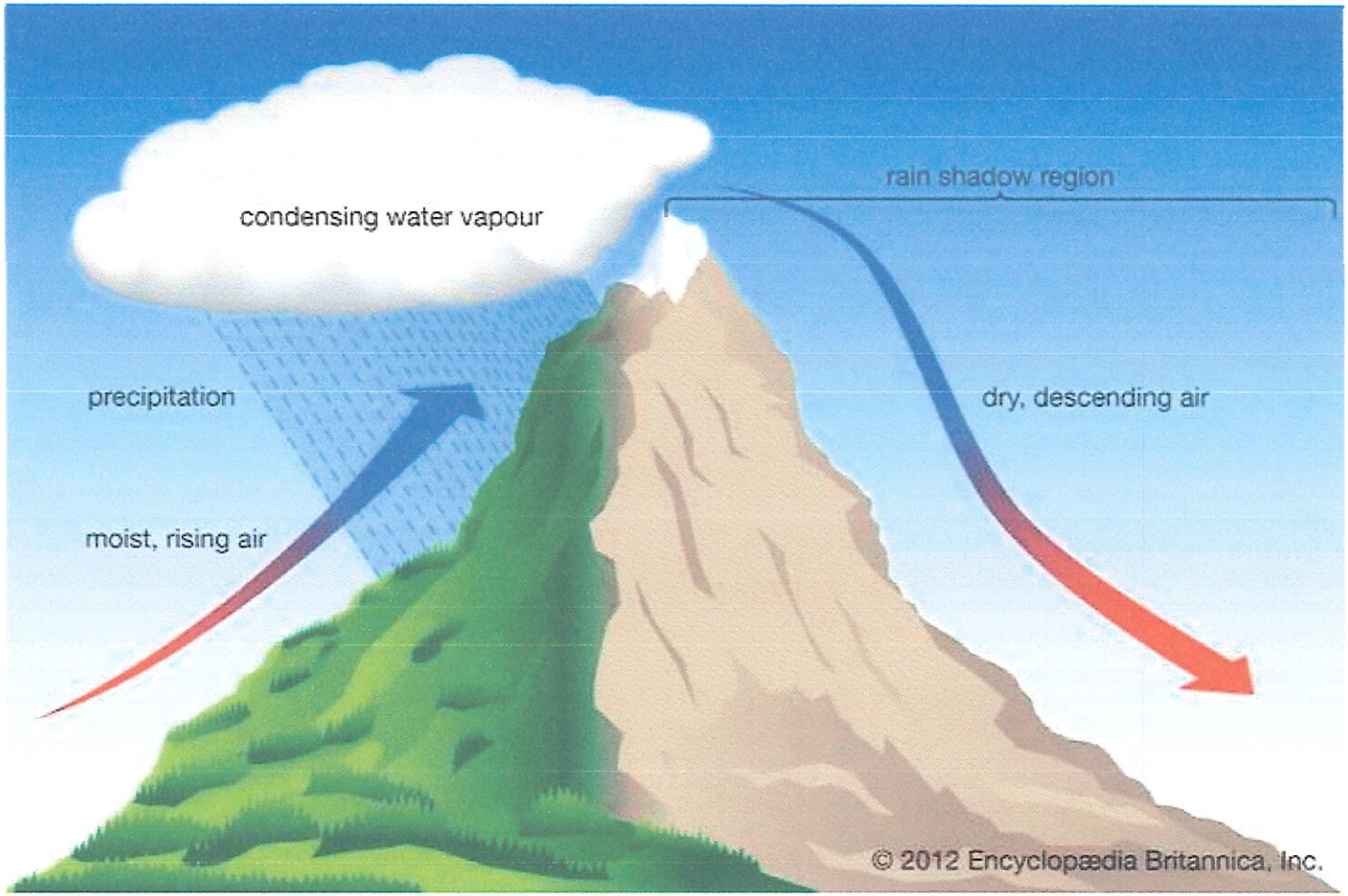


Figure from: https://www.britannica.com/science/orographic-precipitation

NORTHERN GEOTECHNICAL ENGINEERING, INC.
TERRA FIRMA TESTING

FIGURE TITLE: OROGRAPHIC EFFECT		
PROJECT NAME: LANDSLIDE RETURN INTERVAL LETTER		PROJECT ID: 4349-16
PROJECT LOCATION: ANCHORAGE, ALASKA		FIGURE NUMBER: 2

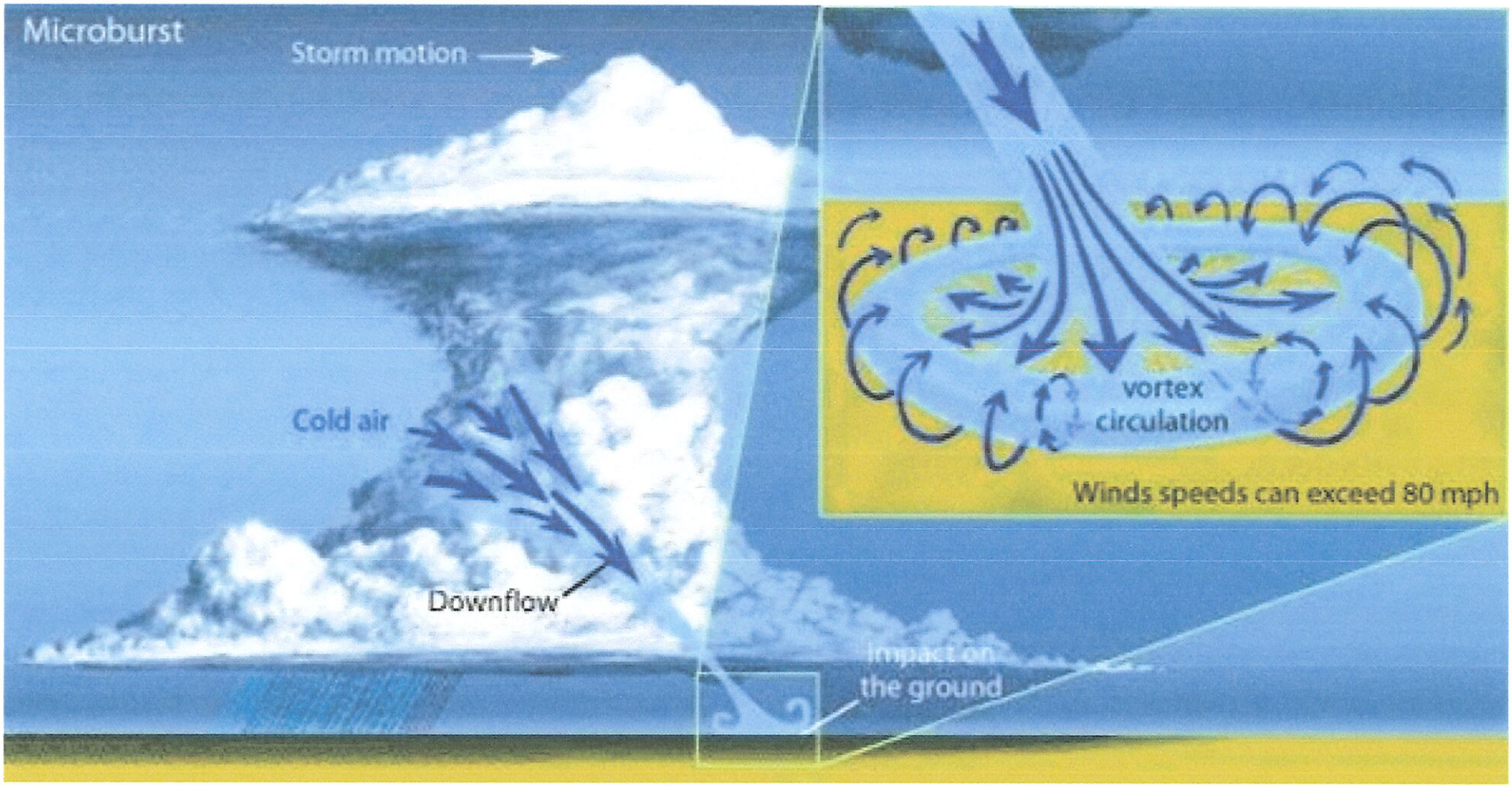
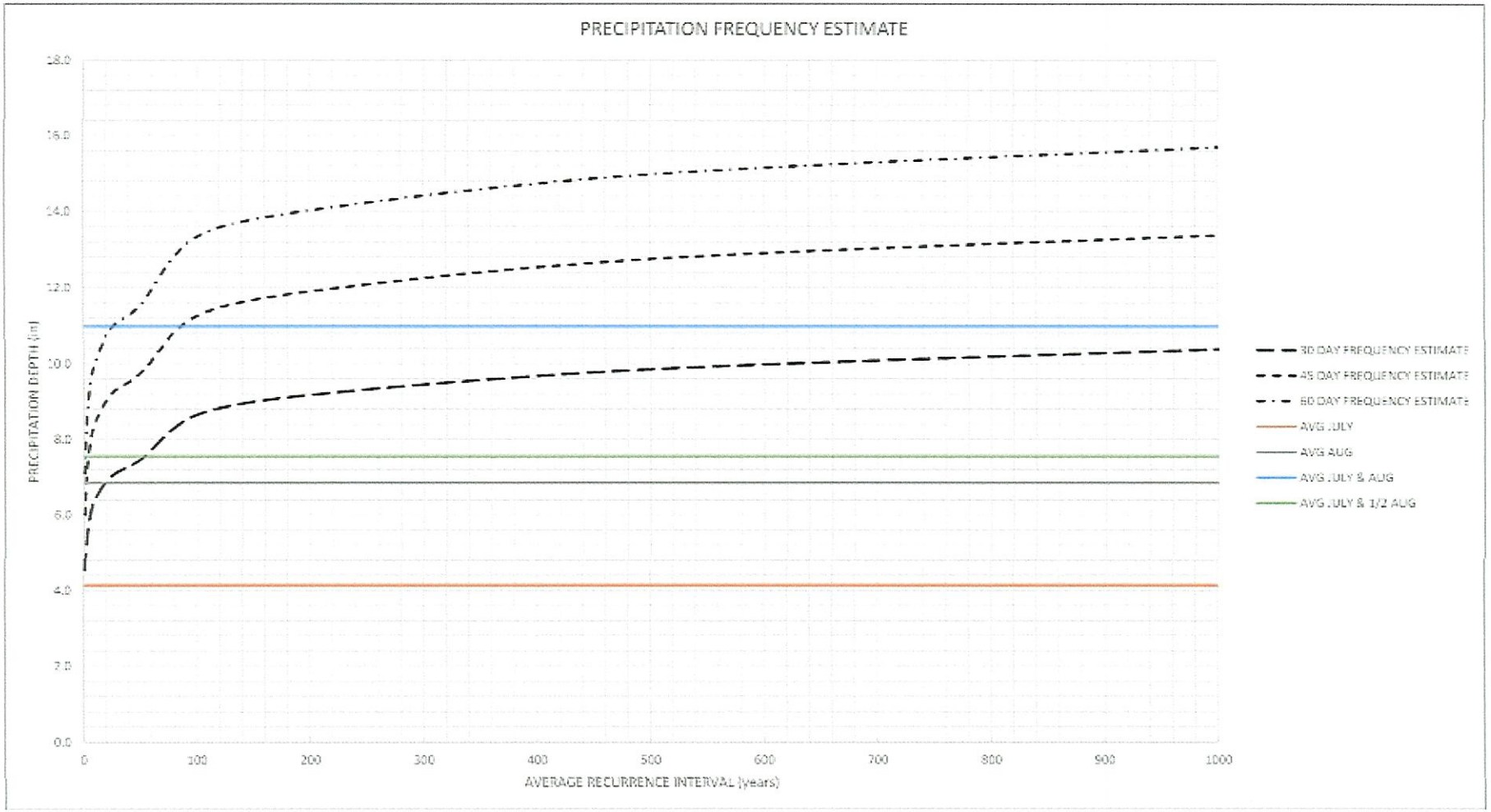


Figure from: https://www.britannica.com/science/orographic-precipitation

NORTHERN GEOTECHNICAL ENGINEERING, INC.
TERRA FIRMA TESTING

FIGURE TITLE: MIRCOBRUST	
PROJECT NAME: LANDSLIDE RETURN INTERVAL LETTER	PROJECT ID: 4349-16
PROJECT LOCATION: ANCHORAGE, ALASKA	FIGURE NUMBER: 3

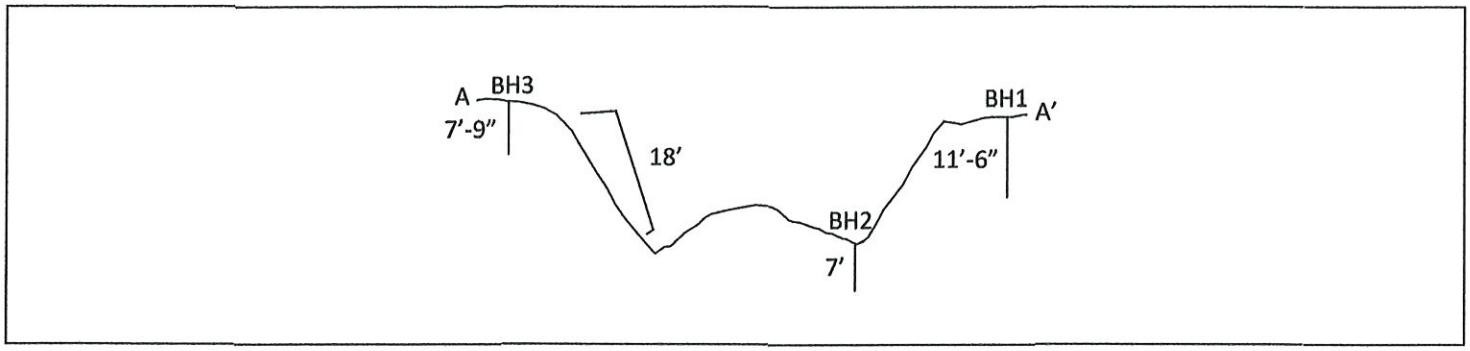


NORTHERN GEOTECHNICAL ENGINEERING, INC.
TERRA FIRMA TESTING

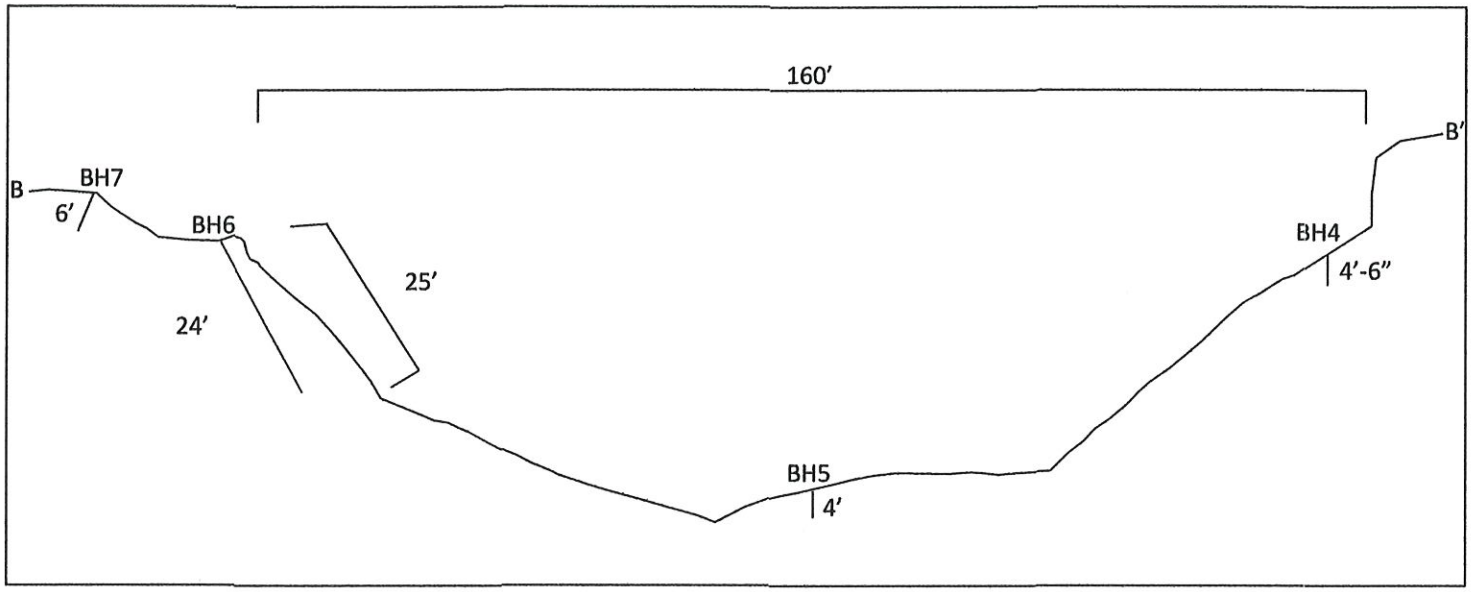
FIGURE TITLE: PRECIPITATION FREQUENCY ESTIMATE	
PROJECT NAME: KRAMER LANDSLIDE	PROJECT ID: 4349-16
PROJECT LOCATION: SITKA, ALASKA	FIGURE NUMBER: 4

NORTHERN GEOTECHNICAL ENGINEERING, INC.
TERRA FIRMA TESTING

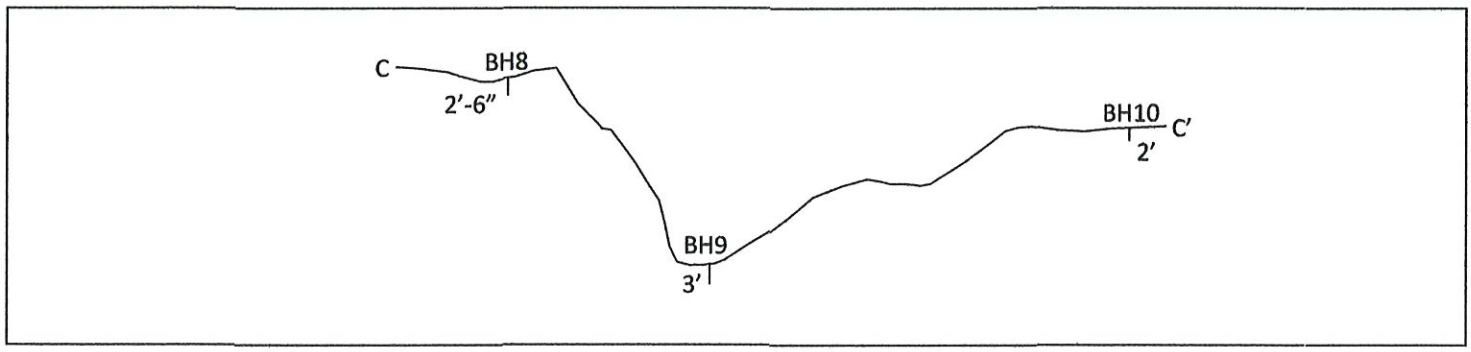
FIGURE TITLE: APPROXIMATE CROSS SECTION LOCATIONS	
PROJECT NAME: KRAMER LANDSLIDE	PROJECT ID: 4349-16
PROJECT LOCATION: SITKA, ALASKA	FIGURE NUMBER: 5



CROSS SECTION AA':



CROSS SECTION BB': ELEVATION 1,200' AT TOP



CROSS SECTION CC':

NORTHERN GEOTECHNICAL ENGINEERING, INC.
TERRA FIRMA TESTING

FIGURE TITLE: NORTH TRIBUTARY CROSS-SECTIONS	
PROJECT NAME: KRAMER LANDSLIDE	PROJECT ID: 4349-16
PROJECT LOCATION: SITKA, ALASKA	FIGURE NUMBER: 6

CERTIFICATE OF OWNERSHIP AND DEDICATION

WE HEREBY CERTIFY THAT WE ARE THE OWNERS OF THE PROPERTY SHOWN AND DESCRIBED HEREON AND THAT WE HEREBY ADOPT THIS PLAN OF SUBDIVISION WITH OUR FREE CONSENT AND DEDICATE ALL STREETS, ALLEYS, WALKS, PARKS AND OTHER OPEN SPACES TO PUBLIC OR PRIVATE USE AS NOTED.

DATE _____ OWNER _____ (SIGNATURE)

DATE _____ OWNER _____ (SIGNATURE)

NOTARY'S ACKNOWLEDGMENT

US OF AMERICA
STATE OF ALASKA
CITY & BOROUGH OF SITKA

THIS IS TO CERTIFY THAT ON THIS ____DAY OF _____, 20____, BEFORE ME, THE UNDERSIGNED, A NOTARY PUBLIC IN AND FOR THE STATE OF ALASKA, DULY COMMISSIONED AND SWORN, PERSONALLY APPEARED _____

TO ME KNOWN TO BE THE IDENTICAL INDIVIDUAL(S) MENTIONED AND WHO EXECUTED THE WITHIN PLAT AND_____ ACKNOWLEDGED TO ME THAT_____ SIGNED THE SAME FREELY AND VOLUNTARILY FOR THE USES AND PURPOSES THEREIN SPECIFIED.

WITNESS MY HAND AND NOTARY SEAL THE DAY AND YEAR IN THIS CERTIFICATE FIRST HEREIN WRITTEN.

NOTARY PUBLIC IN AND FOR THE STATE OF ALASKA

MY COMMISSION EXPIRES_____.

CERTIFICATE STATE OF ALASKA (FIRST JUDICIAL DISTRICT)

I THE UNDERSIGNED, BEING DULY APPOINTED AND QUALIFIED, AND ASSESSOR FOR THE CITY & BOROUGH OF SITKA, HEREBY CERTIFY THAT ACCORDING TO THE RECORDS IN MY POSSESSION, THE FOLLOWING DESCRIBED PROPERTY IS CARRIED ON THE TAX RECORDS OF THE CITY & BOROUGH OF SITKA, IN THE NAME OF_____

AND THAT ACCORDING TO THE RECORDS IN MY POSSESSION, ALL TAXES ASSESSED AGAINST SAID LANDS AND IN FAVOR OF THE CITY & BOROUGH OF SITKA ARE PAID IN FULL; THAT CURRENT TAXES FOR THE YEAR 20_____ WILL BE DUE ON OR BEFORE AUGUST 31, 20____ DATED THIS _____DAY OF_____.

ASSESSOR, CITY AND BOROUGH OF SITKA

CERTIFICATE OF APPROVAL BY THE BOARD

I HEREBY CERTIFY THAT THE SUBDIVISION PLAT SHOWN HEREON HAS BEEN FOUND TO COMPLY WITH THE SUBDIVISION REGULATIONS OF THE CITY & BOROUGH OF SITKA PLATTING BOARD, AND THAT SAID PLAT HAS BEEN APPROVED BY THE BOARD BY PLAT RESOLUTION NO. _____ DATED_____ 20_____, AND THAT THE PLAT SHOWN HEREON HAS BEEN APPROVED FOR RECORDING IN THE OFFICE OF THE DISTRICT MAGISTRATE, EX-OFFICIO RECORDER, SITKA, ALASKA.

DATE _____ CHAIRMAN, PLATTING BOARD

SECRETARY _____

CERTIFICATE OF APPROVAL BY THE ASSEMBLY

I HEREBY CERTIFY THAT THE SUBDIVISION PLAT SHOWN HEREON HAS BEEN FOUND TO COMPLY WITH THE SUBDIVISION REGULATIONS OF THE CITY & BOROUGH OF SITKA ASSEMBLY AS RECORDED IN MINUTE BOOK_____ PAGE_____ DATED_____ 20____, AND THAT THE PLAT SHOWN HEREON HAS BEEN APPROVED FOR RECORDING IN THE OFFICE OF THE DISTRICT COURT, EX OFFICIO RECORDER, SITKA, ALASKA.

DATE _____ MAYOR

CITY AND BOROUGH CLERK _____

CERTIFICATE OF PAYMENT OF LOCAL IMPROVEMENT DISTRICT

I, THE UNDERSIGNED, BEING DULY APPOINTED AND QUALIFIED, AND FINANCE DIRECTOR FOR THE CITY & BOROUGH OF SITKA, DO HEREBY CERTIFY THAT, ACCORDING TO THE RECORDS OF THE CITY & BOROUGH OF SITKA, THE FOLLOWING DESCRIBED PROPERTY IS CARRIED ON THE RECORDS IN THE NAME OF: _____

(ALL OWNERS OF RECORD), AND THAT, ACCORDING TO THE RECORDS IN MY POSSESSION, ALL L.I.D.'S ASSESSED AGAINST SAID LANDS AND IN FAVOR OF THE CITY & BOROUGH OF SITKA ARE PAID IN FULL.

DATED THIS ____ DAY OF _____
20 ____, AT SITKA, ALASKA.

FINANCE DIRECTOR
CITY & BOROUGH OF SITKA

RECORD CURVE DATA

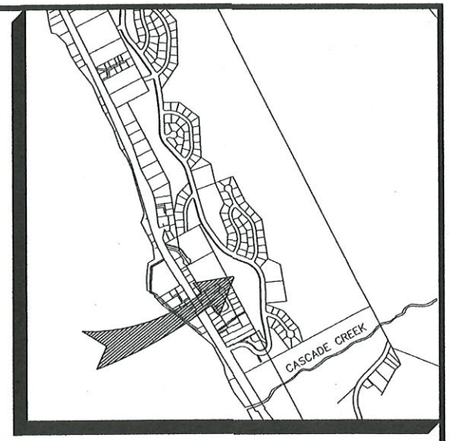
NUMBER	DELTA ANGLE	RADIUS	ARC LENGTH	CHORD DIRECTION	CHORD LENGTH
C1	10°58'12"	248.28	47.54	S 08°57'09" E	47.46
C2	69°24'07"	284.93	345.13	S 38°10'07"E	324.42
C3	26°59'19"	551.24	259.65	S 59°22'40"E	257.26
C4	09°51'39"	551.24	94.87	S 50°51'06"E	94.76
C5	06°14'22"	551.24	60.03	S 58°54'08"E	60.00
C6	12°23'19"	551.24	119.19	S 66°40'39"E	118.96

NOTES

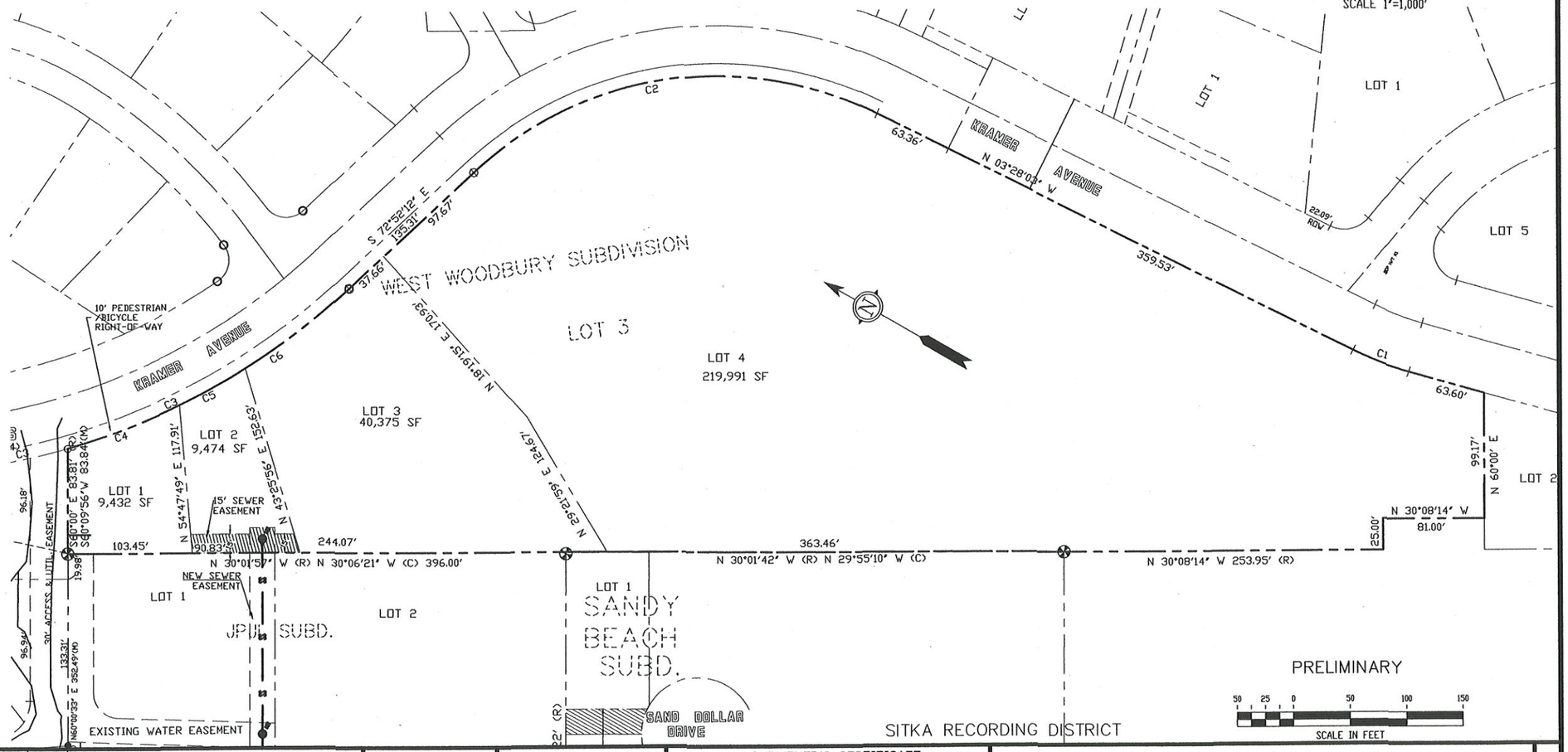
1. THE PURPOSE OF THIS PLAT IS TO SUBDIVIDE LOT 3 OF THE WEST WOODBURY SUBDIVISION INTO 4 LOTS.
2. THE MUNICIPALITY IS PARTY TO ALL EASEMENTS AND PLAT NOTES. THEY SHALL NOT BE MODIFIED WITHOUT APPROVAL OF THE PLATTING BOARD. THERE SHALL BE NO ENCROACHMENTS ON CITY ASSETS OR EASEMENTS.
3. ALL PARCELS WITHIN THIS SUBDIVISION ARE IMPACTED BY NATURALLY OCCURRING OFFSITE DRAINAGE FLOWS. THE OWNERS OF THE PARCELS MAY NOT DIVERT THE OFFSITE FLOWS FROM ENTERING THE PARCELS AND ARE REQUIRED TO DISCHARGE THE FLOWS AT THE SAME LOCATION AS NATURALLY OCCURRING OR INTO A PUBLIC DRAINAGE FACILITY SPECIFICALLY DESIGNED TO COLLECT THE FLOWS. THE OWNER AY REDIRECT THE FLOW PATHWAY WITHIN THE PARCEL PROVIDED THE ENTRY AND DISCHARGE LOCATIONS ARE THE SAME AS THE EXISTING OCCURRING DRAINAGE FLOW PATHWAY.
4. OWNERS OF LOTS CONTAINING WETLANDS AND WATERS OF THEUNITED STATES SHALL CONTACT THE DEPARTMENT OF THE ARMY (DA), US ARMY CORPS OF ENGINEERS, TO DETERMINE THE NEED OF A DA PERMIT FOR WORK ON THE LOT.

LEGEND

- PRIMARY CONTROL MONUMENT RECOVERED (BRASS CAP)
- BLM/GLO PRIMARY BRASS CAP (RECOVERED)
- SECONDARY MONUMENT (SET)
- SECONDARY MONUMENT (RECOVERED)
- ORIGINAL WHITCOMB HTS. MONUMENT (RECOVERED)
- (R) RECORDED DATA
- (C) COMPUTED DATA
- (M) MEASURED DATA



VICINITY MAP
SCALE 1"=1,000'



PRELIMINARY

50 25 0 50 100 150
SCALE IN FEET

NORTH 57°
LAND SURVEYING
(907) 747-6710 2107 CASCADE CREEK ROAD, SITKA, AK 99835

BY	DATE	REV	DESCRIPTION OF CHANGE

RECORD OF REVISIONS

STATE OF ALASKA 49TH — KELLY O'NEILL #LS 13321 — REGISTERED PROFESSIONAL LAND SURVEYOR

DESIGNED: K. O'NEILL
DRAWN: JCH/ACAD
CHECKED: KO
DATE OF PLAT: 01/28/2021
SCALE: 1"= 50'
DRAWING NAME: 40033-09
PROJECT NO: 40033-09

SURVEYOR'S CERTIFICATE

I HEREBY CERTIFY THAT I AM A REGISTERED SURVEYOR, LICENSED IN THE STATE OF ALASKA, AND THAT IN _____ A SURVEY OF THE HEREIN DESCRIBED LANDS WAS CONDUCTED UNDER MY DIRECT SUPERVISION AND THAT THIS PLAT IS A TRUE AND ACCURATE REPRESENTATION OF THE FIELD NOTES OF SAID SURVEY, AND THAT ALL DIMENSIONS AND OTHER DETAILS ARE CORRECT ACCORDING TO SAID FIELD NOTES.

DATE _____ KELLY O'NEILL LS 13321

KRAMER SUBDIVISION

LOT 3 WEST WOODBURY SUBDIVISION (PLAT 2014- 4)

CLIENT: SOUND DEVELOPMENT

SHEET 1 OF 1

Document Path: L:\zz_brl_org_Jobs\22168_Sitka\Figure-3b.mxd

Disclaimer:

The boundaries and polygons shown are based on computer modeling, field reconnaissance, assessment of LiDAR hillshades, and professional judgement. They should be considered approximate. Accurate prediction of runout distance and direction is not possible with currently available scientific knowledge.

Tributary Creek

Study Area

Study Area

Water Tank

Trail

End of August 18th Side Channel Debris Deposit

Emmons St

End of Modeled Debris Deposit From August 18th

End of August 18th Debris Flow

Jacobs Cir

End of Modeled Debris Flow From Tributary Creek (With Berms)

Tract C

End of Modeled Debris Flow From August 18th Debris Flow (No Berms)

End of Modeled Debris Flow From Tributary Creek (No Berms)

Kramer Ave

Brightman St

Sand Dollar Dr

Whale Watch

Halibut Point Road

DRAFT

LEGEND

Risk Categories

- L Low
- M Moderate
- H High
- Boundary - Indeterminate & Approximate

August 18th South Kramer Debris Flow

- Primary Path
- Alternate Path
- Springs
- (5) Termination of Modeled Debris Flow

0 300 600 Feet

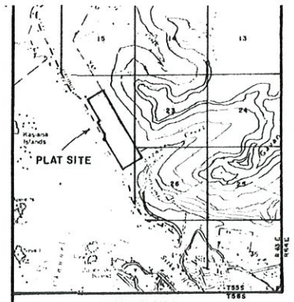
City and Borough of Sitka
South Kramer Landslide
Sitka, Alaska

RUNOUT ANALYSIS AND DEBRIS FLOW RISK

February 2016 21-1-22168-001

SHANNON & WILSON, INC. GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

FIG. 3



VICINITY MAP
SCALE: 1" = 1 MILE
T55S R63E CRM

NUMBER	RADIUS	ARC	DELTA	TAN	CHORD	CHORD BEARING
48	350.00	119.67	19° 35'25"	60.43	119.09	N27° 46'53.0"W
72	380.00	129.93	19° 35'25"	65.60	129.30	S27° 46'53.0"E
72A	390.00	133.35	19° 35'22"	67.33	132.70	N98° 11'37.0"W
72A-2	390.00	58.36	8° 34'23"	29.21	58.30	S33° 17'24.0"E
85	510.68	314.58	35° 17'37"	162.46	309.63	N55° 13'24.0"W
85-1	510.68	281.43	31° 34'29"	144.39	277.88	N53° 21'50.0"W
85-2	510.68	33.15	3° 43'08"	16.58	33.14	S71° 00'38.0"E
86	324.93	393.59	69° 24'09"	225.00	369.96	S38° 10'07.5"E
86-1	324.93	79.58	14° 01'54"	39.99	79.38	S65° 51'15.0"W
86-2	324.93	314.01	55° 22'15"	170.48	301.93	N31° 03'10.0"E
87	1134.90	258.87	13° 04'09"	130.00	258.31	S10° 00'07.5"E
87-1	1134.90	66.85	3° 22'30"	33.44	66.84	S05° 09'18.0"E
87-2	1134.90	192.02	9° 41'39"	96.24	191.79	S11° 41'22.5"E
88	120.00	151.22	72° 12'08"	87.51	141.41	N19° 33'52.0"E
89	180.00	97.54	31° 02'54"	50.00	96.35	S55° 26'36.0"E
90	471.68	174.25	21° 10'00"	88.13	173.26	N12° 12'48.0"E
91	258.75	182.15	40° 20'00"	95.03	178.41	N18° 02'12.0"W
92	316.45	147.28	26° 40'00"	75.00	145.96	N24° 52'12.0"W
93	145.13	128.07	50° 33'36"	68.54	123.95	N13° 44'36.0"E
94	487.88	197.27	23° 10'00"	100.00	195.93	S36° 48'37.0"E
94-1	487.88	88.61	10° 24'24"	44.43	88.49	S30° 25'49.0"E
94-2	487.88	108.66	12° 45'36"	54.55	108.43	S12° 00'49.0"E
95	271.06	191.60	40° 30'00"	100.00	187.64	S28° 08'37.0"E
96	216.28	144.39	38° 15'00"	75.00	141.72	S11° 13'53.0"W
97	343.41	303.60	50° 39'10"	162.52	293.80	S20° 50'45.0"W
97A	550.68	339.21	35° 17'37"	175.18	333.88	S55° 13'24.0"E
98	294.93	357.25	69° 24'09"	204.23	335.80	S38° 10'08.0"E
98A	284.93	345.11	69° 24'09"	197.30	324.42	S38° 10'07.0"E
99	1164.91	265.72	13° 04'09"	133.44	265.14	S10° 00'07.0"E
99A	1274.91	268.00	12° 04'09"	134.58	267.42	S10° 00'07.0"E
100	90.00	111.16	70° 45'55"	63.92	104.23	S16° 50'46.0"W
100A	80.00	97.80	70° 02'44"	56.06	91.82	S18° 29'10.0"W
101	150.00	191.28	73° 03'56"	111.12	178.58	N19° 59'41.0"E
102	1304.90	112.88	5° 51'12"	56.49	112.83	N13° 36'36.0"W
103	20.00	41.79	119° 42'57"	34.44	34.59	N49° 10'28.5"E
104	157.50	85.35	31° 02'54"	43.75	84.31	S55° 26'36.0"E
104-1	157.50	25.00	9° 05'41"	12.53	24.97	S66° 25'12.5"E
104-2	157.50	60.35	21° 57'13"	30.55	59.98	S50° 53'45.5"E
105	20.00	18.37	52° 37'00"	9.89	17.73	S13° 36'39.0"E
106	50.00	248.91	285° 14'01"		60.71	N50° 04'50.5"E
106-1	50.00	34.46	39° 29'03"	17.94	33.78	S07° 02'40.5"E
106-2	50.00	60.00	68° 45'18"	34.21	56.46	S61° 03'51.0"E
106-3	50.00	60.00	68° 45'18"	34.21	56.46	N59° 01'51.0"E
106-4	50.00	60.00	68° 45'18"	34.21	56.46	N18° 20'27.0"W
106-5	50.00	14.45	39° 29'04"	17.94	33.78	N72° 47'18.0"W
107	20.00	18.37	52° 37'01"	9.89	17.73	N66° 13'39.5"W
108	202.50	109.73	31° 02'54"	56.25	108.40	N55° 26'36.0"W
108-1	202.50	20.00	5° 39'32"	10.01	19.99	N42° 44'55.0"W
108-2	202.50	70.00	19° 48'22"	35.35	69.65	N55° 28'52.0"W
108-3	202.50	19.74	5° 35'00"	9.87	19.73	N68° 10'33.0"W
109	20.00	22.81	65° 19'57"	12.82	21.59	N38° 18'04.5"W
110	1104.90	41.80	2° 10'03"	20.90	41.80	N04° 33'04.5"W
122	354.93	303.32	48° 57'51"	161.62	294.17	N27° 56'58.5"W
122-1	354.93	80.81	13° 02'43"	40.58	80.64	N45° 54 33.5"W
122-2	354.93	207.51	33° 29'51"	106.81	204.59	S22° 18'16.0"E
122-3	354.93	15.00	02° 25'17"	7.50	15.00	N04° 40'41.5"W
123	70.00	28.90	62° 47'18"	17.61	26.45	N11° 39'16.0"W
124	238.78	159.41	38° 15'00"	82.80	156.46	N11° 13'53.0"E
124-1	238.78	49.36	11° 50'37"	24.77	49.27	N24° 26'04.5"E
124-2	238.78	65.00	15° 35'48"	32.70	64.80	N10° 42'52.0"E
124-3	238.78	45.05	10° 48'35"	22.59	44.98	N02° 29'19.5"W
125	293.56	207.51	40° 30'00"	108.30	203.21	N28° 08'37.0"W
125-1	293.56	103.00	20° 06'11"	52.03	102.47	N12° 56'42.5"W
125-2	293.56	92.50	18° 03'17"	46.64	92.12	N37° 01'26.5"W
125-3	293.56	12.01	2° 20'32"	6.00	12.00	N47° 13'21.0"W
126	465.38	188.17	23° 10'00"	95.39	186.89	N36° 48'37.0"W
126-1	465.38	75.00	9° 14'01"	37.58	74.92	N43° 46'36.5"W
126-2	465.38	113.17	13° 55'59"	56.87	112.89	N32° 11'36.5"W
127	20.00	18.37	52° 37'00"	9.89	17.73	N01° 04'53.0"E
128	50.00	248.91	285° 14'01"		60.71	S64° 46'22.5"W
128-1	50.00	27.39	31° 23'17"	14.05	27.05	N11° 41'44.5"E
128-2	50.00	67.07	76° 51'04"	39.67	62.15	N42° 25'26.0"W
128-3	50.00	60.00	68° 45'18"	34.21	56.46	S64° 46'23.0"W
128-4	50.00	60.00	68° 45'18"	34.21	56.46	S03° 53'55.0"E
128-5	50.00	34.45	39° 29'04"	17.94	33.78	S58° 06'06.0"E
129	20.00	18.37	52° 32'00"	9.89	17.73	S51° 32'07.0"E
130	510.38	61.23	6° 52'24"	30.65	61.19	S28° 29'49.0"E
131	20.00	24.83	71° 07 25"	14.30	23.26	S03° 27'41.5"W
132	167.63	147.92	50° 33'36"	79.17	143.17	S13° 44'36.0"W
132-1	167.63	29.74	10° 09'50"	14.91	29.70	S33° 56'29.0"W
132-2	167.63	83.14	28° 25'59"	42.47	82.34	S14° 18'34.5"W
132-3	167.63	35.00	11° 57'47"	17.56	34.94	S05° 33'18.5"E
133	338.95	157.75	26° 40'00"	80.33	156.33	S24° 52'12.0"E
133-1	338.95	35.00	5° 54'59"	17.52	34.98	S14° 29'41.5"E
133-2	338.95	80.00	13° 31'23"	40.19	79.81	S24° 12'52.5"E
133-3	338.95	42.75	7° 13'38"	21.41	42.73	S34° 35'23.0"E
134	236.26	106.13	40° 20'00"	55.29	103.90	S18° 02'12.0"E
134-1	236.25	60.00	14° 33'05"	30.16	59.84	S30° 55'39.5"E
134-2	236.25	106.31	25° 46'55"	54.07	105.41	S10° 45'39.5"E
135	449.18	162.65	20° 44'50"	82.23	161.76	S12° 30'13.0"W
135-1	449.18	15.00	1° 54'48"	7.50	15.00	S03° 05'12.0"W
135-2	449.18	80.00	10° 12'17"	40.11	79.90	S09° 03'44.5"W
135-3	449.18	67.65	8° 37'45"	33.89	67.59	S18° 13'45.5"W
136	20.00	32.46	92° 59'42"	21.07	29.01	S58° 22'29.0"W
137	480.68	222.75	26° 33'05"	113.41	220.77	N50° 51'08.0"W
137-1	480.68	85.00	10° 07'54"	42.61	84.89	N59° 01'43.0"W
137-2	480.68	137.75	16° 25'11"	69.35	137.28	N45° 47'11.0"W
138	320.00	109.41	19° 35'25"	55.25	108.88	N27° 46'53.0"W
139	20.00	33.30	95° 23'37"	21.98	29.58	N25° 10'23.5"W
140	494.18	175.90	20° 23'37"	88.89	174.97	N12° 19'36.5"E
140-1	494.18	60.00	6° 57'24"	30.04	59.96	N19° 02'41.0"E
140-2	494.18	90.00	10° 26'05"	45.12	89.88	N10° 20'58.5"E
140-3	494.18	25.90	3° 00'08"	12.95	25.89	N03° 37'52.0"E
141	281.25	197.99	40° 20'00"	103.29	193.92	N18° 02'12.0"W
141-1	281.25	75.00	15° 16'44"	37.72	74.78	N05° 30'34.0"W
141-2	281.25	90.00	18° 20'05"	45.39	89.62	N22° 18'58.5"W
141-3	281.25	32.99	6° 43'11"	16.51	32.97	N14° 50'36.5"W
142	293.95	136.81	26° 40'00"	69.67	135.58	N24° 52'12.0"W
142-1	293.95	96.81	18° 52'12"	48.85	96.37	N28° 46'06.0"W
142-2	293.95	40.00	7° 47'48"	20.03	39.97	N15° 26'06.0"W
143	122.63	101.89	47° 36'20"	54.09	98.98	N12° 15'58.0"E
144	20.00	25.72	102° 20'10"	24.05	31.16	N87° 14'13.0"E
145	510.38	60.56	6° 47'55"	30.32	60.53	S54° 59'39.5"E
146	248.56	175.70	40° 30'00"	91.70	172.06	S28° 08'37.0"E
146-1	248.56	26.07	6° 00'14"	13.05	26.06	S45° 23'20.0"E
146-2	248.56	124.63	28° 43'40"	63.65	123.33	S28° 01'13.0"E
146-3	248.56	25.00	5° 45'46"	12.51	24.99	S10° 46'30.0"E
147	193.78	129.37	38° 15'00"	67.20	126.98	S11° 13'53.0"W
147-1	193.78	60.00	17° 44'25"	30.24	59.76	S00° 58'35.5"W
147-2	193.78	69.37	20° 30'15"	35.06	69.00	S20° 06'05.5"W
148	20.00	29.39	84° 11'36"	18.07	26.82	S72° 27'11.0"W
149	351.93	45.96	7° 25'10"	23.01	45.93	N69° 09'37.0"W

S29°42'03"E 2412.97

S29°42'03"E 1450.14

1825.89

887.09

1450.14

U.S. SURVEY 3565 (NATIONAL FOREST SERVICE)

NUMBER	RADIUS	ARC	DELTA	TAN	CHORD	CHORD BEARING
137-2	480.68	137.75	16° 25'11"	69.35	137.28	N45° 47'11.0"W
138	320.00	109.41	19° 35'25"	55.25	108.88	N27° 46'53.0"W
139	20.00	33.30	95° 23'37"	21.98	29.58	N25° 10'23.5"W
140	494.18	175.90	20° 23'37"	88.89	174.97	N12° 19'36.5"E
140-1	494.18	60.00	6° 57'24"	30.04	59.96	N19° 02'41.0"E
140-2	494.18	90.00	10° 26'05"	45.12	89.88	N10° 20'58.5"E
140-3	494.18	25.90	3° 00'08"	12.95	25.89	N03° 37'52.0"E
141	281.25	197.99	40° 20'00"	103.29	193.92	N18° 02'12.0"W
141-1	281.25	75.00	15° 16'44"	37.72	74.78	N05° 30'34.0"W
141-2	281.25	90.00	18° 20'05"	45.39	89.62	N22° 18'58.5"W
141-3	281.25	32.99	6° 43'11"	16.51	32.97	N14° 50'36.5"W
142	293.95	136.81	26° 40'00"	69.67	135.58	N24° 52'12.0"W
142-1	293.95	96.81	18° 52'12"	48.85	96.37	N28° 46'06.0"W
142-2	293.95	40.00	7° 47'48"	20.03	39.97	N15° 26'06.0"W
143	122.63	101.89	47° 36'20"	54.09	98.98	N12° 15'58.0"E
144	20.00	25.72	102° 20'10"	24.05	31.16	N87° 14'13.0"E
145	510.38	60.56	6° 47'55"	30.32	60.53	S54° 59'39.5"E
146	248.56	175.70	40° 30'00"	91.70	172.06	S28° 08'37.0"E
146-1	248.56	26.07	6° 00'14"	13.05	26.06	S45° 23'20.0"E
146-2	248.56	124.63	28° 43'40"	63.65	123.33	S28° 01'13.0"E
146-3	248.56	25.00	5° 45'46"	12.51	24.99	S10° 46'30.0"E
147	193.78	129.37	38° 15'00"	67.20	126.98	S11° 13'53.0"W
147-1	193.78	60.00	17° 44'25"	30.24	59.76	S00° 58'35.5"W
147-2	193.78	69.37	20° 30'15"	35.06	69.00	S20° 06'05.5"W
148	20.00	29.39	84° 11'36"	18.07	26.82	S72° 27'11.0"W
149	351.93	45.96	7° 25'10"	23.01	45.93	N69° 09'37.0"W

SHEET 2 OF 3

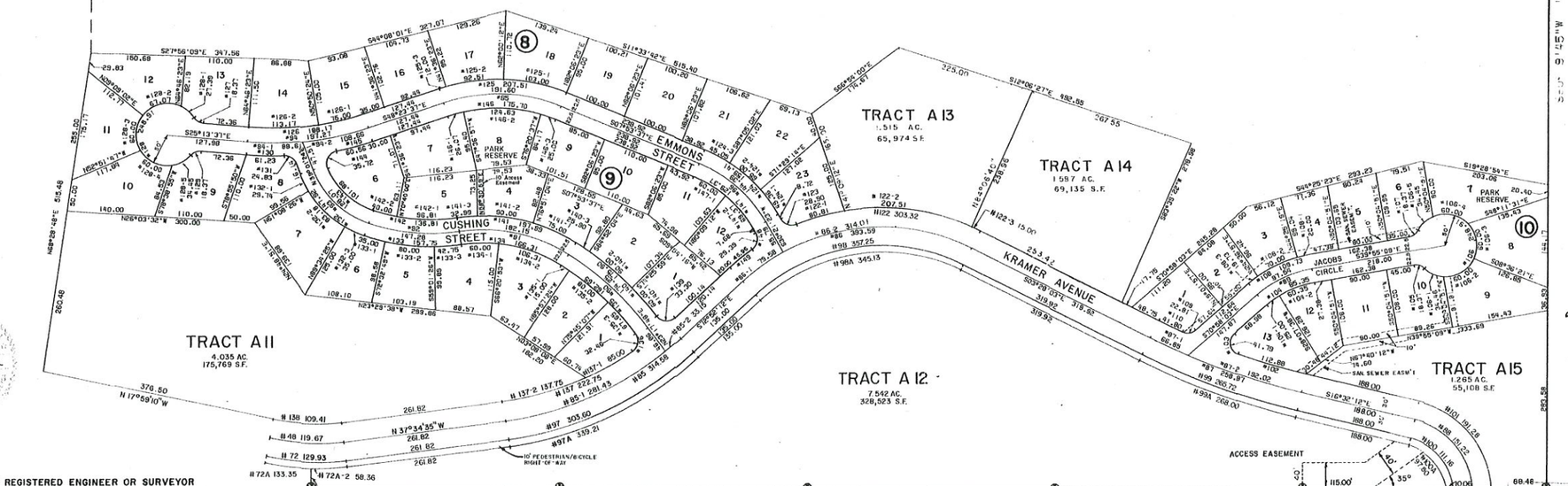
MATCH LINE

N40°38'28"E 789.56

TRACT A1
107.760 AC.
4,694,017 S.F.

PLAT RESTRICTIONS

1. THIS SUBDIVISION IS APPROVED AND RECORDED AS A PLANNED UNIT DEVELOPMENT. THE NUMBER OF ALLOWED HOUSING UNITS ON EACH LOT IS HEREBY NOTED ON SHEET 1 OF 3 SHEETS. THE NUMBER OF UNITS ALLOWED ON THE TRACT AREAS SHALL BE DETERMINED ON A R-1 ZONING DISTRICT BASIS AS COVERED UNDER CITY CODE 22.20.040(H) OR UNDER PLANNED UNIT DEVELOPMENT 22.72.120.
2. PURCHASERS OF DEVELOPMENT- TRACTS SHALL BE REQUIRED TO FURNISH THE CITY AND BOROUGH OF SITKA WITH TOTAL DEVELOPMENT PLANS. SAID PLANS SHALL INCLUDE NUMBER OF UNITS PROPOSED, SIZE, SPACING, AND LOCATION; THE PARKING AREAS AND NUMBER OF SPACES; OPEN SPACES AND PLAYGROUNDS; ACCESS AND EGRESS POINTS PROPOSED ON KRAMER AVENUE; UTILITY PLANS AND PROPOSED TIME FRAME OF COMPLETION. PLANS SHALL BE REVIEWED AND APPROVED BY THE PLANNING COMMISSION AND ASSEMBLY INCLUDING AT LEAST ONE (1) PUBLIC HEARING PRIOR TO ISSUANCE OF ANY BUILDING PERMIT.
3. DEVELOPMENT OF TRACT A-9 SHALL BE LIMITED TO A SMALL COMMERCIAL DEVELOPMENT REQUIRED TO SERVE THE ADJACENT NEIGHBORHOOD. RESIDENTIAL DEVELOPMENT MAY BE ALLOWED IN CONJUNCTION WITH SAID COMMERCIAL USE IF DIRECTLY RELATED SUCH AS OWNER/MANAGER APARTMENTS. AS WITH ALL TRACTS, DEVELOPMENT PLANS MUST BE REVIEWED AND APPROVED.
4. THERE SHALL BE RESERVED, ADJACENT TO THE DEDICATED RIGHTS-OF-WAY SHOWN HEREON, A SLOPE RESERVATION SUFFICIENT TO CONTAIN CUT AND FILL SLOPES OF ONE AND ONE HALF (1-1/2) FEET HORIZONTALLY FOR EACH FOOT VERTICALLY (1-1/2 to 1) OF CUT AND FILL, FOR THE PURPOSE OF PROVIDING AND MAINTAINING LATERAL SUPPORT OF CONSTRUCTED STREET. THERE IS RESERVED TO THE GRANTORS, THEIR HEIRS, SUCCESSORS OR ASSIGNS, THE RIGHT TO REMOVE SAID SLOPES AT ANY TIME UPON PROVIDING AND MAINTAINING OTHER ADEQUATE LATERAL SUPPORT, AS APPROVED BY THE ASSEMBLY OF THE CITY AND BOROUGH OF SITKA.



U.S. SURVEY 2418

THE FIRM OF WAKON REDBIRD & ASSOCIATES DID NOT PERFORM THE BOUNDARY SURVEY OR MONUMENT ANY LOT CORNERS SHOWING ON THIS PLAT.

CERTIFICATE OF REGISTERED ENGINEER OR SURVEYOR

I HEREBY CERTIFY THAT I AM LICENSED TO PRACTICE LANDSURVEYING IN ALASKA, AND THAT THIS PLAT REPRESENTS THE SURVEY MADE BY ME OR UNDER MY DIRECT SUPERVISION, AND THE MONUMENTS SHOWN THEREON ACTUALLY EXIST AS LOCATED, AND THAT ALL DIMENSIONAL AND OTHER DETAILS ARE CORRECT.

January 21, 1983 — William J. Smith
DATE — REGISTERED LAND SURVEYOR

SEAL

CERTIFICATE

STATE OF ALASKA } ss
FIRST JUDICIAL DISTRICT }

I, THE UNDERSIGNED, BEING DULY APPOINTED AND QUALIFIED, AND ACTING ASSESSOR FOR THE CITY AND BOROUGH OF SITKA, DO HEREBY CERTIFY THAT, ACCORDING TO THE RECORDS IN MY POSSESSION, THE FOLLOWING DESCRIBED PROPERTY IS CARRIED ON THE TAX RECORDS OF THE CITY AND BOROUGH OF SITKA. IN THE NAME OF

The City + Borough of Sitka

AND THAT, ACCORDING TO THE RECORDS IN MY POSSESSION, ALL TAXES ASSESSED AGAINST SAID LANDS AND IN FAVOR OF THE CITY AND BOROUGH OF SITKA ARE PAID IN FULL; THAT CURRENT TAXES FOR THE YEAR n/a WILL BE DUE ON OR BEFORE JULY 31 n/a

DATED THIS 25th DAY OF January, 1983, AT SITKA, ALASKA.

Assessor, City and Borough of Sitka

CERTIFICATION OF APPROVAL BY THE BOARD

I HEREBY CERTIFY THAT THE SUBDIVISION PLAT SHOWN HEREON HAS BEEN FOUND TO COMPLY WITH THE SUBDIVISION REGULATIONS OF THE CITY AND BOROUGH OF SITKA PLATTING BOARD, AND THAT SAID PLAT HAS BEEN APPROVED BY THE BOARD BY PLAT RESOLUTION NO. 81-6 DATED April 6, 1981, AND THAT THE PLAT SHOWN HEREON HAS BEEN APPROVED FOR RECORDING IN THE SITKA DISTRICT RECORDING OFFICE, SITKA, ALASKA.
DATE Jan. 18, 1983

Chairman, Platting Board

Glenda L Boddy
Secretary

CERTIFICATION OF APPROVAL BY THE ASSEMBLY

I HEREBY CERTIFY THAT THE SUBDIVISION PLAT SHOWN HEREON HAS BEEN FOUND TO COMPLY WITH THE SUBDIVISION REGULATIONS OF THE CITY AND BOROUGH OF SITKA, ASSEMBLY, AND THAT SAID PLAT HAS BEEN APPROVED BY THE ASSEMBLY AS RECORDED IN MINUTE BOOK 25, PAGE 208/209, DATED May 12, 1982, AND THAT THE PLAT SHOWN HEREON HAS BEEN APPROVED FOR RECORDING IN THE SITKA DISTRICT RECORDING OFFICE, SITKA, ALASKA.

5-3-83 Date — Mayor

City & Borough Clerk

CERTIFICATE OF OWNERSHIP AND DEDICATION

WE HEREBY CERTIFY THAT THE CITY AND BOROUGH OF SITKA IS THE OWNER OF THE PROPERTY SHOWN AND DESCRIBED HEREON AND THAT IT HEREBY ADOPTS THIS PLAN OF SUBDIVISION WITH OUR FREE CONSENT, AND AS THE REPRESENTATIVES DEDICATE ALL STREETS, ALLEYS, EASEMENTS, WALK, PARKS AND OTHER OPEN SPACES TO PUBLIC OR PRIVATE USE AS NOTED.

5-3-83 Date — Mayor

5-3-83 Date — Administrator

NOTARY'S ACKNOWLEDGEMENT

U.S. OF AMERICA
STATE OF ALASKA } ss
CITY AND BOROUGH OF SITKA

THIS IS TO CERTIFY THAT ON THIS 3rd DAY OF May, 19 83, BEFORE ME, THE UNDERSIGNED, A NOTARY PUBLIC IN AND FOR THE STATE OF ALASKA, DULY COMMISSIONED AND SWORN, PERSONALLY APPEARED John E. Dugan and Dolores Guinness TO ME KNOWN TO BE THE IDENTICAL INDIVIDUAL(S) MENTIONED AND WHO EXECUTED THE WITHIN PLAT AND ACKNOWLEDGED TO ME THAT THEY SIGNED THE SAME FREELY AND VOLUNTARILY FOR THE USES AND PURPOSES THEREIN SPECIFIED.

WITNESS MY HAND AND NOTARIAL SEAL THE DAY AND YEAR IN THIS CERTIFICATE FIRST HEREIN WRITTEN.

Dolores Guinness
NOTARY PUBLIC FOR ALASKA

MY COMMISSION EXPIRES 10-31-84

WHITCOMB HEIGHTS SUBDIVISION

CITY & BOROUGH OF SITKA, ALASKA

Dated: Feb. 9, 1980 | Scale: 1" = 100'

A SUBDIVISION OF TRACT A, USS 3806

Surveyed By: REDBIRD & ASSOC, 600 W. 53 RD. AVE., ANCHORAGE, ALASKA | Sheet No. 3 of 3 Sheets

RECORDED - FILED
Sitka, Alaska
DATE May 3, 1983
TIME 1:24 P.M.
Requested by City + Boro
Box 79
Sitka, Ak 99835

Given to City
For tank access

Trail
Parking ?

Phase 1

Phase 2

Phase 3

TRACT A II

4.035 AC.
175,769 S.F.

EMMONS STREET

CUSHING STREET

PARK RESERVE

10' Access Easement

TF

TRAC