Released XXX XX, 2020

REQUEST FOR PROPOSALS
ISSUED BY
THE CITY AND BOROUGH OF SITKA, ALASKA
for
PURCHASE AND DEVELOPMENT OF TRACT A11 WITHIN
WHITCOMB HEIGHTS SUBDIVISION
Month 2020

A. Overview

The City and Borough of Sitka (CBS) owns 4.035 acres of development land located approximately 2.5 miles northwest of downtown Sitka. This property is part of the area generally known as the "Benchlands".

It is the objective of the CBS to sell Tract A11 for the purpose of residential development.

It is anticipated that proposers will request the flexibility that can be granted through the Planned Unit Development (PUD) subdivision process. The development parameters will be reflected on the approved subdivision plat.

There is PUD designation on the portion of the zoning map that covers the area. This PUD designation was used to list the types of structures that may be placed on specific parcels.

Prior to submitting proposals, submitters are strongly encouraged to review the Planned Unit Development chapter of Sitka subdivision regulations. A substantial amount of flexibility is offered through the code section. Proposed development plans that are submitted may recognize this flexibility and incorporate innovative components.

Zoning and subdivision regulations can be found online in the Sitka General Code at www.cityofsitka.com.

B. Property Characteristics

Between 1985 and 1987 approximately 13,300 feet of gravel surface roads were constructed. Kramer Avenue is the main collector street running lengthwise through the property for 1.17 miles.

Much of the gravel road system was constructed without utilities being installed. The roads have minimally maintained since construction, but the roads remain generally sound with minimal environmental damage.

In 2009 the CBS constructed a new 1 million gallon potable water storage tank on the Benchlands. The water tank is located such that it can provide gravity water service to the entire Benchlands property.

C. Existing Utilities and Construction Requirements

Water, sanitary sewer, and electrical utilities have been extended in certain areas of Whitcomb Heights. Road and storm sewer improvements have also been extended. Kramer Avenue is an improved two lane gravel road just past Emmons Street.

Substantial storm drainage improvements have been made along Kramer Avenue, Jacobs Circle, and Emmons Street. Due to the importance of accommodating drainage and stream flows, requirements are outlined in Section D of this RFP.

A sixteen inch water main line extends up Kramer Avenue adjacent to an eight inch tank fill water line. There is an eight inch water main in Jacobs Circle. A sixteen inch and an eight inch tank fill water line also extend past Tracts A12, A13, and A14 up to the water tank on Emmons Street. There is a privately-owned water main in Kramer Avenue extending from Emmons Street to the Tisher Subdivision; any connections to this main must be approved by both the owner of the water main and the CBS. CBS Utility Connection Permitting and fees will apply along with any "late-comer fee" that may be assessed by the owner of the main.

The eight inch sanitary sewer line in Kramer Avenue branches off to serve Jacobs Circle. The Kramer line extends to the beginning of Emmons as well. Sanitary sewer is not present in either the Cushing or Emmons Street right of ways.

Electrical lines are extended in Kramer Avenue to the Emmons intersection and up Emmons to the water tank. 1. Electric infrastructure was installed recently by the Electric Department and the developer of Tisher Subdivision within the easement of the property that is directly across Kramer Avenue from the subject property. Tract A11 could be served from a primary junction that was installed during development of the Tisher Subdivision, and could also connect to existing electrical infrastructure at the entrance to Emmons Street at a later date to accommodate future development.

The water and electrical lines tend to be on the upland side of streets such as Kramer and Emmons. The sanitary sewer line, in Kramer, is on the seaward side of Kramer Avenue.

The City and Borough of Sitka subdivision regulations require that, lots in major subdivisions shall not be sold unless served by utilities and roads that are constructed to municipal standards. The municipality must also accept those roads and utilities for maintenance prior to the sale of any individual lot.

All utilities must be sized and constructed to accommodate development adequate for the proposed development. The construction of municipal utilities shall meet the standards of the CBS and the State of Alaska, Department of Environmental Conservation.

The proposed location and dimensions of utilities shall be shown in the proposed development plan so they can be evaluated along with the rest of the proposal elements.

For each of reference, the descriptions above use a relative compass. Relative north is uphill, east is towards town, and west is towards the Channel Club.

D. Drainage Improvement Requirements

Development of this land may increase stormwater runoff onto properties downstream. If sold, the developer of this property will be required to adhere to CBS Stormwater Design Standards and complete a comprehensive hydrology study completed by a State of Alaska licensed Civil Engineer and accepted by CBS Department of Public Works.

E. Wetlands and Binding Plat Notes

A wetlands delineation study has been completed for the property; the 2008 Whitcomb Heights Subdivision Wetland Delineation Report with Appendix A – Figures are included as attachments to this RFP. This is provided as informational only: CBS makes no warranties, either expressed or implied, nor assumes any liability whatsoever regarding the environmental aspects of the parcel to include without limitation: the soil conditions, water drainage, presence of wetlands, physical access, condition of improvements, natural or artificial hazards which may or may not exist, or the merchantability, suitability or profitability of the parcel or improvements for any use. It is the responsibility of the proposers to investigate and determine existing or pending regulations, restrictions and potential defects which would affect the parcel. The feasibility and costs of construction, permitting, engineering, replatting, etc., should be determined by the proposer, and will be borne solely by the selected developer.

Binding plat notes are in effect for the Whitcomb Heights Subdivision. These plat notes are regulatory in nature and have direct impacts on how the properties can and cannot be developed. The plat is provided in the Appendix of this RFP.

Any modification or subdivision of the parcels will trigger the requirement for a new subdivision plat. Additional plat notes may be required prior to recording. Any new surveying/subdivision of this property will be done at the sole expense of the selected developer.

F. Requirements for Proposals

It is the goal of the CBS for private developers to purchase these parcels and develop them for a mixture of housing types and income levels. Development must occur in a timely manner with total build out of the project expected within **X** years from the date of purchase.

Developers submitting Proposals must include the following requested information arranged in this order:

1. Narrative Statement of Qualifications of your Firm.
2. List of projects previously completed of a similar nature including a construction cost and completion date for each project.
3. Submit an organizational chart showing a designated project manager and staff.
4. Statement of Firm’s experience working in Southeast Alaska or a similar environment.
5. Detailed proposed lot and structure layout with approximate dimensions of parcels, buildings, and improvements.
6. Details on proposed utilities and drainage improvements to be constructed along with notations as to whether they will remain in private lands or dedicated for public use.
7. Concept narrative of your Development Plan for the project including estimated time of completion, mixture of housing types and expected income levels of purchasers.
8. Sources of funding for the project and a tentative development timetable. In the event the project is contingent on funding from public housing programs, the deadline for application submittals and tentative award dates shall be provided.
9. Signed statement that plat notes for the Whitcomb Heights Subdivision have been reviewed and understood.
10. Proposed purchase price.
11. Responses are limited to no more than 15 pages.

Responses to this request for proposals will be evaluated and ranked based on the following criteria (100 points total):

1. Development Plan (0 to 30 points)
   Does the Proposal address the CBS's goals of timely providing a mixture of housing types? Is Developer qualified to perform the work?

2. Time of Completion (0 to 20 points)
   What is the timeframe to bring lots to a saleable condition?

3. Purchase Price (0 to 50 points)
   Points for Purchase Price shall be awarded based upon the following formula:
   (Your Purchase Price/Highest Purchase Price) X 50 points

G. Submissions and Inquiries

Submit five (5) copies of your Proposal(s) to:

City and Borough of Sitka, Municipal Clerk
100 Lincoln Street,
Sitka, Alaska 99835

The exterior of packaging, containing the proposals, shall be clearly marked **Tract A11 Benchlands Development Proposal**.

Proposals will be received until X**:00 p.m. local time XXXday, XXX XX, 20XX**.

As a part of the review of proposals, the City and Borough may, at its discretion, require the submittal of additional detailed information on any or all projects.

The City and Borough of Sitka has not, as of the date of the preparation of this RFP, established a review timetable.

Prior to the submittal, inquires may be directed to Amy Ainslie, Planning Director, City and Borough of Sitka at planning@cityofsitka.org. While phone inquiries can be made to (907) 747-1815, emails are requested to allow for tracking of potential questions.

The City and Borough of Sitka reserves the right to modify this Request for Proposals at any time. The City and Borough further reserves the right to evaluate the proposals in any manner the City and Borough deems appropriate.

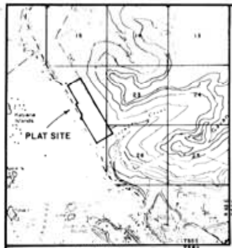
The City and Borough of Sitka reserves the right to accept or reject any and/or all proposals, to waive irregularities or informalities in the proposals, and to negotiate a contract with the respondent that best meets the selection criteria.

The materials provided in this RFCP and appendices are provided for informational purposes only. Potential submitters shall take responsibility for independently verifying all information. Any sale or lease of the land will be in the condition "as is". Any buyer will assume the entire risk as to the quality and suitability of the land for their intended purpose(s).

Outline of Appendices
Aerial Imagery
Plat 83-17 Whitcomb Heights Subdivision
Previous Concept Planning
Whitcomb Heights Subdivision Wetland Delineation Report and Appendix A – Figures
Shannon & Wilson 2016 Report – South Kramer Avenue Landslide Report


Brightman Street
Kramer Avenue
Cushing Street
Emmons Street
Halibut Point Road
Jacobs Circle
Kramer Avenue

Emmons Street
Cushing Street
Emmons Street
Kramer Avenue
Kramer Avenue



NUMBER	RADIUS	ARC	DELTA	TAN	CHORD	CHORD BEARING
48	350.00	119.67	19°35'25"	60.43	119.09	N23°46'53.0"W
72	380.00	129.93	19°35'25"	65.60	129.30	N23°46'53.0"W
72A	390.00	133.35	19°35'27"	67.33	132.70	N08°11'27.0"W
72A-2	390.00	58.36	8°34'27"	29.23	58.30	N13°12'24.0"W
85	510.68	324.58	35°17'37"	162.46	319.63	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	N71°00'38.0"E
86	324.93	393.59	69°24'09"	225.00	369.96	N18°10'07.5"W
86-1	324.93	79.56	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	176.25	21°10'00"	88.13	175.26	N28°12'48.0"E
91	256.75	182.15	40°20'00"	95.03	178.41	N28°02'12.0"W
92	316.45	147.29	26°40'00"	75.00	145.96	N24°52'12.0"W
93	145.13	126.07	50°33'36"	68.54	121.95	N13°44'36.0"E
94	483.88	197.27	23°10'00"	100.00	195.93	N36°48'37.0"E
94-1	483.88	88.61	10°29'24"	44.43	88.49	N30°25'49.0"E
94-2	483.88	108.66	12°45'36"	54.55	108.43	N42°00'49.0"E
95	271.06	191.60	40°30'00"	100.00	187.64	N28°08'37.0"E
96	216.28	144.39	38°25'00"	75.00	141.72	N21°13'51.0"W

NUMBER	RADIUS	ARC	DELTA	TAN	CHORD	CHORD BEARING
97	343.41	303.60	50°39'10"	162.52	293.80	N20°50'45.0"W
97A	550.68	339.21	35°17'37"	175.18	333.88	N55°13'24.0"E
98	294.93	357.25	69°24'09"	204.23	335.80	N18°10'08.0"E
98A	294.93	345.13	69°24'09"	197.30	324.42	N18°10'07.0"E
99	1164.91	265.72	13°04'09"	133.44	265.14	N10°00'07.0"E
99A	1174.91	268.05	13°04'09"	134.58	267.42	N10°00'07.0"E
100	90.00	111.16	70°45'55"	63.92	104.23	N18°50'46.0"W
100A	80.00	97.80	70°02'46"	56.06	91.82	N18°29'10.0"W
101	150.00	191.28	73°03'46"	111.12	178.58	N19°59'41.0"E
102	1104.90	112.88	5°51'12"	56.49	112.83	N13°36'36.0"W
103	20.00	41.79	119°42'47"	34.44	34.59	N69°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	248.93	285°14'01"		60.71	N50°04'50.5"E
106-1	50.00	34.46	39°29'03"	17.94	33.78	S03°02'40.5"E
106-2	50.00	60.00	68°45'18"	34.21	56.46	S67°09'51.0"E
106-3	50.00	60.00	68°45'18"	34.21	56.46	N55°03'51.0"E
106-4	50.00	60.00	68°45'18"	34.21	56.46	N10°40'27.0"W
106-5	50.00	34.45	39°28'04"	17.94	33.78	N72°47'38.0"W
107	20.00	18.37	52°37'01"	9.89	17.73	N66°13'39.5"W
108	202.50	109.23	32°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

NUMBER	RADIUS	ARC	DELTA	TAN	CHORD	CHORD BEARING
108-2	202.50	70.00	19°48'22"	35.35	69.65	N55°28'52.0"W
108-3	202.50	19.73	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
111	354.93	305.33	49°17'51"	161.62	296.00	N27°50'59.5"W
122	354.93	305.33	49°17'51"	161.62	296.00	N27°50'59.5"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	N22°38'16.0"E
122-3	354.93	15.00	02°25'17"	7.50	15.00	N04°40'41.5"W
123	20.00	28.90	82°47'18"	17.61	26.45	N12°02'26.0"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"E
125-1	293.56	103.00	20°06'11"	52.03	102.47	N17°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"E
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	N64°46'22.5"W
128-1	50.00	27.39	31°23'17"	14.03	27.05	N11°41'44.5"W
128-2	50.00	67.07	76°51'07"	39.67	62.15	N42°25'26.0"W

NUMBER	RADIUS	ARC	DELTA	TAN	CHORD	CHORD BEARING
128-3	50.00	60.00	68°45'18"	34.21	56.46	N64°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°37'00"	9.89	17.73	N51°32'07.0"E
130	510.38	61.21	6°52'24"	30.65	61.19	S24°29'49.0"E
131	20.00	24.83	71°07'25"	14.30	23.26	N07°27'41.5"W
132	167.63	147.92	50°33'36"	79.17	143.17	N13°44'36.0"E
132-1	167.63	29.74	10°09'50"	14.91	29.70	N33°56'45.0"E
132-2	167.63	83.18	28°25'59"	42.47	82.34	N14°38'34.5"W
132-3	167.63	35.00	11°57'47"	17.56	34.94	N05°33'18.5"W
133	338.95	157.75	26°40'00"	80.33	156.33	N24°52'12.0"E
133-1	338.95	35.00	5°54'59"	17.52	34.98	N14°29'41.5"E
133-2	338.95	80.00	13°31'23"	40.19	79.81	N24°12'52.5"E
133-3	338.95	42.75	7°13'38"	21.41	42.73	N34°35'23.0"E
134	236.25	166.31	40°20'00"	86.77	162.90	N18°02'12.0"E
134-1	236.25	60.00	14°33'05"	30.16	59.84	N30°55'39.5"E
134-2	236.25	106.31	25°46'55"	54.07	105.41	N10°45'39.5"E
135	449.18	162.65	20°44'50"	82.23	161.76	N12°50'13.0"E
135-1	449.18	15.00	1°54'48"	7.50	15.00	N03°05'12.0"E
135-2	449.18	80.00	10°12'17"	40.11	79.90	N09°03'44.5"E
135-3	449.18	67.65	8°37'45"	33.89	67.59	N18°39'45.5"W
136	20.00	32.46	92°59'42"	21.07	29.01	N64°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	N55°03'43.0"W

CERTIFICATE

STATE OF ALASKA
FIRST JUDICIAL DISTRICT } SS

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

U.S. SURVEY 3565 (NATIONAL FOREST SERVICE)

S29°42'03"E 2412.97

S29°42'03"E 1450.14

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

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°02'43.0"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	N34°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°26'00.0"W
143	122.63	101.89	47°36'20"	54.09	98.98	N12°15'58.0"E
144	20.00	35.72	102°20'10"	24.05	31.16	N87°14'13.0"E
145	510.38	60.56	6°47'55"	30.32	60.53	S64°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°00'34"	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°30'35"	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	354.93	45.96	7°25'10"	23.01	45.93	N69°09'37.0"W

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(B) 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.

TRACT A1
107.760 AC.
4,694,077 S.F.

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 6 PAGE 202/303, 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

CITY AND BOROUGH OF SITKA

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.

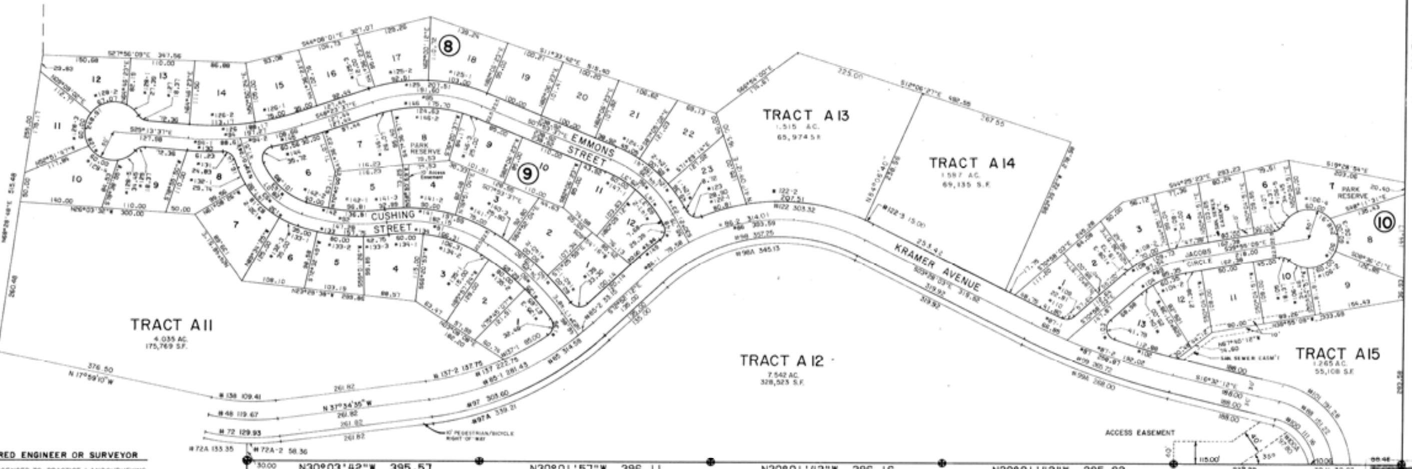
5-3-83
Date
Mayor

5-3-83
Date
Administrator

SHEET 2 OF 3

MATCH LINE

TRACT D U.S. SURVEY 3806



TRACT A13
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65,974 S.F.

TRACT A14
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TRACT A11
4.035 AC.
175,769 S.F.

TRACT A12
7.542 AC.
328,523 S.F.

TRACT A15
1.265 AC.
55,106 S.F.

NOTARY'S ACKNOWLEDGEMENT

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

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. Dapcevich & Jim Gutierrez 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.

NOTARY PUBLIC FOR ALASKA

MY COMMISSION EXPIRES 10-31-84

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 — DATE
William S. Smith — REGISTERED LAND SURVEYOR

SEAL

N30°03'42"W 395.57 — N30°01'57"W 396.11 — N30°01'42"W 396.16 — N30°01'42"W 395.93 — N30°02'12"W 396.01

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

U.S. SURVEY 2418

FILED
Sitka REC. DIST.
DATE May 3 1983
TIME 1:24 P
Requested by City & Boro
Address Box 79
Sitka, AK 99835

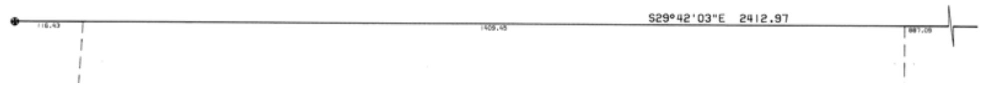
WHITCOMB HEIGHTS SUBDIVISION

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

PLAT 83-17

U.S. SURVEY 3565



NUMBER	RADIUS	ARC	DELTA	TAN	CHORD	CHORD BEARING
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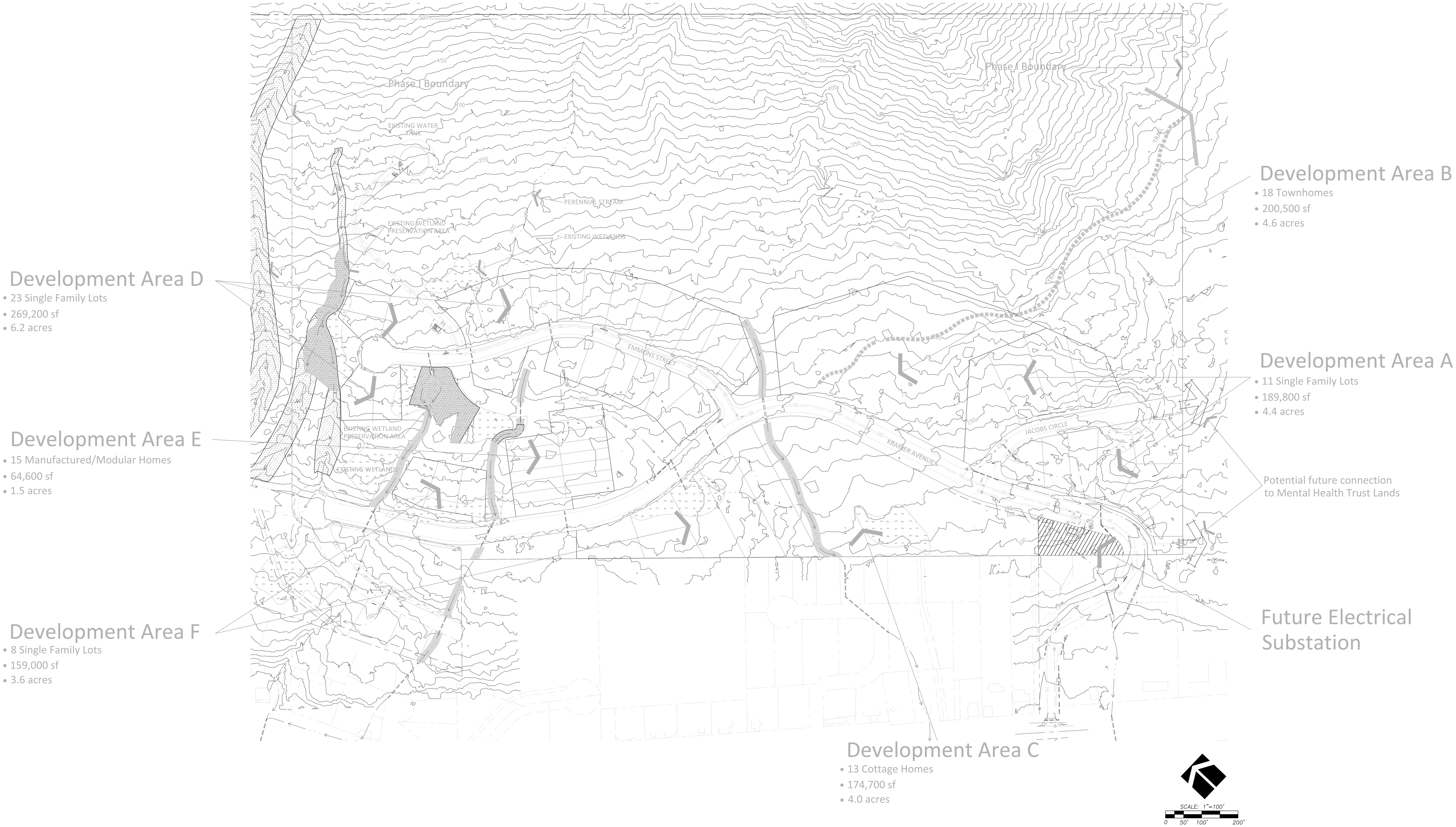
9	355.39	211.93	34°10'00"	109.22	208.80	N20°16'19.0"W
9-1	355.39	81.93	13°12'30"	41.15	81.75	N09°47'34.0"W
9-2	355.39	130.00	20°57'30"	65.73	129.28	N26°52'34.0"W



Whitcomb Heights Subdivision, Phase 1 Development Plan

City and Borough of Sitka, Alaska

Robert W. Droll, Landscape Architect, PS
USKH

8-19-2010

Whitcomb Heights Subdivision
Wetland Delineation
Project No.: 90570

WETLAND DELINEATION REPORT

Prepared for
City and Borough of Sitka
100 Lincoln Street
Sitka, Alaska 99835

July 2008

Prepared by
USKH Inc.
2515 A Street
Anchorage, Alaska 99503

SUMMARY

In August and October 2007, and May 2008, USKH Inc. (USKH) conducted a wetland delineation at the Whitcomb Heights subdivision in Sitka, Alaska for the City and Borough of Sitka (CBS). This survey delineates and classifies wetland and upland areas within the CBS property boundary and additional CBS rights-of-ways that would be utilized for drainage easements and utilities (delineation boundary). Wetland determinations herein follow the U. S. Army Corps of Engineers Wetland Delineation Manual (1987) as well as the Alaska Regional Supplement (2007) three-tier approach. USKH investigated vegetation, soils, and hydrology at all test plot locations. USKH also documented relatively permanent waterbodies within the subdivision and followed them to their terminus wherever practicable.

The project site is located along a benched area above Sitka Sound approximately two miles north of downtown Sitka on Baranof Island. The subdivision is bound on the east by the Tongass National Forest and on the west by housing developments along Halibut Point Road. The subdivision can be accessed from Halibut Point Road via Kramer Avenue to the south or Harbor Mountain Road to the north. Numerous drainages flow through the subdivision, and forested wetland/upland mosaics exist along stream corridors and/or where the topography and soils allow hydric conditions to persist throughout the growing season. Of the approximately 200-acre delineation boundary, USKH has determined that 5.2 acres are wetlands or Waters of the U.S. All wetlands found during field investigations were determined to be hydrologically connected to the Sitka Sound, and therefore under the jurisdiction of the USACE per Section 404 of the Clean Water Act. Development of the subdivision will be coordinated with the USACE and follow the guidelines outlined in Special Public Notice SPN 2005-8: *Evaluation and Review of New Subdivisions Developed Completely or Partially in Wetlands and Other Waters of the United States.*

TABLE OF CONTENTS

APPENDICES

1 INTRODUCTION

1.1 Site Location

The project area is located within the Whitcomb Heights subdivision, locally known as the Benchlands, named such because it sits on a bench that ranges in elevation from 100 to 300 feet above sea level, with steep grades both above and below. The bench runs parallel to the shoreline of Sitka Sound, on the west side of Baranof Island, approximately two miles north of downtown Sitka. The subdivision property is bound on the east by the Tongass National Forest and on the west by housing developments along Halibut Point Road. The subdivision can be accessed from Halibut Point Road via Kramer Avenue to the south or Harbor Mountain Road to the north. Sitka is within a maritime climatic zone, with cool summers, mild winters, and above average precipitation. The project area is located at 57º03'50" North latitude and 135º21'43" West longitude within Sections 22, 23, 26, and 27; Township 55 South; Range 63 East; Copper River Meridian. Figure 1 shows the location and vicinity of the project area (All figures are located in Appendix A).

1.2 Project Description

The Whitcomb Heights subdivision has been a concept in development off and on for 30 years. After subdividing the land into building lots, park preserves, and street rights-of-way (ROW), construction contractors built road bases for the subdivision in the early 1980's. Work ceased shortly thereafter, and trees and brush now crowd the area. Figure 2 shows an aerial photograph of the project area as it exists today. The old roads can be distinguished by vegetation color changes where vegetation has overgrown the roadbed. The City and Borough of Sitka (CBS) recently received a State grant to start the design of the subdivision infrastructure, including access roads, and water and sewer utilities. The CBS expects to acquire additional funding in the coming years to construct the subdivision utilities and roads, and begin the sale of lots. Major components of the project include:

- Constructing paved road surfaces and widen existing road bases for sidewalks.
- Constructing water and sewer systems with extensions to individual subdivision lots.
- Constructing stormwater systems that maintain natural drainage patterns while not overwhelming existing downstream drainage systems.

The majority of this project will fall within the existing road base. Material for the project is expected to come from existing local material sites, and the existing road base will be used for haul routes and staging areas.

The purpose of this analysis is to determine wetland locations within the delineation boundary, in support of the design of the subdivision infrastructure. The City of Sitka received a permit (POA-2007-1291) for a separate project that included the construction of a water tank and access road located within the boundaries of the subdivision. The current delineation area is approximately 200 acres. This report includes descriptions of the delineated wetland and upland habitats throughout the site.

2 BACKGROUND INFORMATION

2.1 Existing Wetland Information

The U.S. Fish and Wildlife Service, National Wetland Inventory (NWI) has mapped the wetlands in the project area (http://wetlandsfws.er.usgs.gov/wtlnds/launch.html). The NWI identifies large swaths of freshwater forested/shrub wetlands intersecting the subdivision. Subdivision construction downgradient (west) of the Benchlands area may have changed the size and extents of the wetlands shown on the NWI mapping. The NWI identifies these wetlands as *Palustrine Forested Needle Leaved Evergreen Saturated* (PFO4B). See Appendix C for NWI mapping of the project site. A feasibility study completed by Kean and Associates in 2004 for CBS states that no large wetland or open water areas were observed on the site. The study states that localized areas of skunk cabbage were observed during site investigations, indicating the presence of forested wetlands within the subdivision. No detailed wetland investigation or mapping effort was performed for these areas as part of the study (Kean and Associates, 2004).

2.2 Existing Vegetation Information

The *Alaska Vegetation Classification* handbook identifies the project area as Coastal Forest, characterized as being dominated by open evergreen needle leaf forests interspersed with mixed conifers (Viereck et al., 1997). The Kean feasibility study identifies the study area as being covered with old growth hemlock and spruce forest, intermixed with stands of Red alder (Kean and Associates, 2004). See Section 4 for detailed descriptions of the vegetation communities found in the project area during delineation fieldwork.

2.3 Existing Soils Information

The U.S. Department of Agriculture Natural Resource Conservation Service (NRCS) soil surveys do not provide detailed coverage of the project area. The Exploratory Soil Survey of Alaska gives general information about the soils in the project area (NRCS, 1979). According to the Exploratory Soil survey, the majority of the soils in southeast Alaska are loamy, gravelly Spodosols, typical to environments with heavy precipitation. In these places, iron and other minerals are leached through the organic soil horizon, becoming deposited in the lower soil layers. The survey also classifies the soils within the Benchlands subdivision as Typic Cryohumods and Humic Cryorthods. These soils are located in forested areas and are comprised mostly of volcanic ash in varying thicknesses and can be well or poorly drained (NRCS, 1979).

The Kean subdivision feasibility study is consistent with the soil survey, describing the soil layers as volcanic ash parent material overlain by organics of varying thicknesses. The feasibility study also states there may be historic (greater than 300-500 years old) slide debris soils in the subdivision based on records from the original 1985 construction of Kramer Avenue. These construction records indicate a large amount of overexcavation took place in order to build portions of Kramer Avenue due to what was called “slide debris” (Kean and Associates, 2004). Construction records do not identify the specific location where the overexcavation took place.

Golder Associates Inc. conducted a Geotechnical Investigation during the summer of 2007. The investigation found evidence of an ancient landslide in areas both east and west of the Emmons cul-de-sac that is causing a perched water table. According to the Golder report, areas with evidence of ancient landslides or disturbed volcanic ash tended to be poorly drained (Golder, 2008). See Appendix C for a copy of the Geotechnical Report. See Section 4 for detailed descriptions of soils found during fieldwork.

2.4 Existing Hydrology Information

The existing site work completed as part of the Kean feasibility study outlines several drainages flowing through the subdivision based on field observations of flow in neighborhoods down gradient of the area. Many of the drainage pathways within the subdivision are not well defined and stormwater run off is carried downstream by a small number of streams. During rain events, flows within these drainages can become high, and evidence of erosion is present at culvert inlets and across portions of Kramer Avenue (Kean and Associates, 2004). Aerial and satellite photography of the region show Cascade Creek to the south of the project area, an unnamed stream to the north, and Sitka Sound to the project's west. USKH completed a Hydrology Study of the Whitcomb Heights Subdivision in March 2008. The study described drainage characteristics of the subdivision and makes recommendations for culvert design throughout the subdivision. Appendix C contains a copy of the Final Hydrology Study. Results of this study were used in combination with the results of the wetland delineation to determine the hydrologic connection (if any) between the wetlands found within the subdivision and Sitka sound to the project's west.

3 METHODOLOGY

Methodology for this wetland delineation followed the process established in the U.S. Army Corps of Engineers (USACE) *Wetland Delineation Manual* (1987) and the *Alaska Regional Supplement* (2006). Methodology followed the three-tiered survey approach established in the USACE manual and included the examination of vegetation, soil, and hydrology at all wetland delineation test plot (TP) sites. Three separate site visits were completed from August 2007 to May 2008. An initial field visit took place on August 14 and 15, 2007, to establish a baseline of vegetation, soils, and hydrology within the subdivision. The initial site visit took place during the growing season for the Coastal Western Hemlock- Sitka Spruce Forest region. Weather at the project site during the initial investigation was sunny and warm. Temperatures averaged around 70 degrees Fahrenheit. August 2007 conditions in Sitka were relatively dry. Only 0.5 inches of precipitation was recorded at the Sitka airport between August 1 and August 14, 2007, with a total of 2.11 inches for the entire month of August. Average August precipitation for the area is 6.77 inches (http://www.wrcc.dri.edu/summary/climsmak.html). A second site visit took place on October 12 and 13, 2007. Weather during the October visit was rainy and cold with temperatures averaging around 40 degrees Fahrenheit. The third site visit took place May 12-16, 2008. Weather during the May site visit was rainy with temperatures in the upper 50s to low 60s (degrees Fahrenheit). Sara Lindberg and Jeff Raun, USKH environmental analysts, conducted the August field investigation; Sara Lindberg conducted the October investigation, and Sara Lindberg and Kacy McDonnell conducted the May trip.

3.1 Field Preparation

Prior to the initial field visit, Lindberg used existing background information and mapping to assess the project area and to identify areas that needed further study or field verification. Thick vegetation adjacent to the roadway visible on the aerial photography made it difficult to identify open areas or drainages that may contain wetlands (Figure 2). An initial site reconnaissance was conducted in the delineation area on August 13, 2007, to ascertain the diversity of the vegetation communities within the subdivision and identify areas where wetland verification and mapping were needed. Subsequent visits were prepared for by reviewing the previous visit's data and planning delineation efforts around problem areas or areas where further study was needed to understand project impacts.

3.2 Wetland Delineation

The site presented difficult field conditions. Steep terrain, thick vegetation and numerous stream channels and drainages made navigation of the subdivision difficult, and in places, impossible. After the first initial site visit, wetland delineation efforts were prioritized into three categories.

1. High priority areas: High priority areas are identified as areas where previous delineation efforts identified wetlands, or where contours show the area may be flat and thus merit further investigation. High priority areas also included areas that would be directly impacted by construction of roadway improvements.

2. Relatively Permanent Waterbodies (RPW) (flowing for at least three months a year) and their drainage corridors: RPWs were walked to the extent practicable to identify the presence of wetland buffers adjacent to the drainage.

3. Isolated or "pocket wetlands": Transects were walked where practicable to establish a pattern of vegetation along a particular elevation gradient. Efforts were focused on finding localized areas not covered in the high priority areas where benching and hydrology may create wetland pockets.

Each subsequent field visit built on the knowledge of the last, helping to predict where wetlands were likely to occur based on contours and streams. Global Positioning System (GPS) coordinates identified prior to field work were located for each priority area. Delineators began by navigating via GPS to each priority area. General notation and photographs of site characteristics, vegetation and hydrology were taken to assess the different vegetation communities present at each location. Test Plots (TP) were recorded for each community type within the priority area. When investigating drainage corridors and transects, test plots were taken at breaks in vegetation communities as the team moved along the corridor. Vegetation communities well represented in other TPs were documented with field notes and photographs referring to the representative TP. As transects were walked through the different vegetation communities, it became apparent which communities were likely to contain wetlands, and delineation effort was concentrated in these communities.

Methodology at each TP followed the three-tiered survey approach established in the USACE manual including the examination of vegetation, soil, and hydrology at each site. A survey protocol document was sent the USACE prior to the May 2008 field visit that outlined delineation methods and showed areas of high priority and areas where transects would be walked. After the May visit was complete, Figures 3-5 of the protocol document were revised to reflect actual transects and pathways the delineation team walked as they surveyed the area. See Appendix C for the survey protocol document and further detail of delineation methods. TP data forms and representative photographs of the wetland areas can be found in Appendix B.

3.3 Data Analysis and Mapping

Mapping of wetland delineation boundaries while in the field was completed by walking the boundary with a GPS unit where vegetation and terrain permitted. In areas where vegetation was too thick or terrain too steep to make mapping practicable, the wetland boundary was drawn on the map in the field using contour and other landmark data. Drainages were walked where practicable, and flow paths were marked with a GPS unit.

After returning to the office, field investigators reviewed data sheets and correlated field data with site photographs and GPS locations. Wetland areas were then assigned a classification using data collected from the field visit as well as existing NWI mapping and *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al., 1979). GPS points used to identify TP locations were correlated with known points on the ground from earlier survey efforts to verify their locations. Wetland boundaries were mapped using GPS information and other notes taken in the field. Wetland boundaries and locations of wetland delineation TP are shown on Figures 3, 4 and 5.

4 RESULTS AND DISCUSSION

4.1 Wetland Habitat Types

The Benchlands subdivision consists of old growth Western hemlock forests, with numerous streams and drainages flowing throughout the benched area. One wetland habitat type exists within the delineation area. Forested wetland/upland mosaics (PFO4/Upland) exist along drainage pathways and in locally benched areas. The ratio of wetland to upland within a particular mosaic area is primarily driven by the local microtopography of the specific location. Some mosaics have a larger percentage of wetlands than others, depending on how much of the area is made up of microtopographic "lows". PFO4/Upland mosaics make up approximately 5.2 acres of the area within the subdivision boundary. See Appendix B for TP data sheets and representative photos of this wetland type. Figures 3, 4 and 5 show the locations and extents of wetlands relative to the proposed project components.

4.1.1 Palustrine Forested Needle-Leaved Evergreen Wetland/Upland Mosaics (PFO4/Upland)

PFO4/Upland mosaics are located along stream channels and low areas throughout the project. Western hemlock (*Tsuga heterophylla*), Western Redcedar (*Thuja plicata*) and Sitka spruce (*Picea sitchensis*) as well as the shrub species Red huckleberry (*Vaccinnium parvifolium*) and False azalea (*Menziesia ferruginea*) dominate the overstory and exist on the microtopographic "highs". Wetland lows are sparsely vegetated with Skunk cabbage (*Lysichiton americanum*) and mosses amid standing or flowing water. Forested wetland/upland mosaics within areas where ancient land slide debris were found have a slightly different vegetation community than the typical mosaics throughout the rest of the subdivision. These areas are located west of the Emmons cul-de-sac above and below a natural hill formation in the vicinity of TP 2, TP 66 and TP 67. This area is typically more flat and contains an open forest canopy with numerous large, standing dead trees. While the shrub and herb layers remain largely the same, tree and sapling species within the slide debris areas appear to be stressed and/or dying.

Soils in wet portions of the PFO4/Upland mosaics consist of organic layers of varying thickness underlain with layers of volcanic ash and cobbles. Organic layers measure eight inches in areas where water flows frequently and greater than 22 inches in areas where ancient slide debris were found. Saturation and presence of the water table within the soil pit occurs within all wetland/upland mosaics, but varies greatly depending on the location of the soil pit within the mosaic topography. Soils within low areas of the mosaic tend to have thicker organic layers and are saturated to the surface, whereas soils a few feet away in a slightly higher location are not saturated. In addition, soils in the microtopographic highs have numerous large roots within the organic soil horizon belonging to the tree and shrub layer. In many places, the microtopographic highs are made up entirely of roots, the trees growing on top of their own buttressed root system to escape inundation. Soils in these areas consist entirely of decomposing wood.

Hydric soil indicators were difficult to identify depending on the weather conditions and time of year the data was taken. Three separate site visits over the months of May to October provided an overall survey of the soil conditions within the subdivision. During the August site visit, saturation was sporadic partially due to local microtopography and partially due to the unusually dry weather. During the October site visit, soils in all wetland mosaic "lows" were saturated. Some soils were oversaturated due to the lack of plant growth during the fall season to assist in the uptake of the water. The May site visit provided a balanced overview of the soils within the subdivision.

Hydrology indicators were the main driver in determining wetland boundaries for the project area. Obvious drainage patterns and changes in microtopography were visible throughout the subdivision. During the August site visit, soil saturation was not present for all wetland areas identified due to the unusually dry conditions. Wetland hydrology indicators in these cases were identified using obvious drainage patterns, microtoporagraphic relief, and sparsely vegetated concave surface indicators. Oversaturation of the soil during the October site visit made hydrology indicators unreliable for some of the TPs. In these cases, data sheets from similar areas found during the August delineation were used to verify the hydrology of the wetlands visited in October. Hydrology indicators during the May trip were typical for conditions in south east Alaska. One area considered wet during the August 2007 site visit was later determined to be upland during the May 2008 site visit based on the lack of hydric soil and hydrology indicators.

4.2 Upland Habitat Types

The Benchlands subdivision supports great expanses of Western hemlock forests. Delineators used the *Alaska Vegetation Classification* System (Viereck et al., 1997) to classify upland habitats. Uplands make up approximately 195 acres within the 200-acre delineation boundary. Three different vegetation communities exist within the delineation boundary. *Open Western Hemlock-Sitka Spruce Forests* occur throughout the majority of the area, generally occurring on slopes less than 30 percent, and are comprised of an open forest canopy of Western hemlock and Sitka spruce with a dense shrub layer of False azalea and Red huckleberry. It is within this forest type that all the wetlands within the subdivision were found. Forests occurring on the steeper slopes (greater than 30 percent) within the subdivision are classified as *Closed Western Hemlock-Sitka Spruce-Western Redcedar Forest* and contain a closed forest canopy, with almost no shrub layer, and very little ground cover except for a thick layer of forest floor mosses. These closed forest areas contain large expanses of downed woody debris that are covered with moss. The closed canopy areas have shallower soils, and USKH delineators determined after the August and October site visits that wetlands were not likely to occur in this habitat type. The third upland vegetation type within the subdivision is *Closed Red Alder Forest*. These areas exist along and include the disturbed ground of the existing subdivision roads, and in most cases, are growing out from the road bed itself. The understory in these areas consists of almost exclusively Sitka spruce saplings, which also grow out of the rocky material of the road bed. Soils in all the upland forested communities except for the rocky soils of the disturbed road bed consist of an organic/loam forest duff layer of varying thickness, underlain by layers of volcanic ash and gravel or cobbles. Soils in the upland areas are not saturated. General topography of the upland areas is sloped and encourages surface water drainage towards adjacent streams and/or drainage ways.

4.3 Streams/Drainages

Streams and drainages occur throughout the subdivision, crossing the subdivision roads through culverts. Figures 3, 4 and 5 identify RPWs found during the site visits. Due to the unusually dry conditions during the August field visit, many of the drainage routes within the forested areas were dry. During the subsequent visit in October, almost all drainages contained flowing water. Determining whether a stream or drainage could be considered an RPW after one site visit was difficult. As a result the drainage pathways were revised after each site visit and finalized subsequent to the May site visit.

Drainages within the closed forested areas that had little shrub undergrowth were easily followed and mapped with a GPS unit or by using contours where steep topography made walking the corridor impractical. Drainages were followed to their western most termini where practicable as well as upgradient to the east where the RPW began to flow within a defined channel. Drainages within the open forested areas where shrub under growth was very thick were more difficult to follow. Drainages in these areas flow underground or under thick masses of downed logs covered in moss and following them was not always practicable. In the ancient slide area, and in some of the wetland/upland mosaics, drainages would often split and meander and then become indeterminate altogether, before coming out again at the ditch line of a road. Figures 3, 4 and 5 show all the RPWs within the subdivision boundary.

4.4 Conclusion

Development activities from road construction and lot development within the boundaries of the subdivision would likely impact wetlands and/or Waters of the U.S. under the jurisdiction of the USACE. 5.2 acres of PFO4/upland mosaic wetlands were identified within the approximately 200-acre delineation boundary. Development of the subdivision roads and utilities will include consideration of all subdivision impacts including those from individual lot development. According to SPN 2005-08, *Evaluation and Review of New Subdivisions Developed Completely or Partially in Wetlands and other Waters of the U.S.*, the subdivision will be developed and permitted in consideration of effects from lot development. It is anticipated that the permit application for the subdivision will follow “Alternative No. 2” for development of subdivisions, where the permittee will apply for a permit to construct the road improvements only, and require individual lot owners to obtain their own permits. Subdivision development will include coordination with the USACE and compliance with Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act.

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REV.	DATE	BY	DESCRIPTION OF CHANGE

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Juneau, Alaska 99801
907/790-2901
907/790-3901 (fax)
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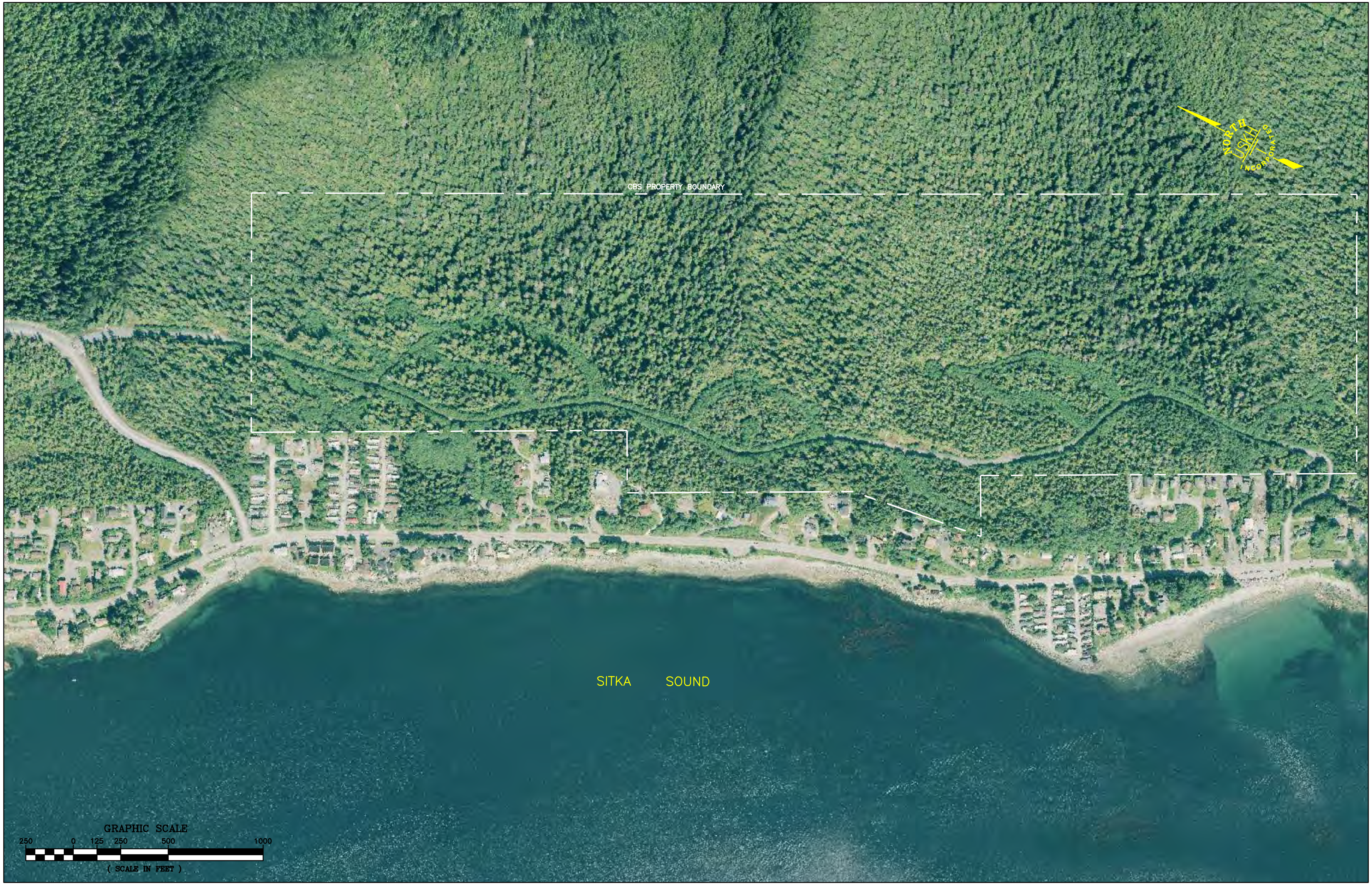
CITY AND BOROUGH OF SITKA
BENCHLANDS SUBDIVISION
SITKA, ALASKA
LOCATION, VICINITY, AND SITE MAP

OCT. 2007

FIGURE 1



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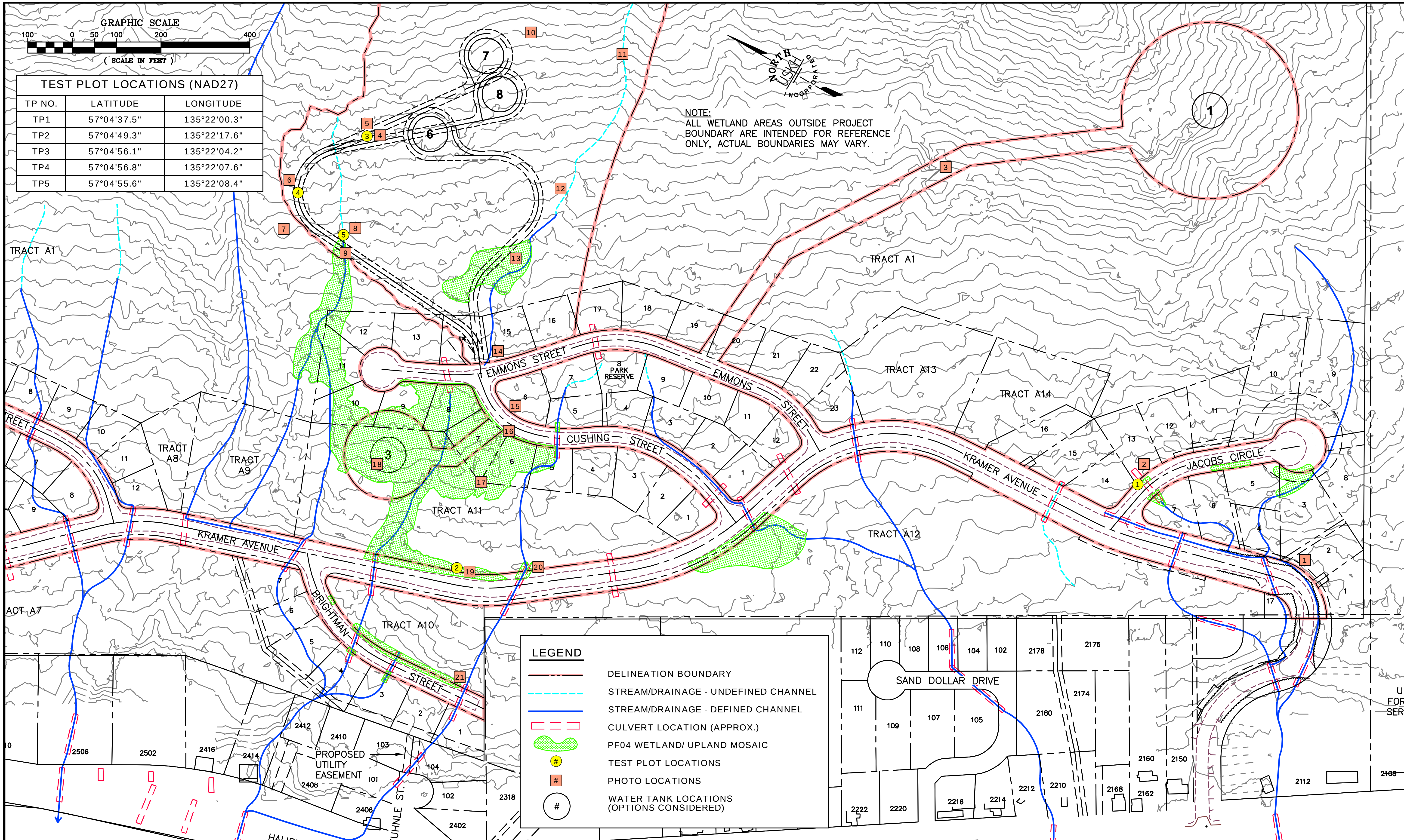
CITY AND BOROUGH OF SITKA
BENCHLANDS SUBDIVISION
SITKA, ALASKA
EXISTING CONDITIONS

OCT. 2007

FIGURE
2



TEST PLOT LOCATIONS (NAD27)

TP NO.	LATITUDE	LONGITUDE
TP1	57°04'37.5"	135°22'00.3"
TP2	57°04'49.3"	135°22'17.6"
TP3	57°04'56.1"	135°22'04.2"
TP4	57°04'56.8"	135°22'07.6"
TP5	57°04'55.6"	135°22'08.4"

FILE: I:\1024000\Dwgs\N\Figures\Wetland Delineation\1024000WD_FIGS_rev10-19-07.dwg

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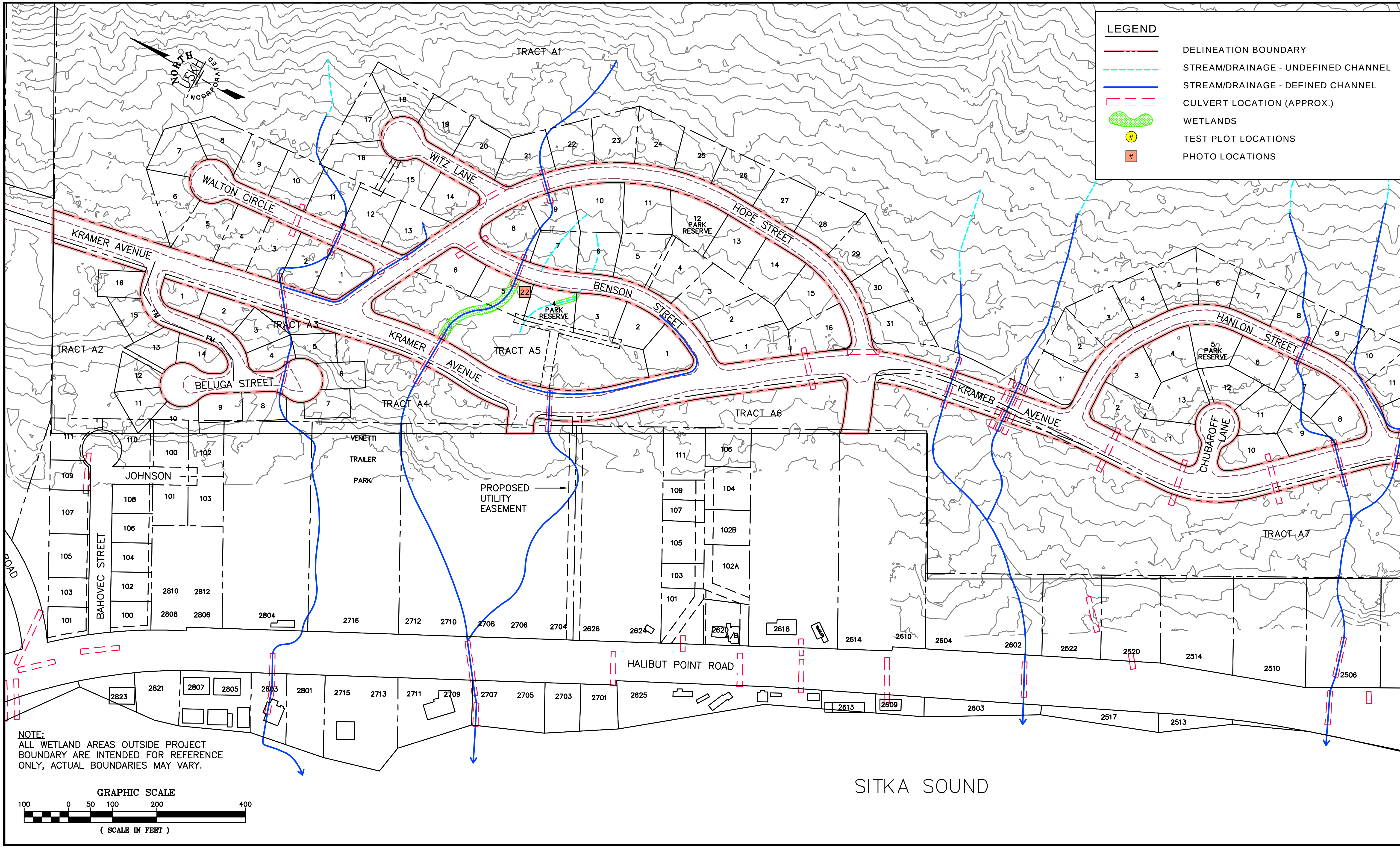
CITY AND BOROUGH OF SITKA, DECEMBER 2, 1971

CITY AND BOROUGH OF SITKA
BENCHLANDS SUBDIVISION
SITKA, ALASKA
WETLAND DELINEATION

OCT. 2007

FIGURE 3



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CITY AND BOROUGH OF SITKA
BENCHLANDS SUBDIVISION
SITKA, ALASKA
WETLAND DELINEATION

OCT. 2007
FIGURE
4

South Kramer Avenue Landslide:
Jacobs Circle to Emmons Street
Sitka, Alaska

February 2, 2016

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GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

Excellence. Innovation. Service. Value.
Since 1954.

Submitted To:
Mr. Michael Harmon, P.E.
Public Works Director
City and Borough of Sitka, Alaska
100 Lincoln Street
Sitka, Alaska 99555

By:
Shannon & Wilson, Inc.
400 N 34th Street, Suite 100
Seattle, Washington 98103

21-1-22168-001

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

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February 2, 2016

Mr. Michael Harmon, P.E.
Public Works Director
City and Borough of Sitka, Alaska
100 Lincoln Street
Sitka, AK 99555

RE: SOUTH KRAMER AVENUE LANDSLIDE: JACOBS CIRCLE TO EMMONS STREET, SITKA, ALASKA

Dear Mr. Harmon:

This letter report presents our research, observations, discussions, analyses, conclusions, and recommendations regarding the South Kramer landslide that occurred in Sitka, Alaska, on August 18, 2015. The landslide caused three fatalities, the destruction of one residence, and the damage of another residence. It is our understanding that more than 50 landslides were documented to have occurred in the Sitka area on August 18 (Prussian, 2015). The purpose of our work is to aid the City and Borough of Sitka (CBS) in understanding the landslide in relation to the existing Kramer Avenue residential development and to offer input to CBS as it considers future development in this area. This study concentrated on the portion of Kramer Avenue between Jacobs Circle and Emmons Street.

The scope of Shannon & Wilson, Inc.'s (Shannon & Wilson's) services included:

1. Review of existing published geologic literature and scientists' reports about the recent landslide.
2. Discussions with local officials and scientists familiar with the geology and the August 18, 2015, landslide.
3. Field reconnaissance of the lower part of the Harbor Mountain hillside and the Kramer Avenue residential development between Jacobs Circle and Emmons Street.
4. Runout analysis of the debris flow.
5. Meetings with the CBS Assembly and staff.
6. Preparation of this report with our findings.

Our work was authorized in a contract signed by Mr. Mark Gorman, CBS city administrator, on November 11, 2015. The contract was amended on December 9, 2015, to include a limited field reconnaissance.

SITE DESCRIPTION

The South Kramer landslide is located north of downtown Sitka on the western flank of Harbor Mountain, as shown in the Vicinity Map, Figure 1. It initiated near the top of a ridge, at the southern end of the west-facing slope of Harbor Mountain. The debris from the debris flow came to rest near the southern end of Kramer Avenue, as shown in Figure 2.

The topography in the vicinity of the landslide is variable. Harbor Mountain rises to about elevation 2,000 feet. The face of the mountain has slope inclinations that exceed 100 percent, and the slope on which the landslide initiated reportedly is inclined at about 85 percent (Landwehr and others, 2015). The slope maintains inclinations steeper than 70 percent down to between elevations 260 and 320 feet at which point it gradually flattens. Along Kramer Avenue, the slope inclination is reduced to 12 to 14 percent.

Kramer Avenue is located on a terrace that is about 400 to 600 feet wide and is continuous for about one and a quarter miles (Figure 2). This area is locally known as the “Benchlands.” From the western edge of the Benchlands, the slope steepens down through the residential areas of Sand Dollar Drive and Whale Watch Drive. Another terrace is located to the west of these streets. Halibut Point Road is situated on this lower bench, a raised marine terrace. The sea is directly west of Halibut Point Road.

Little of Kramer Avenue is presently developed. Roads along the Benchlands are in place. A water tank is constructed on the slope above the northern end of Emmons Street (Figure 3), and distribution is established to the south of it. A sewer main extends from the southern end of Kramer Avenue northward to the Emmons/Kramer intersection. The only part of Kramer Avenue on which residences have been built is the southern end. One of these houses was destroyed by the landslide; another was damaged. Several other houses further south were undamaged.

The natural vegetation on the mountainside consists of a dense stand of conifers, including spruce and hemlock, and intermixed stands of red alder (USKH, Inc., 2008). Undergrowth is highly variable, ranging from very dense to sparse. We understand that the west-facing side of

Harbor Mountain has not been logged by the U.S. Forest Service. On the private property to the west of the U.S. Forest Service property, trees have been removed for the Benchlands streets and for utilities and residential lots at the southern end of the Benchlands.

We understand the landslide occurred at about 9:30 a.m. on August 18, 2015. It initiated on undisturbed U.S. Forest Service forest land near elevation 1,350 feet, traveled about 3,000 feet down an unnamed channel (Gould and others, 2015), and ended at about elevation 110 feet on Kramer Avenue. The upper part of the headscarp (Figure 2) is located at a drainage divide between the west- and south-facing slopes of Harbor Mountain. The initiation zone was estimated to be about 50 (Landwehr and others, 2015) to 85 feet wide (Gould and others, 2015), 90 feet long, and 6 to 10 feet deep (Landwehr and others, 2015). Along its path, it locally deposited but mostly scoured the channel of colluvium. In the upper portion of the path, the channel was scoured to bedrock (Figure 4). The path ranged from 40 to 70 feet wide, as shown in Figure 5. We understand that soil is exposed in the headscarp, but no additional blocks of cracked or detached soil are imminently in danger of falling from the headscarp (Prussian, 2015).

From aerial photographs and from field observations, it appears that the first pulse of the debris flow left the channel and plowed into the woods near elevation 240 feet, as indicated in Figures 2 and 3. This was likely the result of an upslope, straight segment of the channel and the debris wanting to maintain a straight line. After the first pulse, the bulk of the debris followed the existing channel that was directed toward the residence at 430 Kramer Avenue. The debris killed three people, and destroyed one residence and damaged another. Upon reaching Kramer Avenue, the debris encountered a low berm on the south side of the road that appears from photographs to have been 2 to 3 feet higher than Kramer Avenue. Farther south along the western side of Kramer Avenue, fill was mounded 8 to 10 feet high in an earthfill berm. When the debris flow encountered these berms, it turned southward down the road. It came to a stop about 400 feet from the point at which it reached Kramer Avenue, as shown in Figures 2, 3, and 6.

We understand that the more southerly earthfill berm (Figure 6) is a temporary stockpile of soil that was placed by the development contractor for future site grading in Tract C.

WEATHER

We understand that the Sitka area had incurred above-normal precipitation in the 2½ months before the August 18 landslide. For June and July 2015, rainfall was 15.13 inches, whereas the normal total for those two months is 7.0 inches; more than double the normal (YourWeather Service, 2015). For August 2015, 3.23 inches of rain had fallen in the first 17 days of the month, about normal rainfall.

On August 18, an anomalous area of upper level high pressure was positioned over the northeastern Pacific. This upper level pattern steered a heavy rain system toward the central Alaska panhandle (Jacobs and others, 2015) on August 18.

Between 4:00 and 10:00 am on August 18, the Sitka area received 2.5 to 3.25 inches of precipitation, considered by the National Weather Service to be a, “very exceptional and extreme weather and hydrologic event.” (Jacobs and others, 2015) The National Weather Service reported that rainfall in the mountains of the Sitka area could have exceeded the recorded amounts due to orographic effects. Moderate winds of 11 to 17 miles per hour from the southwest were recorded at the Sitka Airport during this storm.

GEOLOGIC CONDITIONS

Harbor Mountain is geologically diverse, comprised of metamorphic bedrock and glacial, volcanic, and mass wasting soils. The mountain is cored by Sitka greywacke, a slightly metamorphosed sandstone (Karl and others, 2015). The rock is moderately hard, light brown, and fine to medium grained. In the Kramer Avenue area, it outcrops sporadically in road cuts along Kramer Avenue and Halibut Point Road.

The greywacke is overlain by glacial till, a compact to dense, gray, poorly graded gravel with silt, sand, and cobbles (Yehle, 1974; Golder Associates, 2008). The till probably covers bedrock throughout the area, but is only exposed in several road cuts. It stands steeply in the cuts, because it was overridden by ice. Test pits logged by Golder Associates indicate that the till is at least 2 feet thick to more than 13 feet thick in the subject area. Only one test pit encountered bedrock beneath the till.

Till is overlain by volcanic ash, a product of eruptions of Mount Edgecumbe. The ash at the Kramer Avenue site is reportedly comprised of deposits from two eruptions (Rhiele, 1996). The ash is described in the Golder Associates report as loose to compact, brown, gray, red, and yellow, silty sand with a trace clay. This report indicates that the deposit (two combined eruptive deposits) is 1.5 to 7 feet thick in the study area. One test pit did not expose ash. It was observed in all road cuts in the Kramer Avenue area.

Locally draping the above geologic units is landslide debris. This diamict is a mixture of the weathered bedrock, till, and ash. It is described as compact, gray, silty sand with trace clay, gravel, cobbles, and boulders in the Golder Associates report, and ranges from 1.5 to 18.5 feet thick where encountered. Four of the 12 test pits in the study area contained no landslide debris. It appears to have accumulated in the Benchlands at the foot of debris flow channels that head on Harbor Mountain. No surficial exposures of landslide debris were observed. Our only knowledge of its locations and characteristics in the study area comes from the Golder Associates report.

Groundwater is perched in this area. In the Golder report, groundwater levels ranged from 1.5 to 8.5 feet below ground surface. Numerous springs, as noted in Figure 3, emerge from the hillside. In some cases, they form the heads of through-going surface streams. In other cases, they infiltrate back into the ground and pop out farther downslope. In some areas, such as Tract C, most of the ground is covered with standing water, likely perched on ash or till.

The Light Detection and Ranging (LiDAR) hillshade image (Figure 2) of the study area is informative but enigmatic. On a very broad scale, it has been suggested by others that the west-facing slope of Harbor Mountain collapsed in ancient times, spreading landslide debris into the ocean, one remnant of which is a shoreline protrusion. There is no evidence in outcrop or exposure of debris of such a widespread event, and the LiDAR image does not unequivocally support such a hypothesis.

The LiDAR image does support the hypothesis that the Benchlands is, in part, constructed of landslide materials supplied by repeated debris flows along several discrete chutes that originate on Harbor Mountain. The depositional distribution of the landslide debris also supports this idea. No landslide debris is observed or reported to the west of Kramer Avenue.

CONCLUSIONS

In our opinion, the South Kramer debris flow was a natural event. There is no evidence that human actions, past or recent, had an influence on the initiation of this landslide. Five contributing factors that appear to have influenced this mass wasting event are: (a) above-normal precipitation in the 2½ months prior to August 18, (b) very steep slopes in the initiation zone, (c) a bedrock hollow that concentrated groundwater and channeled failed soil to the bottom of the slope, (d) weak soil in the initiation zone, and (e) exposure to high winds on the initiation ridge.

The intense storm of August 18, 2015, was judged to be extraordinary by the National Weather Service. This extraordinary event was added to 2½ months of more than twice the normal precipitation for Sitka. The rainfall intensity combined with the other contributing factors was the major factor for this landslide, in our opinion. Debris flows normally initiate on slopes steeper than about 70 percent. The inclination of the slope at the initiation zone of this debris flow was 85 percent, and susceptible to failure.

Bedrock hollows, areas where the topography is convergent, are at particular risk of failure because they are capable of concentrating groundwater, thereby lowering the stability of accumulated soils in the swale.

The soils in the headwall of the debris flow consisted of colluvium, ash, and glacial till. The colluvium is weak because it accumulated from sloughing of surrounding formations. The ash is also weak because it was never overridden and compacted by glacial ice and has low strength. Ash soils are also typically hydrophylic and impermeable creating perched water and can cause an elevated groundwater level in the soil above it.

Although high winds may not have been recorded at the Sitka Airport on August 18, the position of the landslide initiation zone is on a ridge that is vulnerable to south and southwestern winds. During strong winds, the trees in this area would be especially prone to rocking and opening up cracks in the ground surface, thereby allowing relatively fast infiltration of rainfall. Studies in southeastern Alaska have shown wind and windthrow to be a factor in landslides (Buma and Johnson, 2015) in the region.

RUNOUT ANALYSIS

In order to assess the potential future risk to infrastructure and residential development in the Kramer Avenue area between Jacobs Circle and Emmons Street, runout modeling was performed using an empirical-based computer program developed for debris flows in the Queen Charlotte

Islands at the University of British Columbia (Fannin and Bowman, 2007). We judge this program to be appropriate for use in Sitka owing to its regional application, and the similarity of topography of western British Columbia terrain and that of southeastern Alaska.

The model utilized is UBCDFLOW, in which the main factors are the initial volume in the initiation zone, and the channel widths and runout slope angles over channel reaches of similar character (University of British Columbia [UBC] Civil Engineering Department, 2014). The channel widths and runout angles were readily obtained by recent LiDAR data and photographs; however, the initial volume of soil is based on observations by others, and only a best estimate, because the shape of the original topography in the headscarp area cannot be known.

We performed several iterations of the model to calibrate it, and then ran five scenarios (see Figure 3):

1. The full length of the channel along which the August 18 debris flow moved, deflected by the berms on the west side of Kramer Avenue (Terminus 1).
2. The full length of the channel along which the August 18 debris flow moved, if the berms along the west side of Kramer Avenue had not been in place (Terminus 2).
3. The northern tributary chute originating at the top of Harbor Mountain, deflected by the berms on the west side of Kramer Avenue (Terminus 3).
4. The northern tributary chute originating at the top of Harbor Mountain without the berms on the west side of Kramer Avenue (Terminus 4).
5. The northern branch of the August 18 debris flow that ended in the woods uphill from Kramer Avenue (Terminus 5).

The locations of the distal ends of the modeled runouts are presented in Figure 3. Modeling indicated that another debris flow along the August 18 alignment would end up in the same place as before, assuming that the berms on the west side of Kramer Avenue were left in place. If the berms were not in place on August 18, the debris could potentially have runout into Tract C about 400 feet southwest of Kramer Avenue. If the August 18 debris flow deposit had continued straight westward through the woods, as shown in Figures 2 and 3, it could have reached Kramer Avenue. Modeling of this side branch of the debris flow showed that once the debris flow material leaves the channelized section of the creek and becomes a uniform unchannelized slope, the debris slows and deposits relatively quickly, as shown in Figure 3. The modeling does not take the roughness of the in-place trees into account, so it would probably come to rest sooner than the model indicates.

The bedrock hollow in the August 18 initiation zone has mostly emptied out and the channel below has been scoured, so the future hazard from that source is likely low; however, a tributary creek/hollow to the north that extends to the top of Harbor Mountain has the potential to fail and recreate a similar or larger debris flow than the August 18 event. This bedrock hollow is about 700 feet higher in elevation than the initiation zone of the August 18 debris flow.

If this higher bedrock hollow failed in a manner similar to the August 18 debris flow, the model predicts that it would flow down Kramer Avenue about 400 feet beyond the Kramer Avenue debris deposit, assuming the berms were in place. Without the berms in place, this modeled debris flow would move about 580 feet southwest of Kramer Avenue, reaching residences on the eastern side of Whale Watch Drive and Sand Dollar Drive.

RISK ZONES AND DEVELOPMENT RECOMMENDATIONS

The implication of the runout analysis is that residences, utilities, and roads in the path of the identified potential debris flow paths are at high risk. However, the modeling analysis cannot be relied upon singularly. It is a supplement for geologic judgment and experience. In the case of the southern end of Kramer Avenue, the use of LiDAR hillshade images is most instructive. They show the corridors of erosion/incision and deposition, as well as relative ages of the related landforms, factors of particular importance in informing land use decisions.

Based on our assessment of the modeling, field observations, and LiDAR images, we have created three categories of risk in the Jacobs Circle/Emmons Street area for debris flows originating on Harbor Mountain. The three categories described below range from high to low. There are **no** no-risk zones in the study area.

The high-risk zone is in and adjacent to the recent debris flow path and two other debris flow paths that were identified in the field and on the LiDAR hillshade image. They have incised channels and uneven, hummocky, and lobate topography. We recommend no new residential development or transportation and utility corridors through this area without extensive study and protective measures. If any new development or redevelopment is contemplated for these areas, a geotechnical evaluation should be performed by a licensed civil engineer specializing in geotechnical practice or professional geologist experienced in mass wasting processes. The evaluation should include subsurface explorations, evaluation of the hazard and risk from debris flows, and design of debris flow mitigation or protective measures. Such reports should be reviewed by a third-party for completeness and appropriateness.

Some existing residences are in the high-risk zone. Although this report does not attempt to assess or predict the risk to any individual parcel or structure, it may be prudent for those property owners to evaluate their exposure, obtain professional assistance, and take protective action, as discussed above.

Three moderate risk zones were identified, as shown in Figure 3. They are either buffer areas between high- and low-risk zones, or areas that offer slightly higher risk than low, as discussed below. One is the buffer zone adjacent to the debris chute high-risk zone on the northern edge of the study area. Another buffer zone is located downhill (west) of Tract C. Another moderate zone is located uphill of Emmons Street where there appear to be deposits of ancient, relict debris flows. The channel that originally supplied debris to this area is presently incapable of delivering debris to this same area, in our opinion; however, if the adjacent incised creek/swale should become blocked during a debris flow, the relict channel could potentially deliver debris to this area again. If any new development or redevelopment is contemplated for these areas, a geotechnical evaluation should be performed and reviewed in the same manner as recommended above for high-risk zones.

The low-risk debris flow zones are areas that are unlikely to be impacted by debris flows; however, they should be evaluated by a professional, as described above to confirm that condition. They may be subject to other geotechnical issues such as local slope instability, high groundwater level, spring seepage, and soft ground.

CONCEPTUAL MITIGATION MEASURES

In our opinion, it is not possible or practical to prevent debris flows from originating in the undisturbed, natural ground on the western slope of Harbor Mountain.

Mitigation measures have been designed and built throughout the world to protect existing and new structures and infrastructure. They can be categorized into two types: containment and diversion. Containment measures consist of excavated basins with or without outlet structures.

This type of mitigation normally requires a large space; not readily available in this study area for individual property owners, but potentially possible for groups of lots, if reconfiguration of lot lines is possible.

Wire mesh nets are also used to contain debris flow material, but need to be applied to a relatively narrow confined channel. Their use in this area could be assessed.

Diversion measures consist of earth berms and structural walls capable of deflecting the hypothesized debris volume. They can be effective for the properties downhill from the protective works, but the deflected debris can then be deposited on adjacent property.

CLOSURE

The conclusions and recommendations in this letter report are based on a review of published and unpublished literature, discussions with other professionals familiar with the landslide, and a visual examination of the surface conditions as they existed during the time of our field reconnaissance. No subsurface explorations were performed for this study. This work has been performed using practices consistent with geologic and geotechnical industry standards in the region for slope stability; however, prediction of slope movement with absolute certainty is not possible with currently available scientific knowledge. As with any steep slope, there are always risks of instability that present and future owners must accept. Such risks include extreme or unusual storm events and forest fire, among others. If conditions described in this letter report change, we should be advised immediately so that we can review those conditions and reconsider our conclusions and recommendations.

The runout modeling analysis cannot be relied upon singularly. It is an empirical model. Although similar to topographic conditions in the Queen Charlotte Islands, the Harbor Mountain topography may be different, and therefore lead to different runout distances than those described in this letter report. Other factors such as water content, surface roughness, and routing may also contribute to differences between modeled runout distances and actual distances. It is a supplement for geologic judgment and experience.

Recommendations included in this letter report are presented to assist CBS. Shannon & Wilson has included the enclosed, "Important Information About Your Geotechnical/Environmental Report," to assist you and others in understanding the use and limitations of our reports.

We appreciate the opportunity to be of service. If you have any questions or concerns, please contact me.

Sincerely,

SHANNON & WILSON, INC.

William T. Laprade
Senior Vice President

WTL:KLB/wtl

Enc: References (2 pages)
Figure 1 – Vicinity Map
Figure 2 – Site Plan – LiDAR Hillshade
Figure 3 – Runout Analysis and Debris Flow Risk
Figure 4 – Photograph of Debris Flow Initiation Zone
Figure 5 – Photograph of Debris Flow Chute
Figure 6 – Photograph of Debris Flow Deposit on Kramer Avenue
Important Information About Your Geotechnical/Environmental Report

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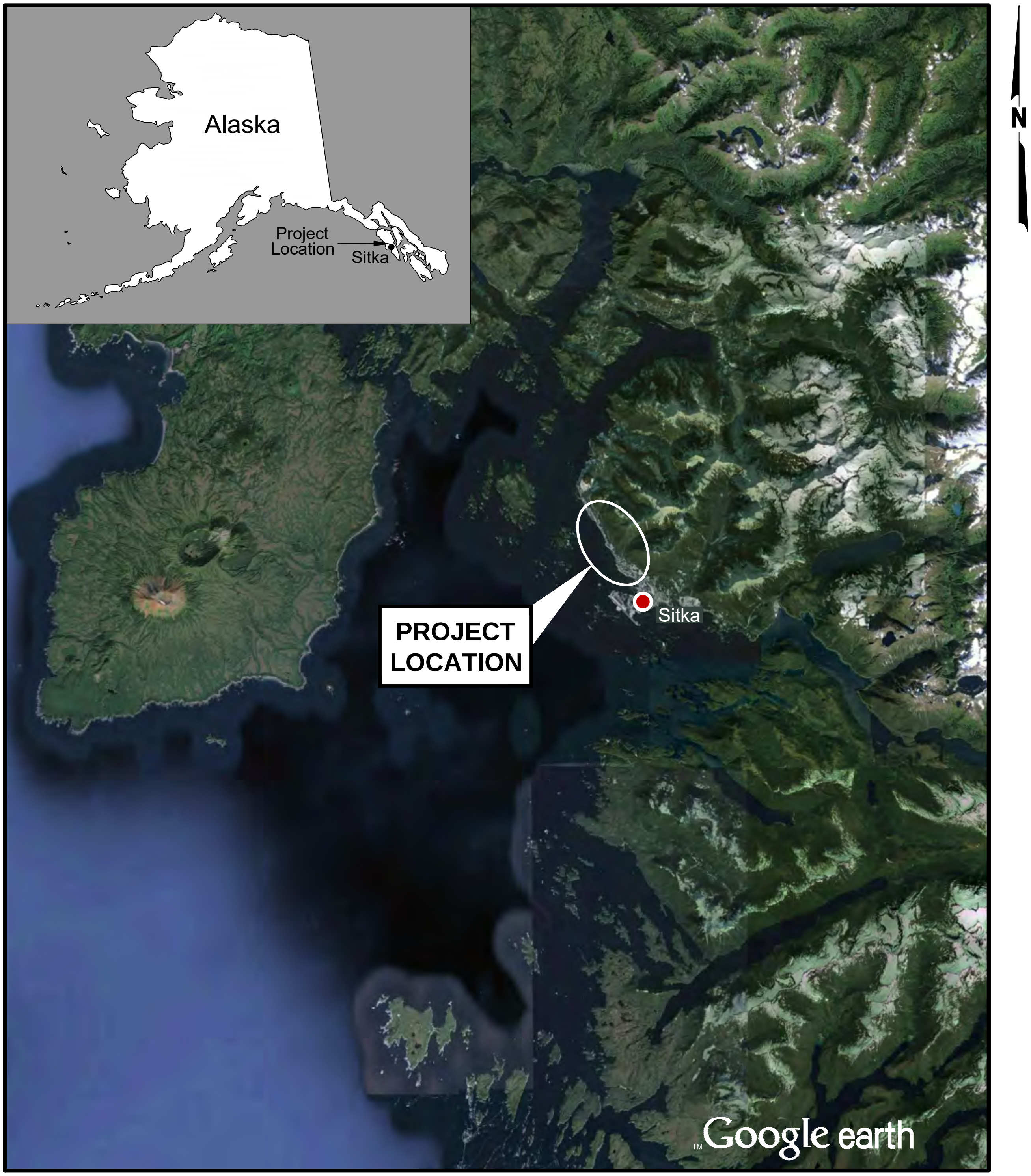

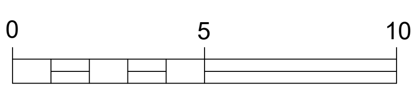

NOTE

Map adapted from aerial imagery provided by Google Earth Pro, Image © 2015 Terrametrics, Image IBCAO, Image © 2015 DigitalGlobe, and Image Landsat, reproduced by permission granted by Google Earth ™ Mapping Service.

City and Borough of Sitka
South Kramer Landslide
Sitka, Alaska

VICINITY MAP

February 2016 21-1-22168-001

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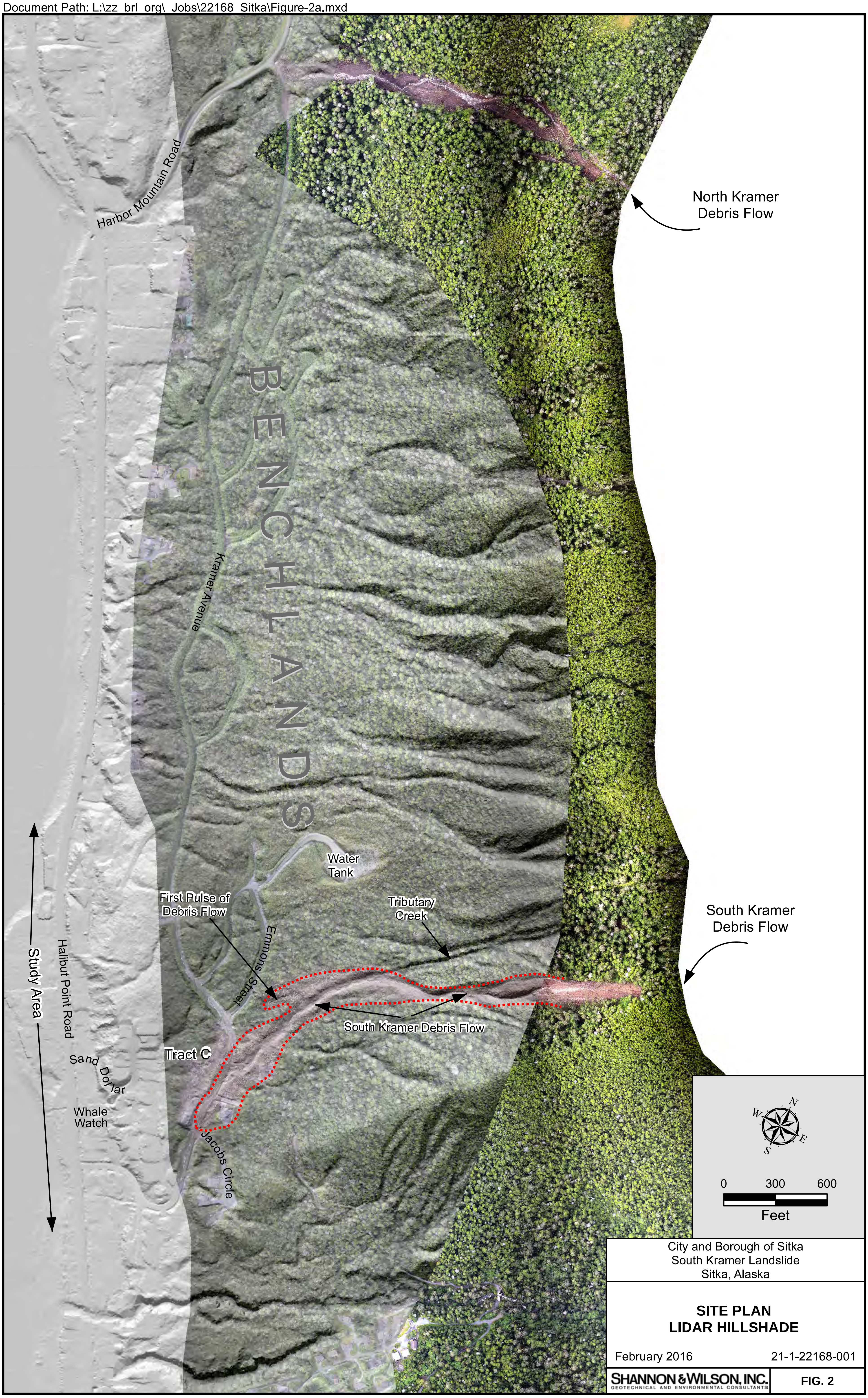
FIG. 1

Document Path: L:\zz_brl_org_Jobs\22168_Sitka\Figure-2a.mxd



City and Borough of Sitka
South Kramer Landslide
Sitka, Alaska

SITE PLAN
LIDAR HILLSHADE

February 2016 | 21-1-22168-001

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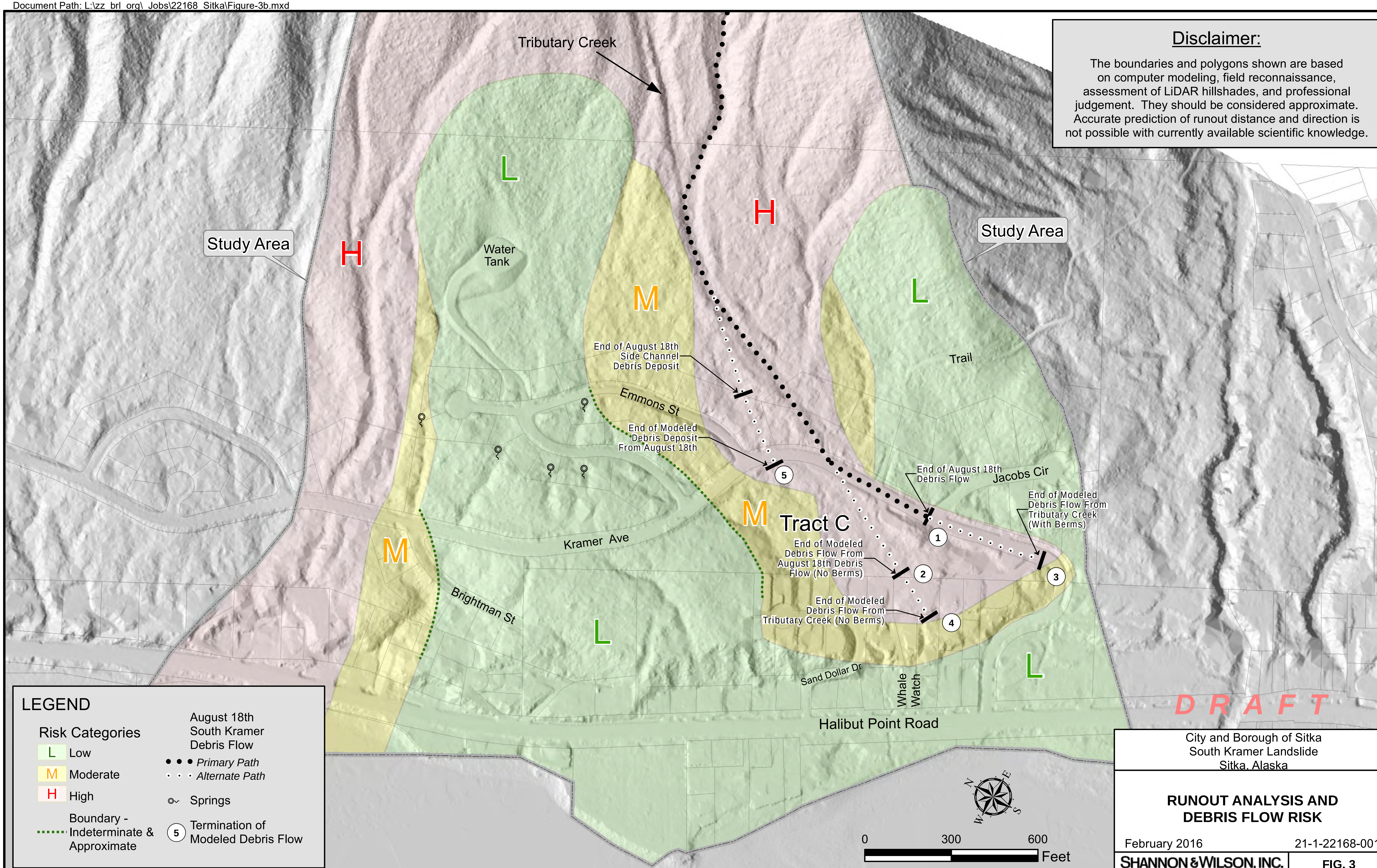
FIG. 2

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



City and Borough of Sitka
South Kramer Landslide
Sitka, Alaska

RUNOUT ANALYSIS AND DEBRIS FLOW RISK

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FIG. 3

City and Borough of Sitka
South Kramer Landslide
Sitka, Alaska

PHOTOGRAPH OF DEBRIS FLOW INITIATION ZONE

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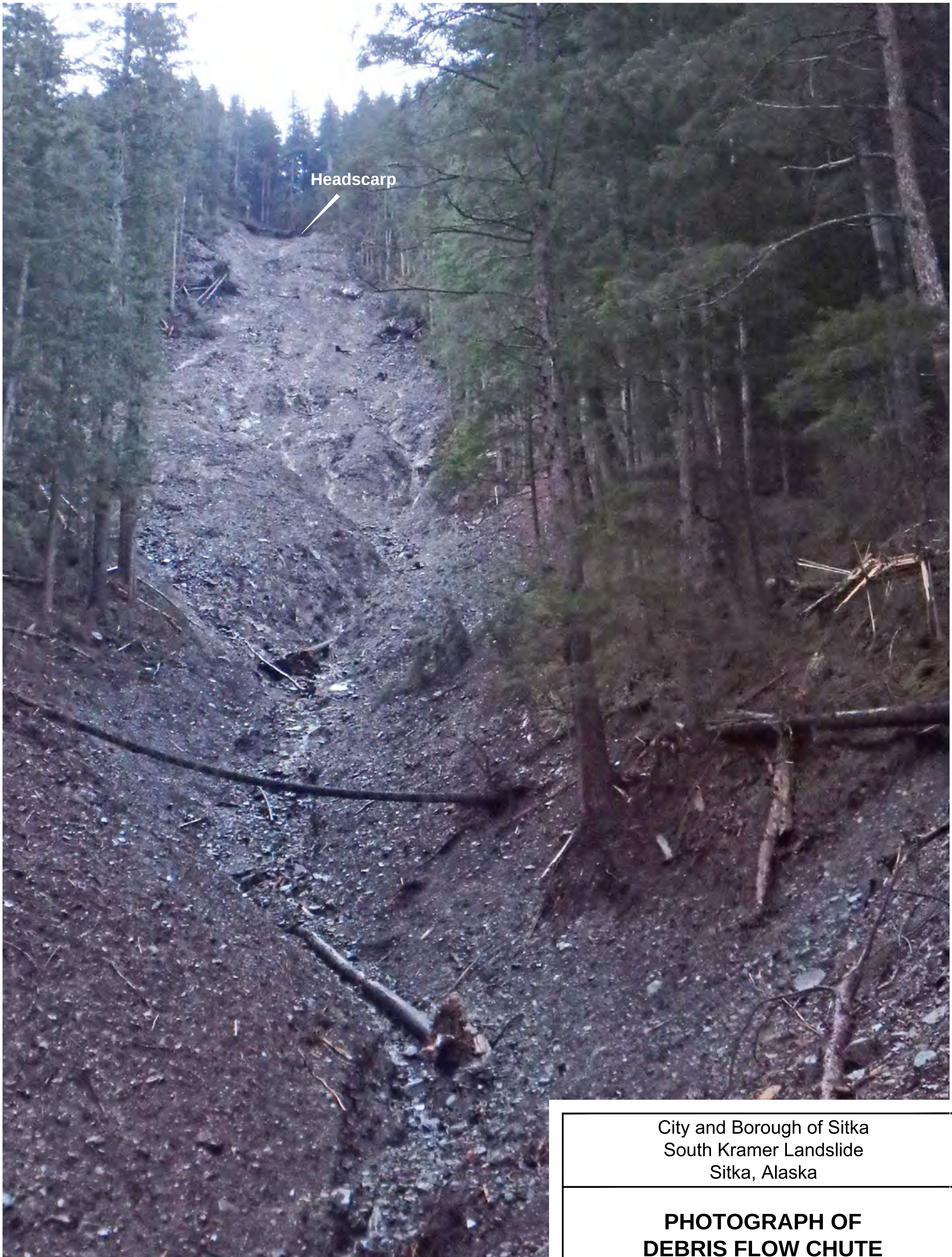
FIG. 4

Filename: J:\211\22168-001\21-1-22168-001 Site Photos.dwg Date: 02-01-2016 Login: sac



City and Borough of Sitka
South Kramer Landslide
Sitka, Alaska

PHOTOGRAPH OF DEBRIS FLOW CHUTE

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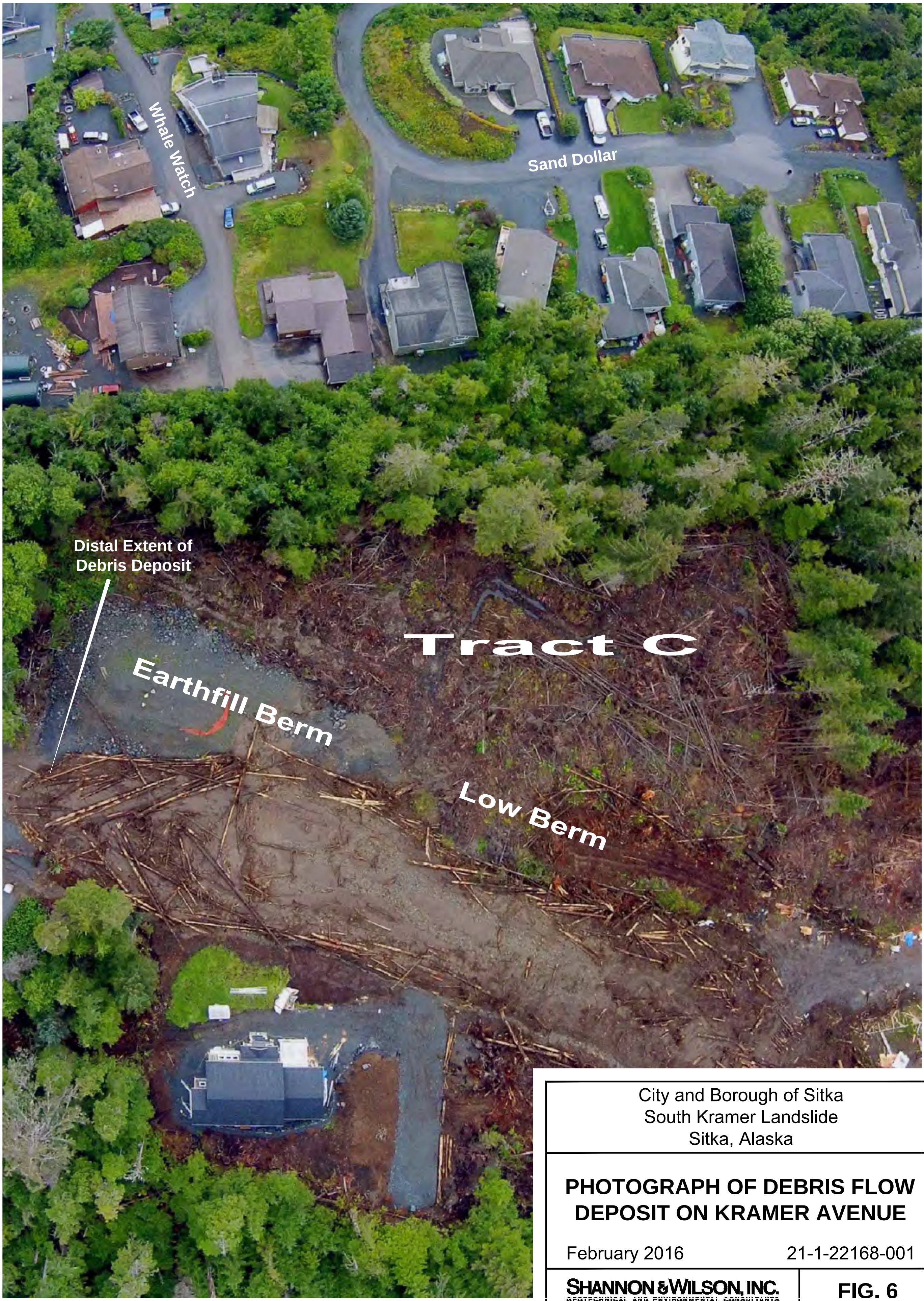
FIG. 5

Filename: J:\211\22168-001\21-1-22168-001 Site Photos.dwg Date: 02-01-2016 Login: sac



City and Borough of Sitka
South Kramer Landslide
Sitka, Alaska

PHOTOGRAPH OF DEBRIS FLOW DEPOSIT ON KRAMER AVENUE

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SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

FIG. 6

Date: February 2, 2016
To: Mr. Michael Harmon, P.E.
City and Borough of Sitka, Alaska

IMPORTANT INFORMATION ABOUT YOUR GEOTECHNICAL/ENVIRONMENTAL REPORT

CONSULTING SERVICES ARE PERFORMED FOR SPECIFIC PURPOSES AND FOR SPECIFIC CLIENTS.

Consultants prepare reports to meet the specific needs of specific individuals. A report prepared for a civil engineer may not be adequate for a construction contractor or even another civil engineer. Unless indicated otherwise, your consultant prepared your report expressly for you and expressly for the purposes you indicated. No one other than you should apply this report for its intended purpose without first conferring with the consultant. No party should apply this report for any purpose other than that originally contemplated without first conferring with the consultant.

THE CONSULTANT'S REPORT IS BASED ON PROJECT-SPECIFIC FACTORS.

A geotechnical/environmental report is based on a subsurface exploration plan designed to consider a unique set of project-specific factors. Depending on the project, these may include: the general nature of the structure and property involved; its size and configuration; its historical use and practice; the location of the structure on the site and its orientation; other improvements such as access roads, parking lots, and underground utilities; and the additional risk created by scope-of-service limitations imposed by the client. To help avoid costly problems, ask the consultant to evaluate how any factors that change subsequent to the date of the report may affect the recommendations. Unless your consultant indicates otherwise, your report should not be used: (1) when the nature of the proposed project is changed (for example, if an office building will be erected instead of a parking garage, or if a refrigerated warehouse will be built instead of an unrefrigerated one, or chemicals are discovered on or near the site); (2) when the size, elevation, or configuration of the proposed project is altered; (3) when the location or orientation of the proposed project is modified; (4) when there is a change of ownership; or (5) for application to an adjacent site. Consultants cannot accept responsibility for problems that may occur if they are not consulted after factors which were considered in the development of the report have changed.

SUBSURFACE CONDITIONS CAN CHANGE.

Subsurface conditions may be affected as a result of natural processes or human activity. Because a geotechnical/environmental report is based on conditions that existed at the time of subsurface exploration, construction decisions should not be based on a report whose adequacy may have been affected by time. Ask the consultant to advise if additional tests are desirable before construction starts; for example, groundwater conditions commonly vary seasonally.

Construction operations at or adjacent to the site and natural events such as floods, earthquakes, or groundwater fluctuations may also affect subsurface conditions and, thus, the continuing adequacy of a geotechnical/environmental report. The consultant should be kept apprised of any such events, and should be consulted to determine if additional tests are necessary.

MOST RECOMMENDATIONS ARE PROFESSIONAL JUDGMENTS.

Site exploration and testing identifies actual surface and subsurface conditions only at those points where samples are taken. The data were extrapolated by your consultant, who then applied judgment to render an opinion about overall subsurface conditions. The actual interface between materials may be far more gradual or abrupt than your report indicates. Actual conditions in areas not sampled may differ from those predicted in your report. While nothing can be done to prevent such situations, you and your consultant can work together to help reduce their impacts. Retaining your consultant to observe subsurface construction operations can be particularly beneficial in this respect.

A REPORT'S CONCLUSIONS ARE PRELIMINARY.

The conclusions contained in your consultant's report are preliminary because they must be based on the assumption that conditions revealed through selective exploratory sampling are indicative of actual conditions throughout a site. Actual subsurface conditions can be discerned only during earthwork; therefore, you should retain your consultant to observe actual conditions and to provide conclusions. Only the consultant who prepared the report is fully familiar with the background information needed to determine whether or not the report's recommendations based on those conclusions are valid and whether or not the contractor is abiding by applicable recommendations. The consultant who developed your report cannot assume responsibility or liability for the adequacy of the report's recommendations if another party is retained to observe construction.

THE CONSULTANT'S REPORT IS SUBJECT TO MISINTERPRETATION.

Costly problems can occur when other design professionals develop their plans based on misinterpretation of a geotechnical/environmental report. To help avoid these problems, the consultant should be retained to work with other project design professionals to explain relevant geotechnical, geological, hydrogeological, and environmental findings, and to review the adequacy of their plans and specifications relative to these issues.

BORING LOGS AND/OR MONITORING WELL DATA SHOULD NOT BE SEPARATED FROM THE REPORT.

Final boring logs developed by the consultant are based upon interpretation of field logs (assembled by site personnel), field test results, and laboratory and/or office evaluation of field samples and data. Only final boring logs and data are customarily included in geotechnical/environmental reports. These final logs should not, under any circumstances, be redrawn for inclusion in architectural or other design drawings, because drafters may commit errors or omissions in the transfer process.

To reduce the likelihood of boring log or monitoring well misinterpretation, contractors should be given ready access to the complete geotechnical engineering/environmental report prepared or authorized for their use. If access is provided only to the report prepared for you, you should advise contractors of the report's limitations, assuming that a contractor was not one of the specific persons for whom the report was prepared, and that developing construction cost estimates was not one of the specific purposes for which it was prepared. While a contractor may gain important knowledge from a report prepared for another party, the contractor should discuss the report with your consultant and perform the additional or alternative work believed necessary to obtain the data specifically appropriate for construction cost estimating purposes. Some clients hold the mistaken impression that simply disclaiming responsibility for the accuracy of subsurface information always insulates them from attendant liability. Providing the best available information to contractors helps prevent costly construction problems and the adversarial attitudes that aggravate them to a disproportionate scale.

READ RESPONSIBILITY CLAUSES CLOSELY.

Because geotechnical/environmental engineering is based extensively on judgment and opinion, it is far less exact than other design disciplines. This situation has resulted in wholly unwarranted claims being lodged against consultants. To help prevent this problem, consultants have developed a number of clauses for use in their contracts, reports, and other documents. These responsibility clauses are not exculpatory clauses designed to transfer the consultant's liabilities to other parties; rather, they are definitive clauses that identify where the consultant's responsibilities begin and end. Their use helps all parties involved recognize their individual responsibilities and take appropriate action. Some of these definitive clauses are likely to appear in your report, and you are encouraged to read them closely. Your consultant will be pleased to give full and frank answers to your questions.

The preceding paragraphs are based on information provided by the
ASFE/Association of Engineering Firms Practicing in the Geosciences, Silver Spring, Maryland