McGee Surveying Consulting

August 6, 2023

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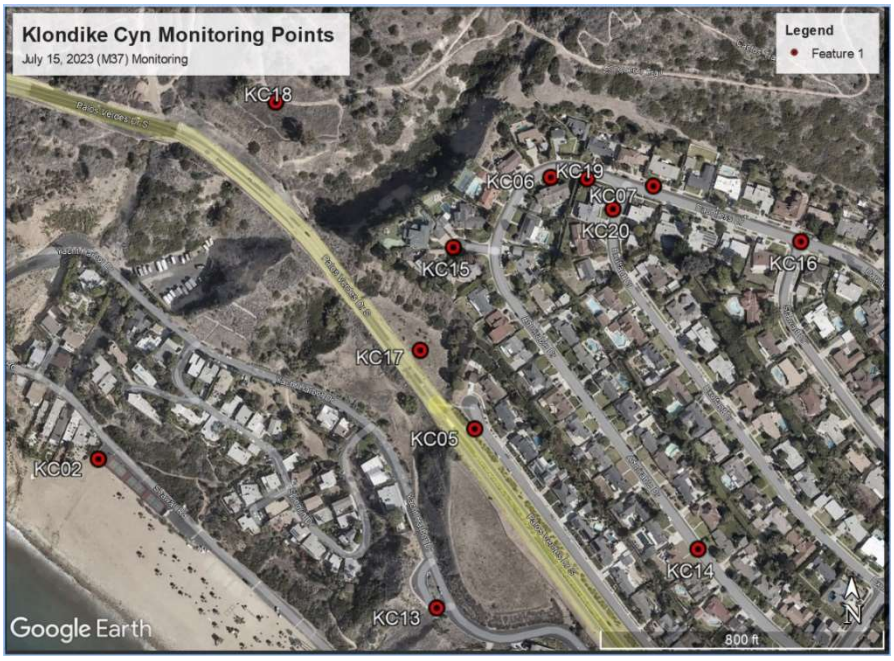
Subject: Report on Rancho Palos Verdes (RPV) Portuguese Bend and Klondike Cyn Landslide Monitoring in Seaside in July and August 2023. Refer to the 2007-2023 Portuguese Bend Landslide Monitoring Reports for more details and procedures utilized in this survey.

A portion of the Portuguese Bend Landslide Complex was monitored between July 12, 2023 and July 19, 2023 (average date July 15, 2023), and then again on August 2, 2023. The purpose was to monitor the movement in the Klondike Canyon Slide and specifically the recent movements at the intersection of Dauntless & Exultant Drives. Additionally, a sampling of points in the Abalone Cove Slide were observed with a single observation to make a preliminary assessment in the gated community of recent movements (listed below). The expected precision (referred to as noise) of repeat GNSS (satellite) observations based on extensive experience is generally 0.02 feet or less; however, solar disturbances occurring during the period of the July surveys resulted in a level of noise of 0.03 to 0.04 feet. To successfully measure actual movement, the measured movement (referred to as signal) must exceed the noise. Thus, the movement is effectively the signal plus or minus the noise.



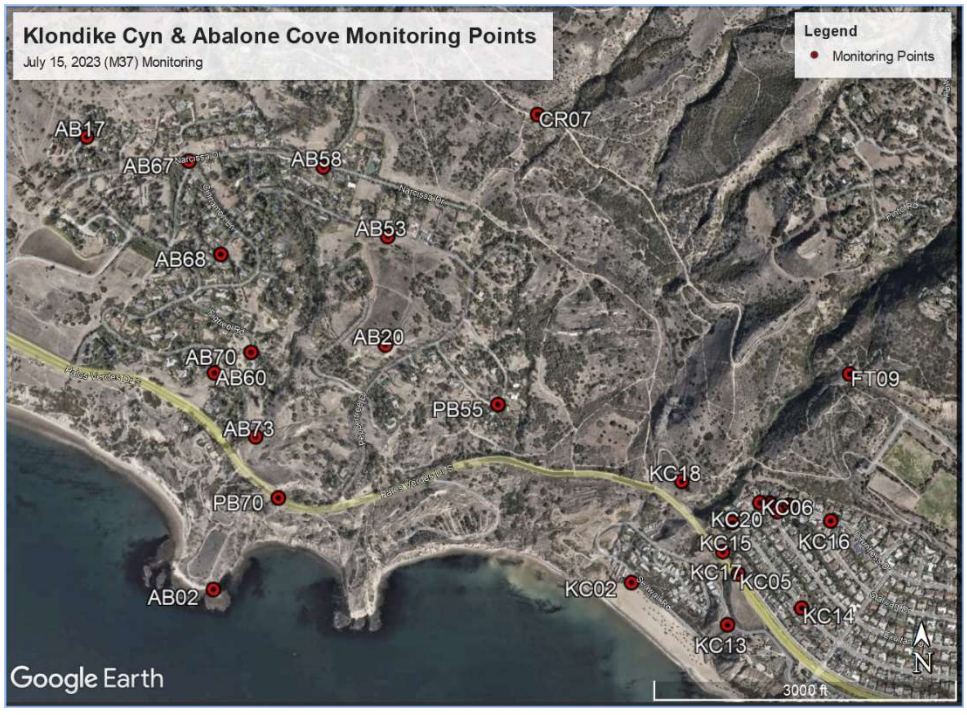
In Klondike Canyon (KC), five observations were made beginning July 12 over a seven day period and again 21 days after the first day. All current KC monitoring points and two new points set at Dauntless & Exultant Drives were monitored. The new points are KC19 located about 100' westerly and KC20 located about 70' southerly of the intersection. Along with existing points KC06 located about 200' westerly and KC07 about 70' east of the intersection provided adequate coverage of the area of visible movement. The daily movements in the first seven days was within the range of the measurement noise which limited the capability to estimate actual movements. The overall assessment with the exception of KC07, indicates points KC06, KC19 and KC20 moved westerly about 0.01 feet per day with no adverse changes in velocities. KC07 remained unchanged. A better assessment of the velocities was possible after a sixth observation on August 2, 2023 in which the accumulative movement sufficiently exceeded the noise to model the signal as listed in the table below.

Point	Bearing (degrees) July 12>July 19	Dist. (feet) July 12>July 19	Bearing (degrees) July 12>August 2	Dist. (feet) July 12>August 2
FT091	*	*	*	*
KC021	S 03 W	0.05	S 03 W	0.19
KC051	*	*	S 14 W	0.06
KC061	S 67 W	0.06	S 67 W	0.11
KC071	*	*	*	*
KC131	*	*	S 22 E	0.06
KC141	*	*	*	*
KC151	S 50 W	0.04	S 50 W	0.11
KC161	*	*	*	*
KC171	S 24 W	0.02	S 24 W	0.10
KC181	S 10 W	0.05	S 10 W	0.26
KC191	N 85 W	0.07	N 85 W	0.09
KC201	N 78 W	0.06	N 78 W	0.09

* No Detectable Movement
Estimated Accuracy= 0.02 feet at 95% Confidence

Points around the intersection of Dauntless & Exultant Drives slowed, however it appears other points in the KC Slide accelerated after the first seven days of observations. It is noted below that KC06 moved westerly 0.32 feet between the May 12 and July 15 (about 0.005'/day) and 0.33 feet in the previous seven months since October 10, 2022. Except for KC07, KC14 and KC16 all other points in the Klondike Canyon Slide have accelerated in this last year after having accelerated in the previous four years.

The following table provides a general assessment of movements since 2014. The 2014-2018 period is generally representative of previous years back to 2007. In the last two months the movement velocities have accelerated over the previous seven-month period between October 10, 2022 to May 12, 2023. In that seven-month period the average velocities had accelerated over the previous four-year average which saw an acceleration over the previous 8 or more years. A monitoring year is 12 months beginning and ending about the beginning of the rainy season on October 1. Below are the measured movements for a sample of monitoring points for the indicated periods with a projection for the full year of October 10, 2022 to October 2023 based on actual measurements for the period October 10, 2022 to July 15, 2023.



Movement Summary at Selected Points in Feet

ID	2014-2018 4-Yr.Av./Max.	2018-2022 4-Yr.Av./Max.	Oct.10,2022 to May 12,2023 7 Months	May 12, 2023 to July 15, 2023 2 Months	Oct.'22-July'23 1 Yr. Projection
AB17	0/0	0/0	0.05	<0.04?	?
AB20	0.09/0.20	0.48/0.54	0.84	0.74	2.11
AB53	0.07/0.18	0.43/0.49	0.74	0.65	1.85
AB58	0.07/0.14	0.35/0.41	0.60	0.54	1.52
AB60	0.07/0.17	0.45/0.46	0.80	0.63	1.91
AB67	0.03/0.04	0.16/0.18	0.32	0.21	0.71
AB68	0.05/0.11	0.31/0.32	0.54	0.50	1.39
AB70		0.49/0.52	0.84	0.69	2.04
AB73		*0.36/0.46	0.78	0.67	1.93
CR07	0.06/0.13	0.30/0.32	0.44	0.42	1.15
FT09		*0.02/0.03	0.04	0.03	0.09
KC02	0.05/0.11	0.22/0.30	?	0.91/9 Mo.	1.21
KC05	0.03/0.06	0.10/0.15	?	0.40/9 Mo.	0.53
KC06	0.04/0.09	0.16/0.22	0.33	0.32	0.87
KC07	0/0	0/0	0	0.02	?
KC13	0.04/0.07	0.08/0.15	0.19	0.15	0.45
KC14	0/0	0.03/.04	?	0.08	0.11
KC15	0.04/0.09	0.16/0.23	?	0.61/9 Mo.	0.81
KC16	0/0	0/0	0	0.04	?
KC17	0.04/0.09	0.14/0.19	0.31	0.28	0.79
KC18		*0.33/0.40	?	1.28/9 Mo.	1.71
PB55	0.89/1.31	0.89/1.23	1.06	0.96	2.69
PB70	*0.53/0.82	0.82/1.15	1.14	0.79	2.56

* 3 Years

As stated above, velocities were fairly stable prior to 2018. After the Fall of 2018 they increased about 3 to 5-fold at most points and remained fairly stable until the Fall 2022. Between October 10, 2022 and May 12, 2023 (seven months) the velocities accelerated, and accelerated again in the following two months as noted. The one-year Projected Movements (October 2022 to October 2023) are annualized based on the accumulated movements between October 10, 2022 and July 12, 2023.

SURVEYOR'S STATEMENT: This report is based on record information and a portion on field surveys and was prepared by me on July 23, 2022 and revised August 6, 2023 at the request of Ramzi Awwad of the City of Rancho Palos Verdes.