

Project No. 3586.002.022

June 7, 2023

Wiedemann Ranch GHAD Board of Directors Chair Candace Andersen Vice Chair Federal D. Glover Board Member John M. Gioia Board Member Diane Burgis Board Member Ken Carlson

Wiedemann Ranch Geologic Hazard Abatement District 651 Pine Street, Room 107 Martinez, CA 94553-1229

Subject: Norris Canyon Estates Contra Costa County, California

## GEOLOGIC HAZARD ABATEMENT DISTRICT MONITORING – SPRING 2023

Dear Chair Andersen and Board Members:

ENGEO is pleased to submit this monitoring report for the Norris Canyon Estates development within the Wiedemann Ranch Geologic Hazard Abatement District (GHAD). This letter summarizes our observations made during our site visits in April 2023 within the Norris Canyon Estates (formerly known as Wiedemann Ranch) development in Contra Costa County, California. The previous Fall 2022 monitoring event was completed in September and October 2022 (Reference 1), and a copy has been posted on the GHAD's website at www.wiedemannranchghad.org. The Wiedemann Ranch GHAD has acquired Plan of Control monitoring and maintenance responsibilities for all residential and open-space parcels within the Norris Canyon Estates development (Reference 2).

# SCOPE

The site visit included observation or monitoring of the following items.

- Slopes within the creek corridor, including drainage inlets, outlets, and other structures within the creek channel
- Common area and open-space slopes located adjacent to improvements
- Retaining walls
- Concrete-lined surface drainage ditches
- Storm drain inlets
- Debris benches
- Subdrain outlets and measurement of discharge volumes
- Settlement/slope monitoring instruments

## **CREEK CHANNELS**

In general, the creek channels within the GHAD-accepted portion of the Norris Canyon Estates development are deeply incised with oversteepened banks that are subject to slope failure. As stated in the Wiedemann Ranch Plan of Control, the creek channels will be allowed to mature naturally, which may include slope failures, unless there are substantial creek bank failures that threaten site improvements (Reference 3).

During our Fall 2022 monitoring event, we noted dense accumulation of tree branches and debris at the flow weir and culvert adjacent to Wall E. We observed during this monitoring that the tree branches and debris had been removed.

During the winter of 2022-2023, the culvert inlets at 2380 Ashbourne Drive and 3221 Ashbourne Circle were obstructed by debris. Woody vegetation became lodged within the culvert adjacent to 3221 Ashbourne Circle and damaged the trash rack upstream of the culvert. We observed during this monitoring event that the woody vegetation had been removed from the culvert pipe (Site Condition A, Appendix A, Figure 2). The GHAD will continue to monitor the damaged trash rack and will perform repairs in the future. We also observed that the culvert at 2380 Ashbourne Drive is still obstructed by sediment and debris (Site Condition B, Appendix A, Figure 2). The GHAD will remove the sediment and debris from the culvert inlet to allow for proper drainage.

## COMMON AREA AND OPEN-SPACE SLOPES

The common area and open-space slopes and swales were observed for evidence of slope instability, including landslides, mudflows, erosion, diverted drainage, or standing water. This activity has resulted in bare soil and surface voids. We will continue to monitor these disturbed areas for instability in the future. There are a number of unrepaired landslides within the ungraded portions of the HOA-owned parcels that do not appear to be impacting improvements. These landslides have moved in the past and will likely do so in the future when wet conditions occur. The GHAD will continue to monitor these slides during future monitoring events. During this monitoring event, we observed that the site slopes in some locations were disturbed from pig rooting activity (Figure 1). This activity has resulted in bare soil. The GHAD will continue to monitor these disturbed areas for instability in the future.

Since 2018, several minor landslides/earthflows were observed along the 1:1 (horizontal:vertical) engineered fill slope, north of Lyndhurst Place, downhill from the nearby residences. These shallow landslides were not of immediate concern but have been monitored during subsequent scheduled monitoring events. During this monitoring event, the landslides did not show any significant movement, but we did observe a new earthflow and damaged fence at the rear of 149 Lyndhurst Place (Site Condition C, Appendix A, Figure 1). The earthflow did not appear to be impacting the house pad or mid-slope drainage ditch. The GHAD will continue monitoring these areas for slope stability.

During the Spring 2018 monitoring event, we observed minor erosion that extended east of 2263 Ashbourne Drive. The erosion gully was located below a riprap dissipater located on the property. During our Fall 2021 monitoring visit, we observed the area was vegetated and the erosion had not significantly increased. Conditions were observed to be unchanged during this monitoring event. We also observed a minor erosion rill extending southwest of 539 Wycombe Court property fence line during our Fall 2022 monitoring. During this monitoring event, we observed that the area was vegetated and erosion had not progressed. These areas will continue to be monitored and observations noted if changes occur in the future.

Wiedemann Ranch Geologic Hazard Abatement District Norris Canyon Estates GEOLOGIC HAZARD ABATEMENT DISTRICT MONITORING – SPRING 2023

During the winter of 2017/2018, a landslide occurred south of Ardleigh Court measuring approximately 35 feet in length, 35 feet in width, and up to 5 feet in depth. In October 2018, the GHAD repaired the landslide and restored the slope to the original graded condition. The repaired slope was observed during this monitoring event and appeared to be performing well. This area will be monitored in future events to ensure the effectiveness of the repair.

During our Spring 2021 monitoring event, we observed that the eastern slope of 3327 Ashbourne Circle was saturated, as well as the access road downslope from the residence. This saturation caused the eastern slope of the access road to begin eroding. During our fall monitoring event, we did not observe overly saturated conditions along the eastern slope or the access road, and slope erosion appeared to be unchanged. During this monitoring event, we observed the conditions of the access road and slope, again, to be unchanged. The GHAD will continue monitoring these areas for slope stability and note if changes occur in the future.

During the recent winter of 2022/2023, prolonged periods of heavy rainfall saturated open space and residential lot slopes which resulted in several shallow earthflow and erosional features adjacent to improvements, as listed below.

- Shallow earthflow northeast of Bishop Tank Site pad measuring 18 feet wide by 25 feet long with an estimated depth of 1 to 2 feet (Site Condition D.1, Appendix A, Figure 1).
- Shallow earthflow northwest of 3581 Ashbourne Circle rear yard (west) measuring 10 to 15 feet wide by 185 feet long with an estimated depth of 1 to 5 feet (Site Condition D.2, Appendix A, Figure 1).
- Shallow earthflow northwest of 3581 Ashbourne Circle rear yard (east) measuring 40 feet wide by 150 feet long with an estimated depth of 2 to 3 feet (Site Condition D.3, Appendix A, Figure 1).
- Shallow earthflow northwest of 3551 Ashbourne Circle rear yard measuring 10 to 30 feet wide by 75 feet long with an estimated depth of 3 to 4 feet (Site Condition D.4, Appendix A, Figure 1).
- Shallow earthflow within natural rear slope of 547 Wycombe Court measuring 10 to 15 feet wide by 60 feet long with an estimated depth of 2 to 3 feet (Site Condition D.5, Appendix A, Figure 2).
- Shallow earthflow within natural rear slope of 539 Wycombe Court measuring 10 feet wide by 25 feet long with an estimated depth of 1 to 2 feet (Site Condition D.6, Appendix A, Figure 2).
- Shallow earthflow southwest of 539 Wycombe Court rear yard measuring 10 to 15 feet wide by 185 feet long with an estimated depth of 1 to 5 feet (Site Condition D.7, Appendix A, Figure 2).
- Shallow earthflow within natural rear slope of 533 Wycombe Court measuring 15 to 20 feet wide by 60 feet long with an estimated depth of 12 to 4 feet (Site Condition D.8, Appendix A, Figure 2).
- Shallow earthflow west of 3340 Ashbourne Circle rear yard measuring 15 feet wide by 20 feet long with an estimated depth of 2 to 3 feet (Site Condition D.9, Appendix A, Figure 2).
- Multiple shallow earthflows along northwestern side of EVA Road. (Site Condition D.10, Appendix A, Figure 2).

- Shallow earthflow west of EVA Road and retaining wall measuring 50 to 60 feet wide by 40 feet long with an estimated depth of 2 to 3 feet (Site Condition D.11, Appendix A, Figure 2).
- Shallow earthflow within natural rear slope of 231 Cliffecastle Court measuring 15 wide by 30 feet long with an estimated depth of 4 to 5 feet (Site Condition D.12, Appendix A, Figure 2).
- Shallow earthflow within natural rear slope of 223 and 231 Cliffecastle Court measuring 15 feet wide by 30 to 40 feet long with an estimated depth of 2 to 3 feet (Site Condition D.13, Appendix A, Figure 2).
- Slope erosion rills northeast of Whitcliffe Court measuring 1 to 2 feet wide by 35 feet long with an estimated depth of 1 to 2 feet (Site Condition E, Appendix A, Figure 1). Erosional rills are outside of the GHAD boundary.
- Eroded and displaced backfill above culvert pipe. (Site Condition F.1, Appendix A, Figure 1).
- Eroded and displaced backfill behind retaining wall and below wall lagging. (Site Condition F.2, Appendix A, Figure 2).
- Creek bank failure/slump within natural creek bank of 2380 Ashbourne Drive measuring 40 to 45 feet wide by 35 feet long with an estimated depth of 5 to 6 feet (Site Condition G, Appendix A, Figure 1).

During our recent monitoring event, we observed that the earthflows and erosion listed above had stabilized. The GHAD will continue to monitor these areas and will perform mitigation and/or repairs, as needed, during the summer and fall of 2023.

We noted during our Fall 2020 monitoring event that linear cracking parallel to the adjacent MSE Retaining Wall L2 and top of slope had occurred in the asphaltic concrete (AC) pavement along Ashbourne Drive. The cracks in the street ranged in width from hairline to 1 inch. We did not see evidence of any instability failure of the MSE retaining wall or downhill slope adjacent to the road at the time of our visit. During this monitoring event, the cracking within the street was visible due to recent wear and degradation of previously crack sealing of the asphalt paving on the roadways. The GHAD has an ongoing investigation to determine necessary mitigation related to potential movement of the slope and MSE retaining wall.

## MECHANICALLY STABILIZED EARTH (MSE) RETAINING WALLS

In addition to the other structures within the creek channels, we observed the conditions of the mechanically stabilized earth (MSE) retaining walls above or adjacent to the culvert headwall structures. Many of the MSE walls within the development were observed to have some minor cracking. On Walls A, B, E, F, H, I, lower L1, and lower M, cracks ranging from hairline to ¼-inch wide were observed along or adjacent to planned expansion joints above culvert headwalls.

On Wall J, a 1-inch gap along an expansion joint was observed between the concrete headwall and the adjacent MSE retaining wall blocks during the 2002 monitoring event. During the 2007 site visit, it appeared that the gap had widened to approximately 2 inches. During the 2011 site visit, the gap had widened to approximately 2¼ inches. As observed during the most recent monitoring event, the gap has remained at approximately 2¼-inch-wide (Site Condition H, Appendix A, Figure 1).

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On the southern side of the upper portion of Wall M, cracks up to ¼-inch wide were observed in the wall, which are located at the base of the southern 1:1 (horizontal:vertical) creek bank slope. The cracks are not associated with an expansion joint. The cracks were first observed during the 2002 monitoring and do not appear to have significantly changed since the first observation.

Since the Spring 2018 monitoring event, a few of the wall blocks were observed to be knocked off at the top of the MSE retaining walls. These missing wall blocks do not appear to be affecting the performance of the walls.

Observation of the above-listed retaining wall conditions should be included in future monitoring events.

## CONCRETE-LINED SURFACE DRAINAGE DITCHES

The concrete drainage ditches were checked for accumulation of debris/sediment and for obvious distress, such as cracking or shifting of the concrete. Some minor cracking was observed in the concrete drainage ditches, but the cracks do not appear to be related to significant slope movement nor do they substantially impact the integrity of the ditches. As part of annual maintenance, the GHAD removes debris from the concrete-lined drainage ditches.

Retaining Wall L-5 subdrain outlet discharges directly over a separated drainage ditch expansion joint, and potential subdrain and/or surface water can seep through the separation and potentially saturate the soil of the slope (Site Condition I, Appendix A, Figure 1). During this monitoring event, the surrounding slope did not show significant saturation or movement. The expansion joint between segments of the concrete-lined drainage ditch should be sealed/patched, and the GHAD will continue monitoring the area for slope stability concerns.

## **STORM DRAIN IMPROVEMENTS**

Storm drain improvements within the open space area of the GHAD appeared to be relatively clear of debris with the exception of some materials accumulating in concrete-lined drainage ditches and within drain inlet boxes where the drainage ditches discharge into the inlets. Any accumulated material will be removed as part of the GHAD's annual maintenance work.

During the Spring 2020 monitoring event, the top of the storm drain inlet box at the concrete-lined drainage ditch, located southwest of 3057 Ashbourne Circle, showed cracking and significant separation from the inlet box structure. At the time of this monitoring event, the cracking had not progressed (Site Condition J, Appendix A, Figure 2). The inlet box and cracks should continue to be monitored and, if needed, sealed or replaced to maintain the integrity and longevity of the drain inlet.

We observed that the storm drain inlet located at the southeastern corner of 101 Lyndhurst Place was obstructed by vegetation and sediment (Site Condition K, Appendix A, Figure 1). The drain inlet will be cleared during annual maintenance work.

A series of pre-development culvert pipe inlets along the upslope side of an access road west of Ashbourne Drive (APN 211210045) were obstructed during the recent rains of winter 2022/2023 and required maintenance. We noted during monitoring that the recent maintenance of the pipe inlets allowed for proper drainage (Site Condition L.1-L.3, Figure 1). The GHAD will continue to monitor the culvert pipes during future monitoring and will provide maintenance, as needed.

## **DEBRIS BENCHES**

The debris benches within the development were relatively free of debris and do not appear to require cleaning at this time.

## SUBDRAIN OUTLET MONITORING AND LOCATION

Subdrain outlet locations were observed and/or monitored during the site visit. Discharge levels flowing from the subdrain outlets are shown in Tables A and B (attached). As shown in Tables A and B, we were unable to locate some of the subdrain outlets. The GHAD will continue to search for the surveyed locations of these outlets during future site monitoring, and, if possible, will locate, expose, and mark the outlets in the field for future monitoring.

## INCLINOMETER AND SONDEX SETTLEMENT MONITORING

In order to monitor engineered fill and graded slope performance, two monitoring devices were installed at 149 Lyndhurst Place (Lot 8) in December 1998. The monitoring devices, a slope inclinometer, and a Sondex settlement monument are located at the northwestern corner of the rear yard of the lot near the top of slope. A slope inclinometer is used to measure the lateral movement, if any, within the slope. The Sondex monitoring instrument is used to measure vertical movement within the engineered fill.

We attempted to contact the homeowner of Lot 8 during this monitoring event, but they were not available at this time to allow access to their rear yard. As access is provided to the GHAD, we will report monitoring results for the Sondex and inclinometer instruments in future monitoring letters.

As previously mentioned in this report, The GHAD has an ongoing investigation in regard to AC cracking along Ashbourne Drive, which includes monitoring of two slope inclinometers installed between Ashbourne Drive and MSE Retaining Wall L2 (Figure 1). Test results of the inclinometer readings performed during this monitoring event are presented in Appendix B.

If you have any questions regarding the contents of this letter, please contact us.

Sincerely,

**ENGEO** Incorporated

Greg Hudson

gh/rhb/ca



Attachments: Selected References Tables A and B Appendix A – Site Condition Summary with Photographs Appendix B – Inclinometer Test Results Figures 1 and 2 – Site Plans



## SELECTED REFERENCES

- 1. ENGEO. 2022. Geologic Hazard Abatement District Monitoring Fall 2022, Norris Canyon Estates, Contra Costa County, California. November 10, 2022. Project No. 3586.002.022.
- 2. ENGEO. 2020. Wiedemann Ranch Geologic Hazard Abatement District Plan of Control Transfer Acceptance of Selected Parcels, Norris Canyon Estates, Contra Costa County, California. July 27, 2020. Project No. 3586.002.020.
- ENGEO. 1998. Plan of Control for Wiedemann Ranch Geologic Hazard Abatement District (GHAD), Contra Costa County, California. May 1, 1998, Revised August 17, 1998. Project No. 3586-W4.



# TABLES

Table A – Keyway Subdrains Table B – MSE Retaining Wall Subdrains



# TABLE A: Keyway Subdrains

LABEL/LOCATION	FLOW (GALLONS/DAY)	COMMENTS
K-1	457	
K-1A	-	UTM/UTL (beneath riprap embankment)
K-2 (west)	3424	
K-2 (east)	-	UTM, (pipe outlet partially submerged in sediment and water)
K-3	-	UTM, (pipe outlet obstructed by vegetation and sediment)
K-5	0	Wet
K-5A	1598	
K-6	-	UTM/UTL (beneath riprap apron)
K-7	274	
K-8 (north)	-	UTM (pipe outlet not visible/obstructed by riprap and soil)
K-8 (south)	2282	
K-9 (west)	-	UTM (pipe outlet submerged in creek water)
K-9 (east)	-	UTM/UTL (beneath riprap apron)
K-11	46	
K-14	0	Wet
K-16	0	UTM (pipe outlet submerged in creek water)
K-17 (northwest)	0	Dry
K-17 (southeast)	2511	
K-17 (east)	457	
K-21 (west)	685	
K-21 (east)	0	Dry
K-22 (west)	457	
K-22 (east)	1826	
K-24	913	EST. UTA (pipe outlet visible but not accessible)
K-26	228	
K-32	913	
K-33	0	Wet
K-39	0	Dry
K-39A	0	Dry
K-41	0	Dry
K-41A	2	
K-42	1027	
K-43	2739	
K-43A	1826	
K-43B	46	



## TABLE A: Keyway Subdrains (Continued)

LABEL/LOCATION	FLOW (GALLONS/DAY)	COMMENTS
K-43C	-	UTM/UTL
K-45 (west)	4565	
K-45A	228	
K-45N	457	
K-45 (east)	3424	UTA (pipe outlet visible)
K-46	-	UTL
K-47	3652	
K-47A	1598	
K-58	1370	EST (pipe outlet invert at ground surface)
K-66	-	UTM/UTL (silted over by SD outfall wash)
K-70	0	Dry
K-D	-	UTM/UTA (within SD structure)
K-B	0	Dry
K-T	0	Dry
K-OS	46	
Lot 1	0	Dry
Lot 50, 7578	-	UTM/UTL (within homeowner property)
EVA Roadway	46	
Bishop Tank Site	0	Dry
Ashbourne Drive Landslide	0	Wet
Ashbourne Drive	0	Dry
KL-1	23	
KL-18A	23	
KL-22	91	
KL-22A	23	EST. UTA (pipe outlet visible)
KL-22B	23	
KL-22C	11	
KL-28	23	
KL-38	11	
KL-48	2282	
KL-58	23	
KL-60	913	
KL-92	-	UTM/UTL (within homeowner property)
KL-99	23	
KL-101	23	
KL-103	69	
KL-118	0	Dry



# TABLE A: Keyway Subdrains (Continued)

LABEL/LOCATION	FLOW (GALLONS/DAY)	COMMENTS
KL-121	-	UTM/UTL (within homeowner property)
KL-122	0	Dry
KL-123	0	Dry
KL-124	23	
KL-125	23	
Ardleigh Drive Landslide	0	Dry
SAR-1	0	Wet
S-3	685	
S-43A	3424	
S-43B	-	UTM (pipe outlet submerged in creek water), ground area saturated
S-100	0	Dry
S-101	4565	
S-102	46	
S-103	-	UTM (pipe outlet submerged in creek water)

#### LEGEND

EST - Estimate UTM – Unable to monitor UTL – Unable to locate UTA – Unable to access



## TABLE B: MSE Retaining Wall Subdrains

LABEL/LOCATION	FLOW (GALLONS/DAY)	COMMENTS
B (south)	228	
B (north)	11.4	
E	-	UTM (pipe outlet submerged in creek water)
F (east)	-	UTM (pipe outlet not visible/obstructed by riprap and soil)
G	1,370	
I	0	Wet
J (south)	0	Dry
J (north)	0	Dry
L-2	0	Dry
L-5	0	Dry
M (northwest)	0	Wet
M (southeast)	11	
Р	457	
Q	0	Dry
V	0	Wet
RW-26	11	
RW-31	-	UTM (within homeowner property)
RW-33	23	
RW-54	0	Dry
RW-57	0	Dry
RW-61	0	Dry
RW-62	3310	
RW-67	0	Dry
RW-69	-	UTM (within homeowner property)
RW-70	0	Dry
RW-70A	-	UTM/UTL (within homeowner property)
RW-71	23	
RW-71A	0	Wet
RW-72	0	Wet
RW-72A	0	Wet
RW-77	0	Dry
RW-96	-	UTM/UTL (within homeowner property)
RW-104	0	Dry
RW-105	-	UTM/UTL (within homeowner property)

LEGEND

EST - Estimate UTM – Unable to monitor UTL – Unable to locate UTA – Unable to access

3586.002.022 June 7, 2023



# **APPENDIX A**

Norris Canyon Estates Site Condition Summary with Photographs



Site Condition: Observation Date:	A 04/24/2023				
Description:	Damaged trash rack.				
Recommendation:	Continue to monitor. replace/repaired.	Trash	rack	to	be
Field Representative:	GH				

В

04/24/2023

vegetation.

pipe.

GH

Culvert pipe obstructed by sediment and

Remove sediment and vegetation from culvert





Site Condition:	С
Observation Date:	04/24/2023
Description:	Surficial mudslide along 1:1 slope.
Recommendation:	Continue to monitor.

Field Representative: GH

Field Representative: GH

Site Condition:

Description:

Observation Date:

Recommendation:



Site Condition: Observation Date:	D.1 04/24/2023
Description:	Shallow earthflow (18 feet wide by 25 feet long with an estimated depth of 1 to 2 feet).
Recommendation:	Continue to monitor. Mitigate/repair as needed.





Site Condition: Observation Date:	D.2 04/25/2023
Description:	Shallow earthflow (10 to 15 feet wide by 185 feet long with an estimated depth of 1 to 2 feet).
Recommendation:	Continue to monitor. Mitigate/repair as needed.
Field Representative:	GH

D.3

GH

04/25/2023

Shallow earthflow (40 feet wide by 150 feet long

Continue to monitor. Mitigate/repair as needed.

with an estimated depth of 2 to 3 feet).





Site Condition:	D.4
Observation Date:	04/25/2023
Description:	Shallow earthflow (10 to 30 feet wide by 75 feet long with an estimated depth of 3 to 4 feet).
Recommendation:	Continue to monitor. Mitigate/repair as needed.

Field Representative: GH

Field Representative: GH

Site Condition:

Description:

Observation Date:

Recommendation:



Site Condition: Observation Date:	D.5 04/25/2023
Description:	Shallow earthflow (10 to 15 feet wide by 60 feet long with an estimated depth of 2 to 3 feet).
Recommendation:	Continue to monitor. Mitigate/repair as needed.





Site Condition: Observation Date:	D.6 04/25/2023
Description:	Shallow earthflow (10 feet wide by 25 feet long with an estimated depth of 1 to 2 feet).
Recommendation:	Continue to monitor. Mitigate/repair as needed.
Field Representative:	GH

Shallow earthflow (25 feet wide by 35 feet long

Continue to monitor. Mitigate/repair as needed.

with an estimated depth of 2 to 3 feet).

D.7

GH

04/25/2023





Site Condition: Observation Date:	D.8 04/25/2023
Description:	Shallow earthflow (15-20 feet wide by 60 feet long with an estimated depth of 2 to 4 feet).
Recommendation:	Continue to monitor. Mitigate/repair as needed.

Field Representative: GH

Field Representative: GH

Site Condition:

Description:

Observation Date:

Recommendation:



Site Condition: Observation Date:	D.9 04/25/2023
Description:	Shallow earthflow (15 feet wide by 20 feet long with an estimated depth of 2 to 3 feet).
Recommendation:	Continue to monitor. Mitigate/repair as needed.





Site Condition:	D.10
Observation Date:	04/25/2023
Description:	Multiple shallow earthflows along northwest side of EVA Road.
Recommendation:	Continue to monitor.
Field Representative:	GH

D.11

GH

04/25/2023

Shallow earthflow (50 to 60 feet wide by 40 feet long with an estimated depth of 2 to 3 feet).

Continue to monitor. Mitigate/repair as needed.





Site Condition:	D.12
Observation Date:	04/25/2023
Description:	Shallow earthflow (15 feet wide by 30 feet long with an estimated depth of 4 to 5 feet).
Recommendation:	Continue to monitor. Mitigate/repair as needed.

Field Representative: GH

Field Representative: GH

Site Condition:

Description:

Observation Date:

Recommendation:



Site Condition: Observation Date:	D.13 04/25/2023
Description:	Shallow earthflow (15 feet wide by 30 to 40 feet long with an estimated depth of 2 to 3 feet).
Recommendation:	Continue to monitor. Mitigate/repair as needed.





Site Condition: Observation Date:	E 04/24/2023	
Description:	Off-site slope erosion adjacent to boundary	GHAD
Recommendation:	Continue to monitor.	
Field Representative:	GH	





Site Condition: Observation Date:	F.1 04/24/2023
Description:	Eroded and displaced backfill above culvert pipe.
Recommendation:	Repair culvert pipe and slope above pipe.

Field Representative: GH

Site Condition: Observation Date:	F.2 04/25/2023
Description:	Eroded and displaced backfill behind retaining wall and below wall lagging.
Recommendation:	Replace backfill behind wall after reconstruction of fill in front of wall.

Field Representative: GH



Site Condition: Observation Date:	G 04/24/2023
Description:	Creek bank failure/slump measuring 40 to 45 feet wide by 35 feet long with an estimated depth of 5 to 6 feet.
Recommendation:	Continue to monitor. Mitigate/repair as needed.





Site Condition:

Description:

Observation Date:

Recommendation:

Field Representative: GH

L

04/24/2023

Continue to monitor.

Concrete-lined drainage ditch separated at expansion joint. Approximate 1-inch separation.

### Appendix A Site Condition Summary with Photographs Norris Canyon Estates

Site Condition: Observation Date:	H 04/24/2023
Description:	2 1/4-inch gap along retaining wall expansion joint.
Recommendation:	Continue to monitor.
Field Representative:	GH





Site Condition: Observation Date:	J 04/24/2023
Description:	Crack along top portion of DI box.
Recommendation:	Continue to monitor and replace if cracking affects DI function.
Field Representative:	GH



Site Condition:	К
Observation Date:	04/24/2023
Description:	Storm drain inlet obstructedy by vegetation and sediment.
Recommendation:	Storm drain inlet should be cleared of vegetation and sediment.
Field Representative:	GH





Site Condition: Observation Date:	L.1 04/25/2023
Description:	Maintained drainage culvert.
Recommendation:	Continue to monitor.
Field Representative:	GH

L.2

GH

04/25/2023

Maintained drainage culvert.

Continue to monitor.





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18. S.M.	and they have	A
	No the state	



Field Representative: GH

Site Condition:

Description:

Observation Date:

Recommendation:





# **APPENDIX B**

**Inclinometer Test Results** 

3586.002.022 June 7, 2023











FIGURES

Figures 1 and 2 – Site Plan



PATH: G:\DRAFTING\PROJECTS\3586\3586002022\GHAD-WIEDEMANN RANCH-NORRISCANYON\3586002022-GHAD-WIEDEMANN-NORRISCANYON\_EDIT.AP LAYOUT: SITE PLAN 1 USER: NLAMOTTEKERR







GHAD BOUNDARY

VEGETATION MANAGEMENT ZONE

GRASSES AND BASIN MAINTENANCE

6009 ADDRESS

211020026 ASSESSOR'S PARCEL NUMBER

SITE PLAN - SPRING 2023

Expect Excellence

WIEDEMANN RANCH GHAD - NORRIS CANYON ESTATES SAN RAMON, CALIFORNIA

DJECT NO. : 3586.002.022 LE: AS SHOWN WN BY:NLK CHECKED BY:RHB



PATH: G:\DRAFTING\PROJECTS\3586\3586002022\GHAD-WIEDEMANN RANCH-NORRISCANYON\3586002022-GHAD-WIEDEMANN-NORRISCANYON\_EDIT.APF LAYOUT: SITE PLAN 2 USER: NLAMOTTEKERR



# EXPLANATION ALL LOCATIONS ARE APPROXIMATE SITE CONDITION (SPRING 2023) 🕂 INCLINOMETER OTHER MONITORING INSTRUMENT 💠 SONDEX CULVERT BASIN INLET/OUTLET SUBDRAIN OUTLET SUBDRAIN OUTLET (RETAINING WALL) —— CONCRETE-LINED DRAINAGE DITCH ------ RETAINING WALL —— CATCHMENT FENCE GHAD BOUNDARY VEGETATION MANAGEMENT ZONE GRASSES AND BASIN MAINTENANCE 6009 ADDRESS

211020026 ASSESSOR'S PARCEL NUMBER

ENGEO Expect Excellence

SITE PLAN - SPRING 2023 WIEDEMANN RANCH GHAD - NORRIS CANYON ESTATES SAN RAMON, CALIFORNIA

DJECT NO. : 3586.002.022 LE: AS SHOWN 2 WN BY:NLK CHECKED BY:RHB

0