

Project No.  
**3586.002.023**

April 17, 2024

Wiedemann Ranch GHAD Board of Directors  
Chair Candace Andersen  
Vice Chair Federal D. Glover  
Boardmember John M. Gioia  
Boardmember Diane Burgis  
Boardmember 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 2024**

Dear Chair Andersen and Boardmembers:

ENGEO is pleased to submit this monitoring report for the Norris Canyon Estates development, formerly known as Wiedemann Ranch, within the Wiedemann Ranch Geologic Hazard Abatement District (GHAD). This letter summarizes our observations made during our site visits in April 2024, within the Norris Canyon Estates development in Contra Costa County, California. The previous fall 2023 monitoring event was completed in October 2023 (Reference 1). As described in the Wiedemann Ranch Plan of Control (Reference 2), the purpose of this monitoring is to observe and report on the open space and associated improvements within the development. The Wiedemann Ranch GHAD has monitoring and maintenance responsibilities for the open space parcels within the Norris Canyon Estates development. These parcels are listed in Table 1.

**TABLE 1: Wiedemann Ranch GHAD Open Space Parcels – Norris Canyon Estates Development**

ASSESSOR'S PARCEL NUMBER (APN)		
211-210-045	211-240-017	211-340-012
211-210-063	211-240-019	211-360-051
211-210-074	211-250-020	211-360-052
211-210-081	211-250-021	211-370-062
211-210-082	211-260-025	211-370-063
211-210-084	211-270-012	211-370-069
211-210-085	211-310-024	211-410-001
211-230-015	211-320-019	
211-240-002	211-330-012	

## SCOPE

Site monitoring included observation of the following features.

- 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.

## 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 by 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 have been 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. We did observe a new earthflow and damaged fence at the rear of 149 Lyndhurst Place during the spring 2023 monitoring event. During this monitoring event, the earthflow appeared to have stabilized and did not appear to be impacting the house pad or mid-slope drainage ditch (Site Condition A, Appendix A, Figure 1B). The GHAD will continue monitoring these areas for slope stability.

During the 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. During our spring 2023 monitoring event, we observed that the earthflows and erosion had stabilized. During our fall 2023 monitoring event, we noted repair/mitigation work performed by the GHAD, and the status of the features. Below is a list of features we observed during this monitoring event.

- Shallow earthflow northeast of Bishop Tank Site pad. Earthflow is stabilized with partial revegetation on affected slope (Site Condition B.1, Appendix A, Figure 1B).
- Shallow earthflow northwest of 3581 Ashbourne Circle rear yard (west). Earthflow is stabilized with partial revegetation on affected slope. Debris wall constructed within open space below earthflow and adjacent to homeowner property.
- Shallow earthflow northwest of 3581 Ashbourne Circle rear yard (east). Earthflow is stabilized with partial revegetation on affected slope. Debris wall constructed within open space below earthflow and adjacent to homeowner property.
- Shallow earthflow northwest of 3551 Ashbourne Circle rear yard. Erosion control mitigation is in place with partial revegetation on affected slope. Debris wall constructed within open space below earthflow and adjacent to homeowner property.
- Shallow earthflow within the natural rear slope of 547 Wycombe Court. Erosion control mitigation is in place with partial revegetation on affected slope.
- Shallow earthflow within the natural rear slope of 539 Wycombe Court. Erosion control mitigation is in place with partial revegetation on affected slope.
- Shallow earthflow southwest of 539 Wycombe Court rear yard. Earthflow is stabilized with partial revegetation on affected slope (Site Condition B.2, Appendix A, Figure 1C).
- Shallow earthflow within the natural rear slope of 533 Wycombe Court. Erosion control mitigation is in place with partial revegetation on affected slope.
- Shallow earthflow west of 3340 Ashbourne Circle rear yard. Slope repair and erosion control is in place with revegetation on affected slope.
- Multiple shallow earthflows along northwestern side of EVA Road. Earthflows are stabilized with revegetation on affected slope.
- Shallow earthflow east of EVA Road and retaining wall. Earthflow is stabilized with partial revegetation on affected slope.
- Shallow earthflow within the natural rear slope of 231 Cliffecastle Court. Slope repair and erosion control is in place with revegetation on affected slope.
- Shallow earthflow within the natural rear slope of 223 and 231 Cliffecastle Court. Slope repair and erosion control are in place with revegetation on affected slope.
- Slope erosion rills northeast of Whitcliffe Court (outside of the GHAD boundary). Condition unchanged with partial revegetation on affected slope. (Site Condition C, Appendix A, Figure 1C).
- Creek bank failure/slump within the natural creek bank of 2380 Ashbourne Drive. Failure/slump is stabilized below constructed retaining wall (Reference 3).

The GHAD will continue to monitor the above areas and will perform mitigation and/or repairs, as needed.

## **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 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 inches wide.

On the southern side of the upper portion of Wall M, cracks up to ¼-inch wide were observed in the wall, which is 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.

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

We noted during our fall 2020 monitoring event that linear cracking parallel to the adjacent MSE Retaining Wall L2 (previously known as Retaining Wall #1 or L3) 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 subsequent monitoring and this monitoring event, the cracking within the street was visible due to ongoing wear and degradation of previous crack sealing of the asphalt paving, and some distress was observed within the upper portion of the wall. The GHAD has completed an investigation and has received design recommendations for mitigation of the pavement and MSE retaining wall distress (Reference 4). Repairs of the roadway and retaining wall are scheduled to be performed during spring/summer 2024.

## **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.

## **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 material 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 D, Appendix A, Figure 1C). 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 E, Appendix A, Figure 1B). 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 rains of winter 2022/2023 and required maintenance. We noted during our spring 2023 monitoring that performed maintenance of the pipe inlets allowed for proper drainage. During this monitoring event, we observed the pipe inlets to be functioning properly (Site Condition F.1-F.3, Appendix A, Figure 1B). 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 did not appear to require cleaning at this time.

### **SUBDRAIN OUTLET MONITORING AND LOCATION**

Subdrain outlet locations were observed and monitored during the site visit. Discharge levels flowing from the subdrain outlets are shown in Table A (attached). As shown in Table A, 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 completed an 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 1C). Test results of the inclinometer readings performed through February 2024, are presented in Appendix B.

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

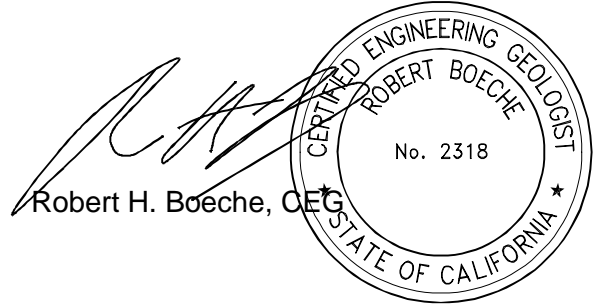
Sincerely,

ENGEO Incorporated



Greg Hudson

gh/rhb/cb



Attachments: Selected References  
Table A – Subdrains  
Appendix A – Site Condition Summary with Photographs  
Appendix B – Inclinator Test Results  
Figures 1A through 1D – Site Plans

## SELECTED REFERENCES

1. ENGEO. 2023. Geologic Hazard Abatement District Monitoring – Fall 2023, Norris Canyon Estates, Contra Costa County, California. November 29, 2023. Project No. 3586.002.023.
2. 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.
3. ENGEO. 2023. Testing and Observation Services During MSE Wall Construction, 2380 Ashbourne Drive, Norris Canyon Estates, Contra Costa County, California. December 4, 2023. Project No. 3586.002.023.
4. ENGEO. 2024. MSE Retaining Wall Design, Ashbourne Drive, Stations 20+60 to 25+20, Contra Costa County, California. April 1, 2024. Project No. 3586.002.023.

**TABLE A**

**Subdrains**



**TABLE A: Subdrains**

SUBDRAIN LABEL	FLOW (GALLONS/DAY)	COMMENTS
Ardleigh Landslide	22	
Ashbourne Drive	0	Dry
Ashbourne Drive Landslide	0	Wet
B (north)	0	Wet
B (south)	91	
Bishop Tank Site	148	
E	-	UTM, Pipe outlet submerged in creek water and soil
EVA Roadway	114	
F (east)	-	UTM, Pipe outlet not visible/obstructed by rip rap and soil.
G	1,141	
I	0	Wet
J (north)	0	Dry
J (south)	0	Wet
K-1	136	
K-11	45	
K-14	0	Wet
K-16	-	UTM, Pipe outlet submerged in creek water.
K-17 (east)	456	
K-17 (northwest)	0	Wet
K-17 (southeast)	1,711	
K-1A	-	UTM/UTL (beneath rip rap embankment)
K-2 (east)	-	UTM. Pipe outlet partially submerged in sediment and water
K-2 (west)	3,423	
K-21 (east)	0	Dry
K-21 (west)	228	
K-22 (east)	3,309	
K-22 (west)	273	
K-24	912	Est. UTA (within storm drain inlet box)
K-26	228	
K-3	22	
K-32	798	
K-33	68	
K-39	0	Wet

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

TABLE A: Subdrains (Continued)

SUBDRAIN LABEL	FLOW (GALLONS/DAY)	COMMENTS
K-39A	0	Dry
K-41	0	Dry
K-41A	342	
K-42	684	
K-43	2,510	
K-43A	2,967	
K-43B	148	
K-43C	-	UTM/UTL
K-45 (east)	3,423	Est. Pipe outlet visible but inaccessible.
K-45 (west)	3,309	
K-45A	0	Wet
K-45N	570	Est. Pipe outlet invert at ground level with pooling water. Area saturated.
K-46	-	UTL
K-47	3,195	
K-47A	2,054	
K-5	0	Wet
K-58	1,597	
K-5A	1,597	
K-6	-	UTM/UTL (beneath rip rap apron)
K-66	-	UTM/UTL (Silted over by SD outfall wash)
K-7	684	
K-70	68	
K-8 (north)	-	UTM, Pipe outlet submerged in creek water.
K-8 (south)	2,738	
K-9 (east)	-	UTM/UTL (beneath rip rap apron)
K-9 (west)	-	UTM, Pipe outlet submerged in creek water
K-B	0	Dry
K-D	-	UTM/UTA (within SD structure)
K-OS	273	
K-T	0	Dry
KL-1	365	
KL-101	114	
KL-103	114	

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

**TABLE A: Subdrains (Continued)**

SUBDRAIN LABEL	FLOW (GALLONS/DAY)	COMMENTS
KL-118	0	Dry
KL-121	-	UTM/UTL (within homeowner property)
KL-122	0	Wet
KL-123	11	
KL-124	22	
KL-125	22	
KL-18A	22	
KL-22	91	
KL-22A	22	Est. Outlet visible (within homeowner property)
KL-22B	228	
KL-22C	22	
KL-28	91	
KL-38	114	
KL-48	2,967	
KL-58	68	
KL-60	-	UTM, Pipe outlet obstructed by vegetation. Visible flow.
KL-92	-	UTM/UTL (within homeowner property)
KL-99	22	
L-2	0	Dry
L-5	0	Dry
Lot 1	0	Dry
Lot 50	-	UTM/UTL (within homeowner property)
M (northwest)	0	Wet
M (southeast)	22	
P	1,711	
Q	0	Dry
RW-104	0	Dry
RW-105	-	UTM/UTL (within homeowner property)
RW-2380	0	Dry
RW-26	114	Est. Outlet visible (within homeowner property)
RW-31	-	UTM (within homeowner property)
RW-33	45	
RW-54	0	Dry

**LEGEND**  
 EST - Estimate  
 UTM - Unable to monitor  
 UTL - Unable to locate  
 UTA - Unable to access

**TABLE A: Subdrains (Continued)**

SUBDRAIN LABEL	FLOW (GALLONS/DAY)	COMMENTS
RW-57	-	Dry
RW-61	0	Dry
RW-62	0	Wet
RW-67	0	Dry
RW-69	-	UTM/UTL (within homeowner property)
RW-70	22	
RW-70A	-	UTM/UTL (within homeowner property)
RW-71	91	
RW-71A	285	
RW-72	45	
RW-72A	11	
RW-77	0	Dry
RW-96	-	UTM/UTL (within homeowner property)
S-100	0	Dry
S-101	3,423	
S-102	456	
S-103	-	UTM, Pipe outlet submerged in creek water and soil
S-3	3,423	Est. Pipe outlet partially obstructed by vegetation.
S-43A	3,994	
S-43B	-	UTM, Pipe outlet submerged in water. Visible flow.
SAR-1	45	
V	0	Wet

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

**APPENDIX A**

**Norris Canyon Estates  
Site Condition Summary with Photographs**

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Site Condition: A  
Observation Date: 04/02/2024  
Description: Surficial earthflow along 1:1 slope.  
Recommendation: Continue to monitor.  
Field Representative: GH



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Site Condition: B.1  
Observation Date: 04/02/2024  
Description: Shallow earthflow (18 feet wide by 25 feet long with an estimated depth of 1 to 2 feet).  
Recommendation: Continue to monitor.  
Field Representative: GH



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Site Condition: B.2  
Observation Date: 04/03/2024  
Description: Shallow earthflow (25 feet wide by 35 feet long with an estimated depth of 2 to 3 feet).  
Recommendation: Continue to monitor.  
Field Representative: GH



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Site Condition: C  
Observation Date: 04/02/2024  
Description: Off-site slope erosion adjacent to GHAD boundary  
Recommendation: Continue to monitor.  
Field Representative: GH



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Site Condition: D  
Observation Date: 04/02/2024  
Description: Crack along top portion of DI box.  
Recommendation: Continue to monitor.  
Field Representative: GH



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Site Condition: E  
Observation Date: 04/02/2024  
Description: Storm drain inlet obstructed by sediment.  
Recommendation: Storm drain inlet should be cleared of sediment.  
Field Representative: GH



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Site Condition: F.1  
Observation Date: 04/02/2024  
Description: Maintained drainage culvert.  
Recommendation: Continue to monitor.  
Field Representative: GH



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Site Condition: F.2  
Observation Date: 04/02/2024  
Description: Maintained drainage culvert.  
Recommendation: Continue to monitor.  
Field Representative: GH





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

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Site Condition: F.3  
Observation Date: 04/02/2024  
Description: Maintained drainage culvert.  
  
Recommendation: Continue to monitor.  
  
Field Representative: GH

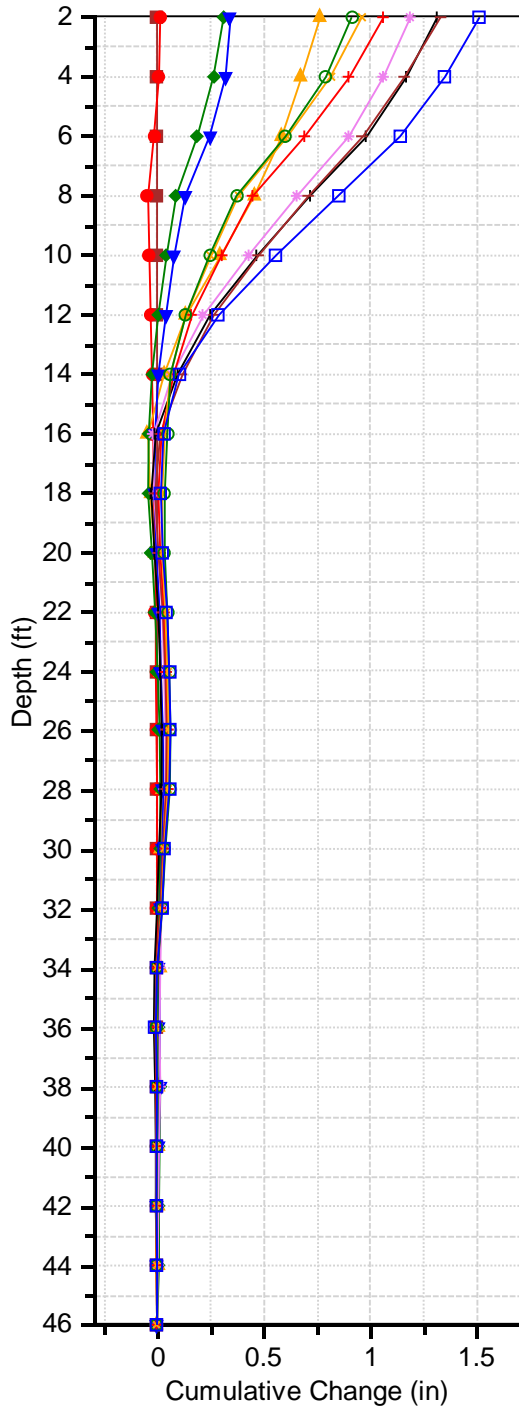
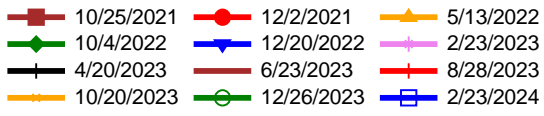




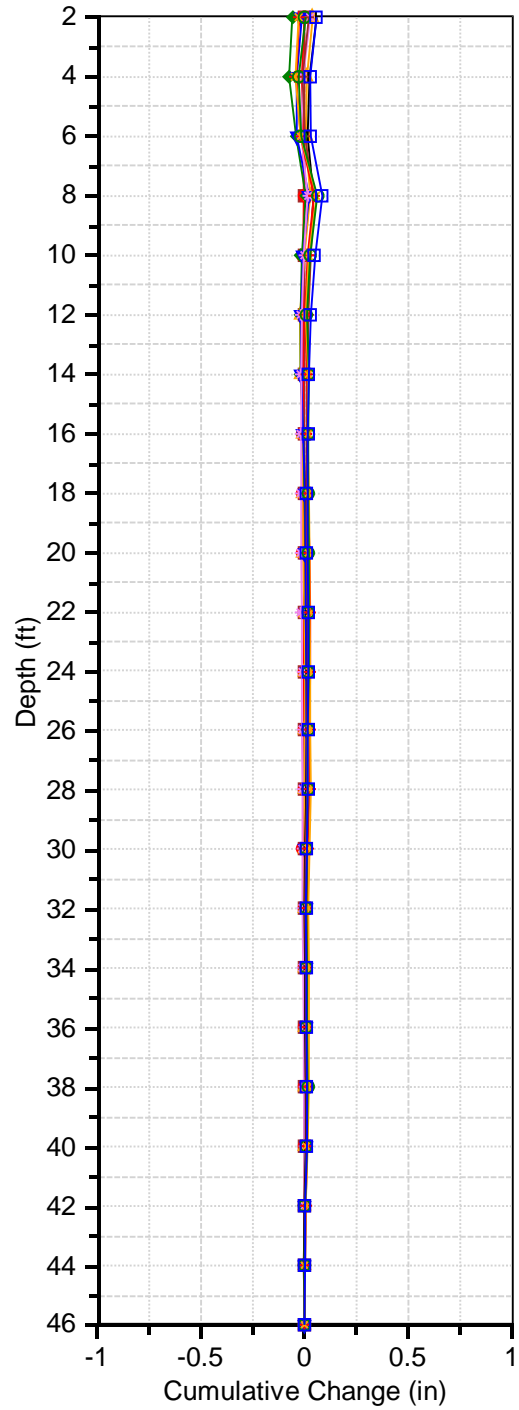
## **APPENDIX B**

### **Inclinometer Test Results**

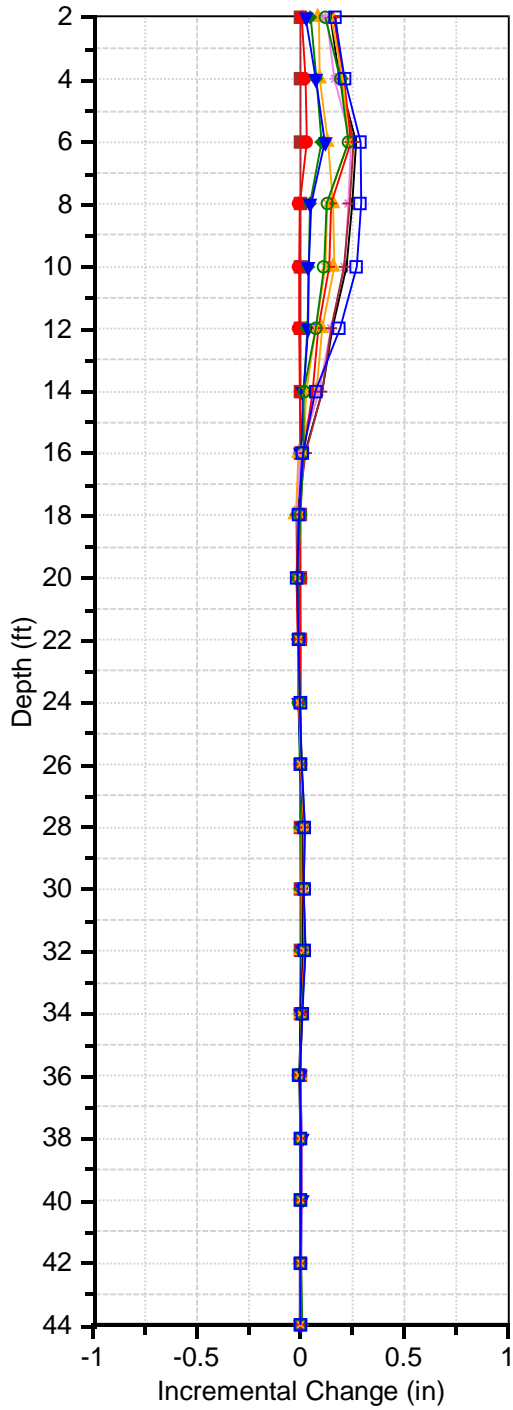
Norris SI-1 A



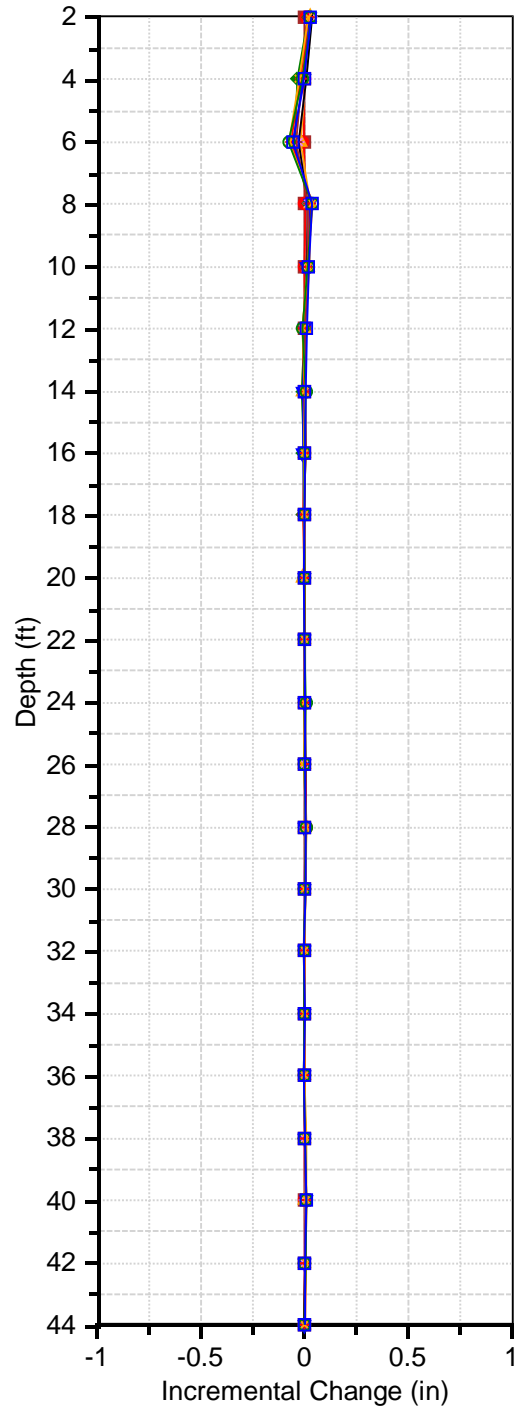
Norris SI-1 B



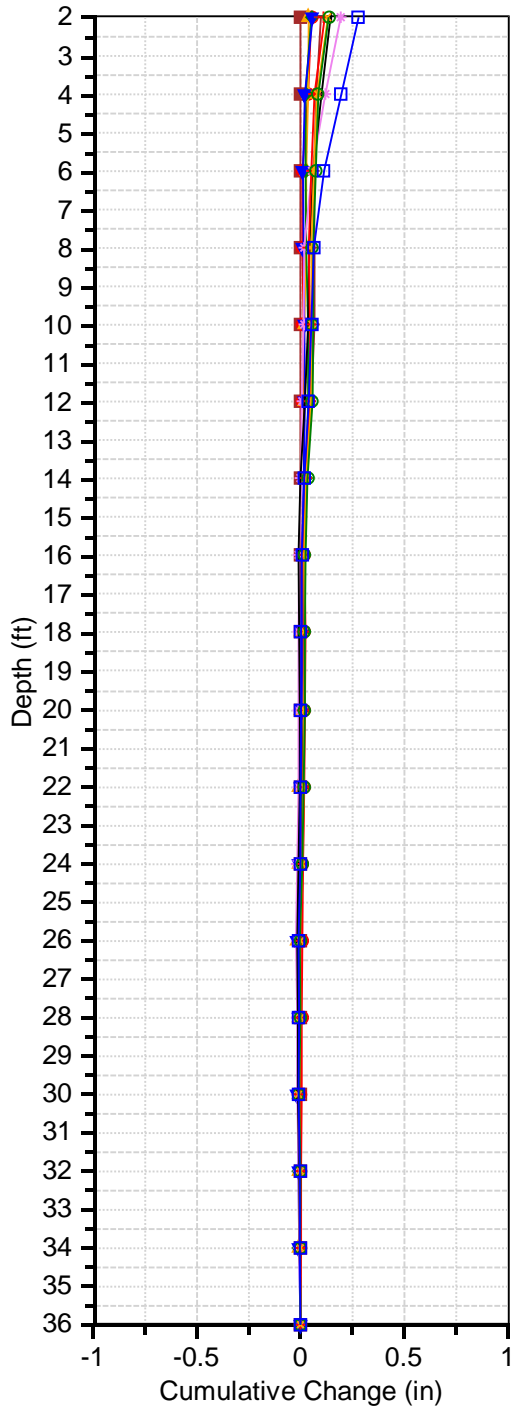
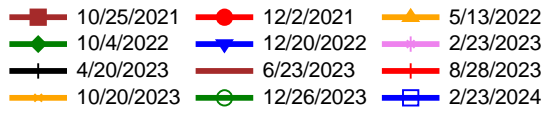
Norris SI-1 A



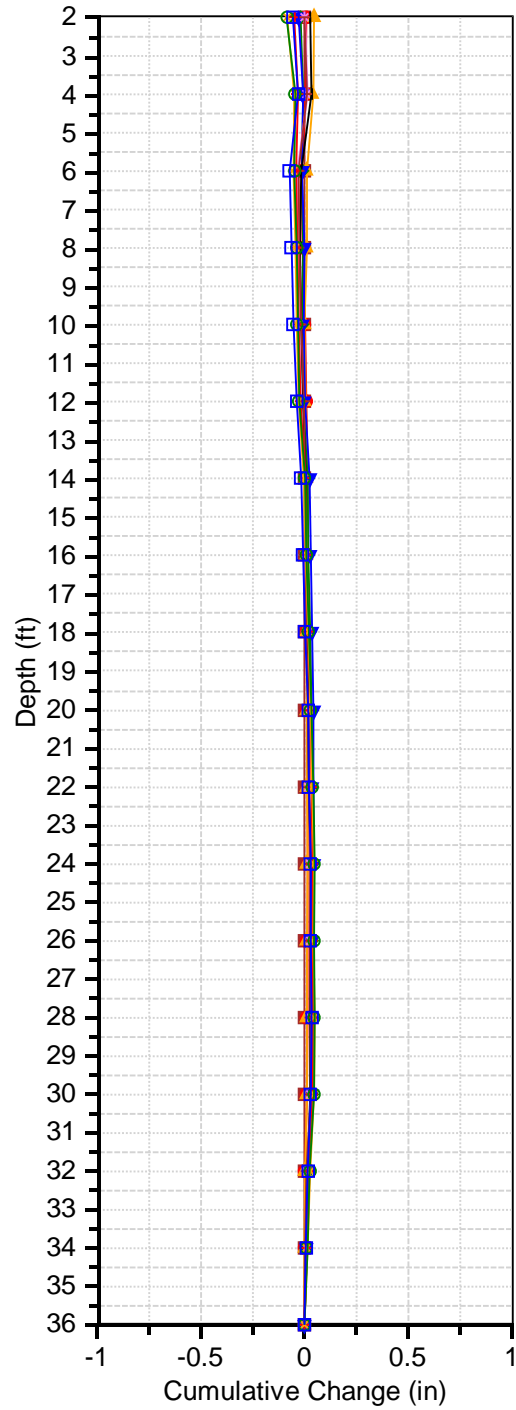
Norris SI-1 B



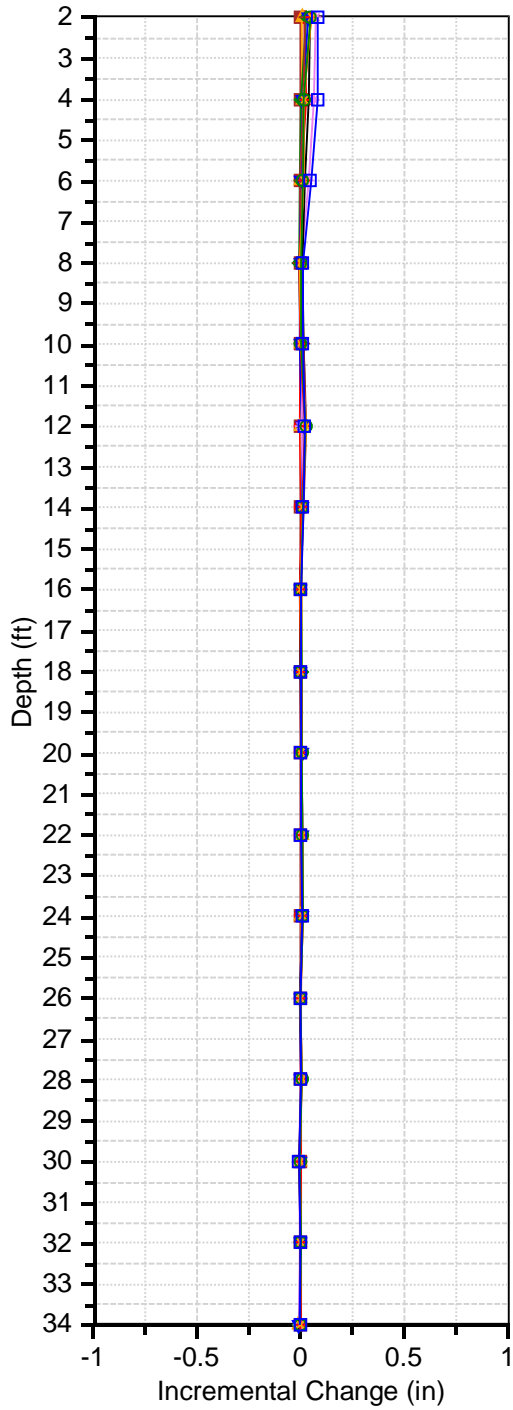
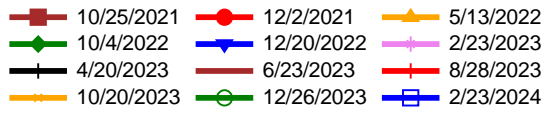
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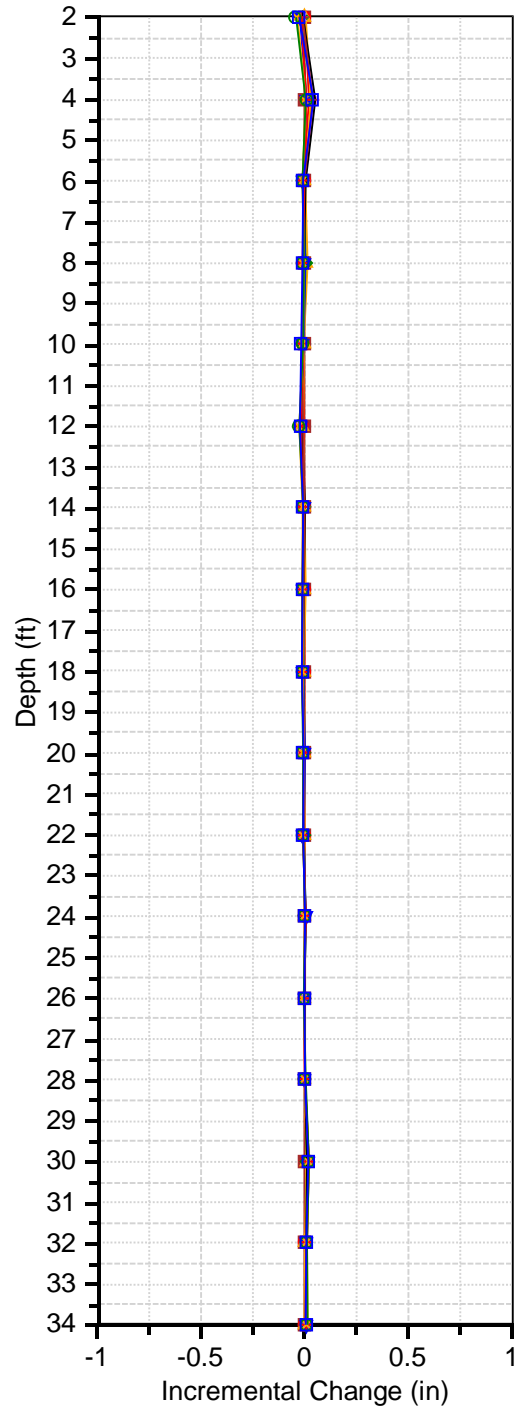
### Norris SI-2 B



Norris SI-2 A



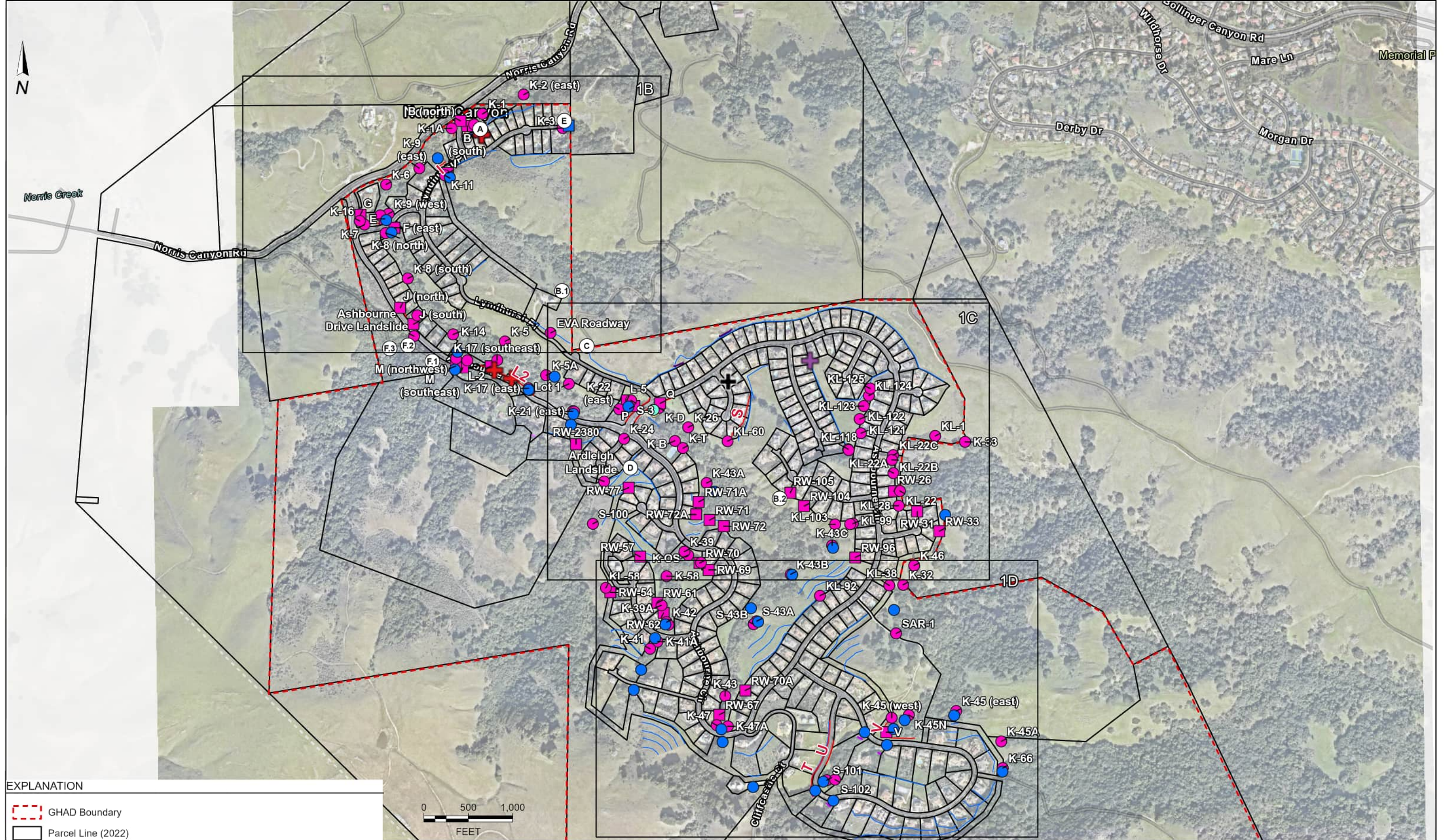
Norris SI-2 B



**FIGURES**

**Figures 1A and 1D – Site Plan**





**EXPLANATION**

	GHAD Boundary
	Parcel Line (2022)

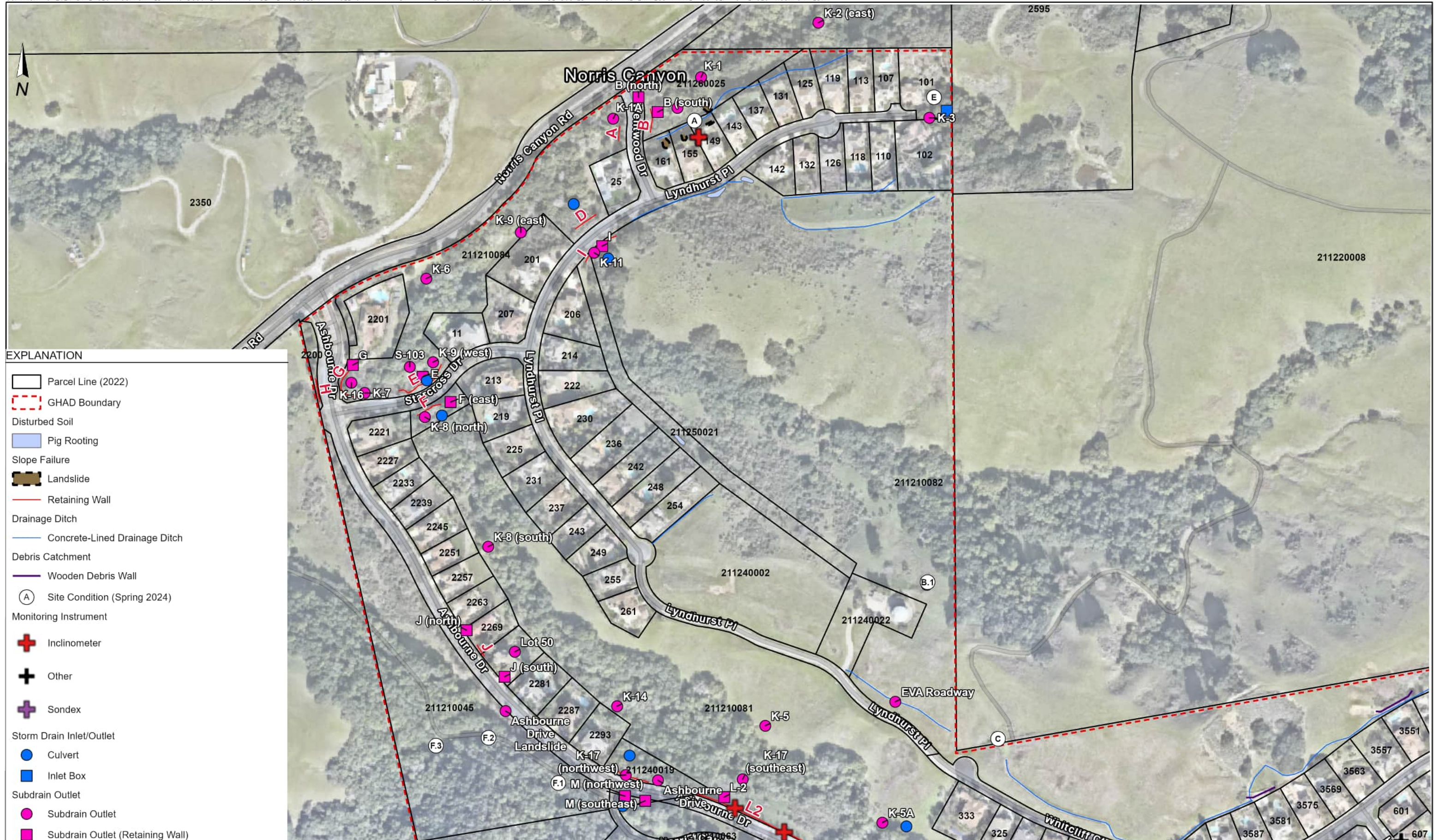


VICINITY MAP - NORRIS CANYON ESTATES  
 WIEDEMANN RANCH GHAD  
 SAN RAMON, CALIFORNIA

PROJECT NO. :	3586.002.023
SCALE:	AS SHOWN
DRAWN BY:	CMG
CHECKED BY:	RHB

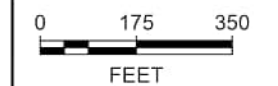
FIGURE NO.  
**1A**





**EXPLANATION**

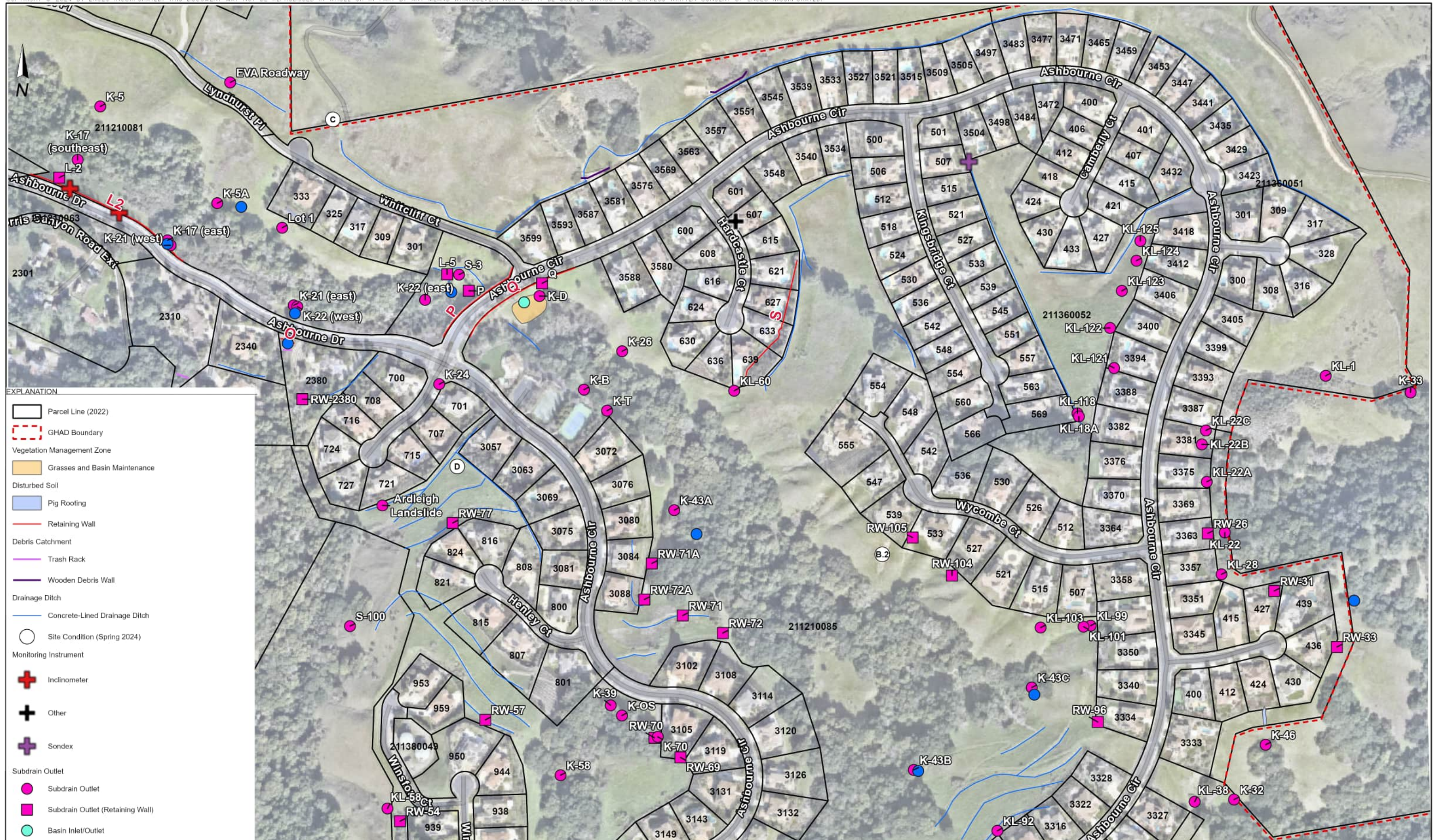
- Parcel Line (2022)
- GHAD Boundary
- Disturbed Soil
- Pig Rooting
- Slope Failure
- Landslide
- Retaining Wall
- Drainage Ditch
- Concrete-Lined Drainage Ditch
- Debris Catchment
- Wooden Debris Wall
- Site Condition (Spring 2024)
- Monitoring Instrument**
- + Inclinometer
- + Other
- + Sondex
- Storm Drain Inlet/Outlet**
- Culvert
- Inlet Box
- Subdrain Outlet**
- Subdrain Outlet
- Subdrain Outlet (Retaining Wall)



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

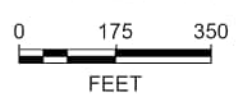
PROJECT NO. : 3586.002.023	FIGURE NO.
SCALE: AS SHOWN	<b>1B</b>
DRAWN BY: CMG	





**EXPLANATION**

- Parcel Line (2022)
- GHAD Boundary
- Vegetation Management Zone**
- Grasses and Basin Maintenance
- Disturbed Soil
- Pig Rooting
- Retaining Wall
- Debris Catchment
- Trash Rack
- Wooden Debris Wall
- Drainage Ditch
- Concrete-Lined Drainage Ditch
- Site Condition (Spring 2024)
- Monitoring Instrument**
- Inclinometer
- Other
- Sondex
- Subdrain Outlet**
- Subdrain Outlet
- Subdrain Outlet (Retaining Wall)
- Basin Inlet/Outlet
- Storm Drain Inlet/Outlet**
- Culvert

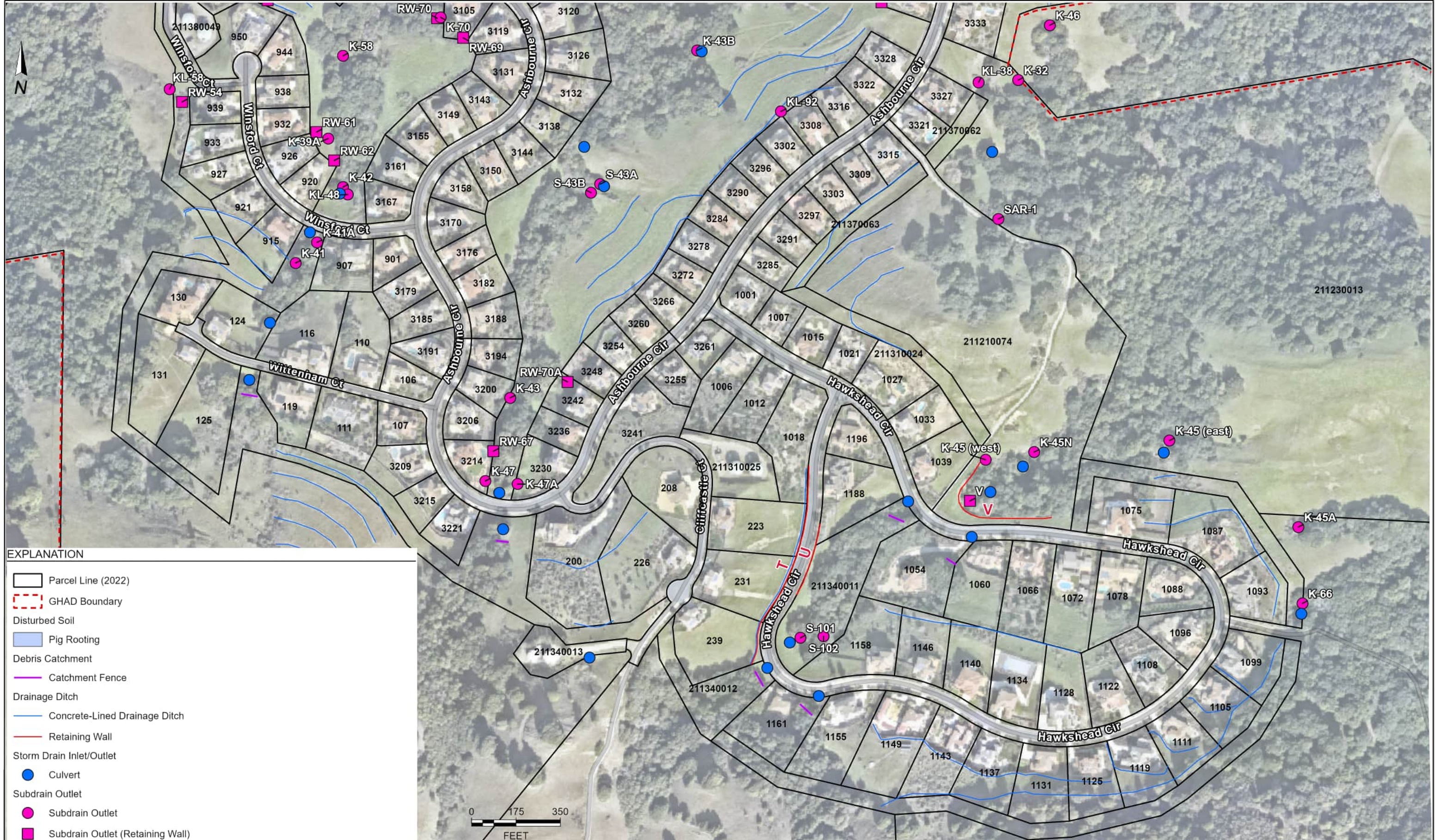


**SITE PLAN - NORRIS CANYON ESTATES**  
 WIEDEMANN RANCH GHAD  
 SAN RAMON, CALIFORNIA

PROJECT NO. : 3586.002.023  
 SCALE: AS SHOWN  
 DRAWN BY: CMG CHECKED BY: RHB

FIGURE NO.  
**1C**





**EXPLANATION**

	Parcel Line (2022)
	GHAD Boundary
	Disturbed Soil
	Pig Rooting
	Debris Catchment
	Catchment Fence
	Drainage Ditch
	Concrete-Lined Drainage Ditch
	Retaining Wall
	Storm Drain Inlet/Outlet
	Culvert
	Subdrain Outlet
	Subdrain Outlet
	Subdrain Outlet (Retaining Wall)



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

PROJECT NO. :	3586.002.023
SCALE:	AS SHOWN
DRAWN BY:	CMG
CHECKED BY:	RHB

FIGURE NO.  
**1D**