

Project No.
5698.002.021

March 22, 2022

Mr. Ryan Panganiban
City of Fairfield
Department of Public Works
1000 Webster Street
Fairfield, CA 94533-4883

Subject: Paradise Valley Maintenance and Monitoring District
Fairfield, California

MONITORING REPORT – FALL 2021

Dear Mr. Panganiban:

We performed a site reconnaissance of the open space parcels and accessible developed areas within the Paradise Valley Maintenance and Monitoring District (PVMMD) on December 13, 2021. Residential construction has been completed within Area “K”, and Area “L”, and has been mostly completed within Area “I”. The previous monitoring event ENGEO conducted was in August 2018 after the Nelson fire (Reference 3). Monitoring events are intended to satisfy the monitoring requirements in the referenced Plan of Control (Reference 1). In addition, we reviewed Cal Engineering and Geology’s Preliminary Evaluation Report for their site reconnaissance in January 2021 (Reference 4).

SITE MONITORING RESPONSIBILITIES

Based on the District Plan of Control, the overall site observation monitoring events included:

- Sedimentation Basins “A”, “C-D”, and “I”.
- Three deflection walls with berms and riprap aprons.
- Maintenance roads.
- Concrete-lined drainage ditches.
- Subsurface drain outlets.
- Storm drain inlets, outfalls and pipelines within the open space areas.
- A geologic reconnaissance of the site slopes for indications of erosion or slope failure.
- Photographing significant areas for documentation purposes.

As appropriate, maintenance and repair of improvements listed below are identified in the Request for Qualifications document (Reference 5). The PVMMD will seek bids for this work to maintain a robust preventive maintenance program.

SEDIMENTATION BASINS

Three sedimentation basins are located within the PVMMD (Figure 1), one upslope of Area “I” (Sedimentation Basin “I”) and two upslope of Area “K” (Sedimentation Basins “A” and “C-D”). It does not appear that a significant volume of sediment has entered into any of the basins that would require removal. For monitoring the volume of sediment accumulation, the PVMMD

should install robust staff gauges in each of the sedimentation basins; however, with the frequency of human activity within the basins, damage to staff gauges may occur. In general, the PVMMD should consider sediment removal when sediment accumulation exceeds approximately 10 percent of the basin capacity. We observed the following items within the sedimentation basins.

- The outlet pipe from Sedimentation Basin “A” should be repaired so that a grate can be installed to prevent large debris from entering and potentially clogging the outlet pipe (Figure 1, Site Condition A, Photograph 1).
- The outlet pipe and dissipator from Sedimentation Basin “I” is partially buried and should be exposed and reconstructed to allow for proper drainage from the sedimentation basin (Figure 1, Site Condition B, Photograph 2).
- A riprap-lined overflow channel is located at the terminus of the western swale exiting Sedimentation Basin “I” (Figure 1, Site Condition C, Photograph 3). Vegetation, perennial and annual, should be removed to maintain its capacity.
- Two riprap-lined aprons are located at the terminus of swales entering at the upslope edge of Sedimentation Basin “A”. A significant amount of sediment has accumulated at the terminus of the swales and has partially covered the riprap-lined aprons (Figure 1, Site Condition D, Photograph 4). Removal of accumulated sediment should be undertaken to reduce surface flows velocities for water entering Sedimentation Basin “A”.

DEFLECTION WALLS

Three deflection walls are located within the District (Figure 1). Two of the three deflection walls do not appear to have accumulated significant volume of sediment against the deflection walls and riprap outfall structures. However, the deflection wall east of Sedimentation Basin “A” has accumulated significant soil and vegetation against the deflection walls and within the riprap outfall structures (Figure 1, Site Condition E, Photograph 5). Vegetation should be removed from the riprap structures along the deflection walls to provide adequate capacity of the deflection walls.

MAINTENANCE ROADS

In general, most of the gravel-surfaced maintenance roads were in good condition with the exception of some areas with moderate vegetation. However, the maintenance road to the east of the concrete-lined drainage ditches near Area “L” has significant erosion gullies from overflow of the concrete-lined drainage ditches (Figure 1, Site Condition F, Photograph 6). The maintenance road should be lightly regraded to restore the gravel-surfaced roadway to its original design condition.

CONCRETE-LINED DRAINAGE DITCHES

Concrete-lined drainage ditches were checked for accumulation of debris and sediment and for obvious distress such as cracking or shifting of the concrete (Figure 1). During our site visit, significant amounts of vegetation and soil were observed within the most of the drainage ditches. Concrete-lined drainage ditches should be cleaned regularly to maintain adequate drainage capacity.

It appears that cracks within most of the ditches have been sealed at least once previously but are in need of sealing or resealing. It should be expected that minor cracking will occur in the ditches and sealing or resealing of the cracks should be anticipated every 2 to 3 years. Less cracking was observed in the “V”-shaped concrete-lined ditches as compared to the flat-bottomed concrete-lined ditch adjacent to Couples Circle. Mechanical damage was observed in several areas from equipment used to access the open space (Figure 1, Site Condition G, Photograph 7). In damaged areas, soil should be removed, and the concrete-lined drainage ditch should be repaired or replaced.

SUBDRAIN OUTLETS

The following subdrain outlets were observed and monitored during our recent site visit. Discharge flow rates from the subdrain outlets were measured and are shown in Table 1. At the time of our site visit, the subdrain outlets were clear and flowing.

TABLE 1: Subdrains

LABEL	FLOW (estimated gallons/day)	COMMENTS
Upslope of Area “L”	1,700	6-inch-diameter pipe. Outlets within a storm drain inlet
Area “K”	685	6-inch-diameter pipe. Outlets within a storm drain inlet

STORM DRAIN FACILITIES

In general, the storm drain inlets located within the open-space parcels were relatively free of vegetation and debris. The storm drain inlets located in the concrete-lined drainage ditches north of 1384 and 1392 Couples Circle have missing grates (Figure 1, Site Condition H, Photograph 8). The grates should be replaced to prevent significant amounts of debris from entering the storm drain system and help eliminate a trip hazard.

There is an exposed, damaged storm drain inlet pipe next to the access road intersection near the Solano Irrigation Water Reservoir (Figure 1, Site Condition I, Photograph 9). If this storm drain pipe is responsibility of the PVMMD, it should be repaired to maintain integrity of the storm drain pipe in the long term.

OPEN SPACE AND SLOPES

The open space slopes were observed for evidence of slope instability, seeps or unusual erosion. During our site visit, with the exception noted below, we did not observe significant distress to the slopes adjacent to the PVMMD-maintained improvements. It should be noted that there are a number of unrepaired landslides within the ungraded portions of the open space parcels (Figure 1). These landslides have moved in the past and will likely do so in the future when wet conditions occur. The landslides within the ungraded portion of the site appear to be in a similar condition to that described during development of the site.

On August 10, 2018, the Nelson fire covered a total of approximately 2,162 acres, and the burn area included a large portion of the open space within the PVMMD. At the time of our August 2018 monitoring event, containment lines were dozed around the perimeter of the Nelson fire resulting in minor cuts and berms of loose soil along the edge of the burned area. We previously

recommended that minor remedial grading occur in these areas to reestablish preexisting grades. We are unaware if these recommendations were implemented; however, at the time of our recent site visit, these areas appear to be performing well.

A landslide is located northeast of Sedimentation Basin “I” that measures approximately 110 feet in length and 75 feet in width (Figure 1, Site Condition J). It appears that this landslide reactivated during the winter of 2016/17. This landslide is not of immediate threat or concern to GHAD-maintained improvements, but should be monitored during future scheduled monitoring events as it could continue to move and deposit a significant amount of sediment to the sedimentation basin.

An erosion gully is located approximately 30 feet south of the access road to the Solano Irrigation Water District Reservoir (Figure 1, Site Condition K, Photograph 10). The gully is up to approximately 125 feet in length, 3 to 4 feet in width, and up to about 2 to 3 feet in depth. We recommend this erosion gully be backfilled with riprap as described in Reference 5.

Additionally, there is an erosion gully near the offsite underground water storage facility that drains into the offsite concrete-lined drainage ditch (Figure 1, Site Condition L, Photograph 11). At the time of the site visit, these erosion gullies do not threaten any improvements within the open space, but should be monitored during future scheduled monitoring events.

There are two riprap swales with storm drain inlets along the Solano Irrigation District Water Reservoir paved access road. Significant erosion gullies are present within the riprap swales due to the differences in elevation between the riprap swales and the storm drain inlets (Figure 1, Site Condition M, Photograph 12). The riprap swales should be regraded to proper elevation to allow proper drainage to enter the storm drain inlets. The PVMMD will contact the Solano Irrigation District to verify that they have responsibility for the surface storm drain improvements.

There are relatively shallow landslides along the embankments surrounding the Solano Irrigation Water Reservoir and along the paved access road to the reservoir (Figure 1, Site Condition N, Photographs 13 and 14). At the time of our site visit, the landslides were not affecting nearby improvements; however, they should be continue to be monitored.

In the open space north of Couples Court, there is cut vegetation and related debris within the PVMMD-owned and maintained open space (Figure 1, Site Condition O, Photograph 15). The vegetation and debris should be removed from the open space.

FENCES AND LOCKS

Fences within the district appear to be in fair condition. The Nelson Fire destroyed some wood posts supporting the barbed wire, but most posts are steel and the PVMMD is not responsible for fence maintenance or replacement.

A gate on the paved roadway leading to the Solano Irrigation Water District Reservoir and PVMMD-owned open space currently does not have a lock for the PVMMD. A lock should be daisy-chained to the existing locks on the gate, or the District should obtain a key for one of the existing City of Fairfield locks, in order to have access to the northern open space parcels within the PVMMD.

SUMMARY

We have identified several areas of concern that present a low to moderate potential to threaten or impact PVMMD-maintained site improvements and as appropriate, these items are identified as maintenance items in the referenced Request for Qualifications (Reference 5).

If you have any questions, please do not hesitate to contact us.

Sincerely,

ENGEO Incorporated

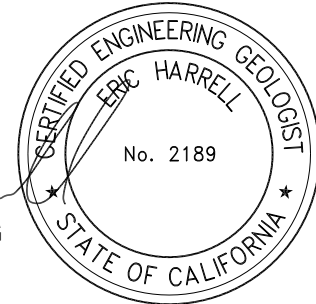


Haley J. Ralston, GIT

hjr/eh/dt



Eric Harrell, CEG



Attachments: List of Selected References
Site Photographs
Figure 1 - Site Plan

LIST OF SELECTED REFERENCES

1. ENGEO; Plan of Control for Paradise Valley Areas “I”, “K”, and “L” Geologic Maintenance and Monitoring District, Fairfield, California; July 22, 2010; Project No. 5698.100.101.
2. ENGEO; Open Space Management Plan, Paradise Valley, Fairfield, California; March 7, 2008; Project No. 5698.100.101.
3. ENGEO; Monitoring Report, Paradise Valley Geologic Maintenance and Monitoring District, Fairfield, California; September 25, 2018; Project No. 5698.002.000.
4. Cal Engineering & Geology; Preliminary Evaluation Report, Paradise Valley Maintenance and Monitoring District, Fairfield, California, February 26, 2021, Document No.: 200980-001.
5. ENGEO; Request for Qualifications, Paradise Valley Maintenance and Monitoring District, Area “K”, Paradise 360 (Area “I”), and The Ridge (Area “L”, Fairfield, California, February 10, 2022 (Draft), Project No. 5698.002.021.

SITE PHOTOGRAPHS

PHOTOGRAPH 1: Site Condition A



Damaged outlet drainage pipe with missing grate in Sedimentation Basin “A”

PHOTOGRAPH 2: Site Condition B



Buried pipe outlet apron from Sedimentation Basin "I"

PHOTOGRAPH 3: Site Condition C



Vegetation growth within riprap outfall apron for Sedimentation Basin "1"

PHOTOGRAPH 4: Site Condition D



Accumulated sediment partially covering riprap-lined aprons at terminus of swales upslope of Sedimentation Basin "A".

PHOTOGRAPH 5: Site Condition E



Deflection wall east of Sedimentation Basin "A" filled with soil and vegetation

PHOTOGRAPH 6: Site Condition F



Erosion gully within maintenance road north of Area "L"

PHOTOGRAPH 7: Site Condition G



Damaged section of concrete-lined drainage ditch

PHOTOGRAPH 8: Site Condition H



Storm drain inlet with missing grate

PHOTOGRAPH 9: Site Condition I



Damaged storm drain pipe along paved access road for Solano Irrigation District Water Reservoir

PHOTOGRAPH 10: Site Condition K



Erosion gully south of access road to Solano Irrigation District Water Reservoir

PHOTOGRAPH 11: Site Condition L



Erosion gully flow discharging into offsite concrete-lined drainage ditch north of Solano Irrigation District Water Reservoir

PHOTOGRAPH 12: Site Condition M



Erosion gullies along paved access road to Solano Irrigation District Water Reservoir

PHOTOGRAPH 13: Site Condition N



Shallow landslide along embankment near Solano Irrigation District Water Reservoir

PHOTOGRAPH 14: Site Condition N

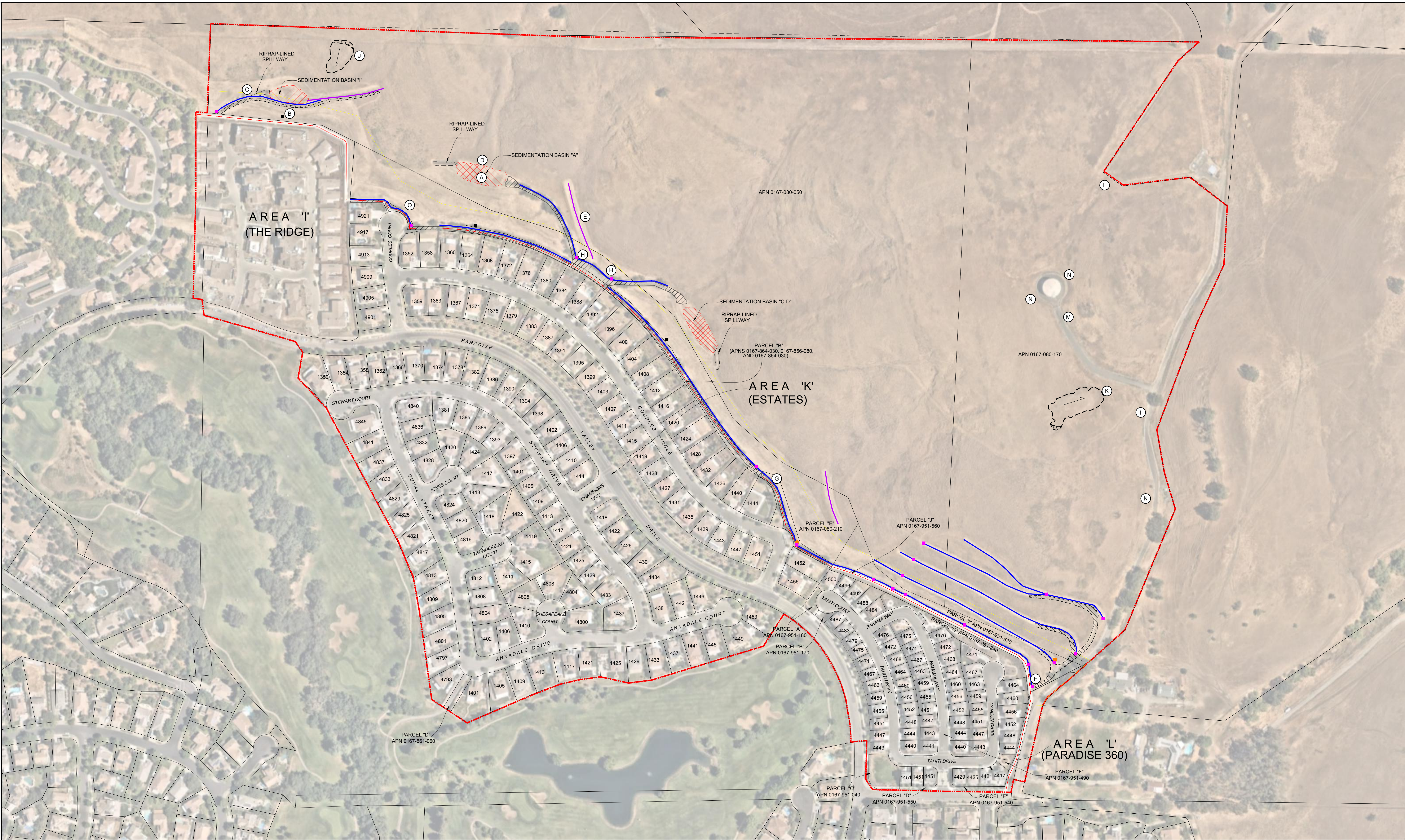


Shallow landslides along slope adjacent to paved access road to Solano Irrigation District Water Reservoir

PHOTOGRAPH 15: Site Condition O



Vegetation deposited on PVMMD-owned open space north of Area "I"



EXPLANATION

- APPROXIMATE LIMIT OF PARADISE VALLEY MAINTENANCE AND MONITORING DISTRICT
- PATH - CITY OF FAIRFIELD MAINTAINED
- DEFLECTION WALL
- GRAVEL SURFACED MAINTENANCE ROAD
- CONCRETE-LINED DRAINAGE DITCH
- FUEL MANAGEMENT ZONE ANNUAL GRASS REMOVAL TO 4 INCHES MAXIMUM HEIGHT OUTSIDE OF ANY LANDSCAPE AREAS
- RECENTLY REACTIVATED LANDSLIDE (JANUARY, 2017)
- SUBDRAIN OUTLET
- SEDIMENTATION BASIN OUTLET
- STORM DRAIN INLET
- M SITE CONDITION

PARCEL "F" - FINAL MAP PARCEL LABEL
 APN 0167-080-050 - ASSESSOR'S PARCEL NUMBER
 4921 - STREET NUMBER

	SITE PLAN	PROJECT NO.: 5698.002.021	FIGURE NO. 1
	PARADISE VALLEY MAINTENANCE AND MONITORING DISTRICT FAIRFIELD, CALIFORNIA	SCALE: AS SHOWN	DRAWN BY: HJR CHECKED BY: EWH

BASE MAP SOURCE: NEARMAP, MAY 2021

COPYRIGHT © 2018 BY ENSCO INCORPORATED. THIS DOCUMENT MAY NOT BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE EXPRESS WRITTEN CONSENT OF ENSCO INCORPORATED.