CE&G
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22 September 2022

Ms. Jackie Howe
Howe Association Management, Inc.
485 Hartz Avenue
Danville, California 94526

RE: Preliminary Geologic and Geotechnical Evaluation and Annual Observation Services
Magee Ranch Open Space
Danville, California
CE&G Document 220560-001

Dear Ms. Howe:

At your request, we have completed our preliminary geologic and geotechnical evaluation of the Magee Ranch open space area in Danville, California. As part of the evaluation, we completed the annual observations of the open space areas. The open space area is part of a Geologic Hazard Abatement District (GHAD) managed by the Magee Ranch Homeowners Association (HOA). CE&G assumed the role for the annual observation services, which were completed in the years prior by Tryhorn Consulting.

The scope of our services was performed to satisfy the requirements of Exhibit C of the Magee Ranch GHAD Plan of Control document's purpose to reduce the potential, mitigate, abate, and provide control measures for identified geologic hazards within the open space boundaries.

Based on the information reviewed, we understand that the GHAD open space area includes the following accessor parcel numbers:

- 215070024 - Parcel B Subdivision 7669
- 215070016 - Parcel A Subdivision 7668
- 215070017 - Parcel B Subdivision 7668
- 215070005 - Parcel C Subdivision 7058
- 215070006 - Parcel D Subdivision 7058
- 215070014 - Parcel E Subdivision 7058
- 215070012 - Parcel J Subdivision 7058

1.0 PURPOSE AND SCOPE

The purposes of this project were to:

- observe the condition of the common open space areas and the associated improvements maintained by the GHAD;
- evaluate the geologic and geotechnical hazards/conditions such as landslides, areas of surface erosion, shallow soil creep, soil slumps, etc. in the open space areas;
- observe the condition of the surface drainage facilities and detention basins in the open space areas;
- observe the condition and functionality of the subdrains outlets and cleanouts;
- observe and document the condition of the GHAD-managed improvements, including retention and catchment structures;
- observe the condition of the Sunhaven Trail sewer easement road; and
- provide recommendations for mitigation, monitoring, and maintenance of the identified geologic and geotechnical conditions, the surface and subsurface drainage facilities, and GHAD-managed improvements.

The scope of our work has included:

- review of maps, reports, and plans for the project area made available by the GHAD;
- review of published regional geologic reports and maps of the project area and historical stereo-paired aerial photographs in our files;
- Preparation of an updated base map;
- reconnaissance level observations and geologic mapping
- preparation of a preliminary geologic map book of the project site, including identified surface and subsurface drainage features, retention structures, and geologic hazards;
- photo-documentation of the identified geologic and geotechnical conditions in the project site;
- Initial development of a GIS-based document management system;
- analysis of the collected data; and
- preparation of this summary report of findings and recommendations.

2.0 DOCUMENT REVIEW AND BACKGROUND

We understand that Tryhorn Consulting (TC) has provided annual observation and geologic consulting services for the GHAD until 2021. Tryhorn Consulting's services included periodic site observations and recommendations for the GHAD. As part of their services, TC

prepared annual reports documenting those observations. The GHAD provided CE&G with the 2018 and 2019-2020 Tryhorn Consulting annual observation reports for review. The reports focused on conditions of the hillslopes, subdrains, surface drainage, detention basins, and the Sunhaven Trail easement.

The GHAD provided CE&G with the Grading Plans for Subdivision 7058 Magee Ranch, prepared by DK Associates and dated July 1988. The plans were annotated and documented the as-built locations of the cut and fill slopes, areas of remedial grading, installation of subdrain systems, landslides, and surface drainage facilities. The plans indicated that the grading for the subdivision was completed in early 1992.

3.0 UPDATED BASE MAP AND GIS-BASED DOCUMENT MANAGEMENT SYSTEM

CE&G prepared an updated topographic base map of the project area. The base map was developed based on the most recent publicly available LiDAR and ortho-photographic information available from Contra Costa County. The base map was required to complete the reconnaissance level geologic and site observations mapping. The base map was separated into a map book with 27 sheets that encompassed the GHAD limits and the Sunhaven Trail sewer easement.

CE&G then prepared a GIS-based document management system (DMS) for the GHAD. The system includes regional published geologic data, parcel boundaries, and the GHAD boundary limits. The provided documents were also uploaded to the system. Existing as-built information provided by the GHAD, including mapped landslides, subdrain system and cleanouts, surface drainage facilities, and detention basins, were plotted onto the system.

The DMS can be used to track documents, changes to site conditions, and provide the GHAD management and residents with data at a glance. The data from 2022 observations and mapping were added to the system and incorporated into the map book included at the end of this report. Additional data will be added and updated following subsequent field observations and consulting services.

A link to the DMS is below:

https://cegis.caleng.com/projects/2022/220560/GeoViewer.html

4.0 2022 SITE OBSERVATIONS AND RECOMMENDATIONS

The following observations were made during our site visits between 10 August through 15 August 2022 by staff geologist Jennifer Pfau-Flores and principal engineering geologist David Burger. Observations of site features were photo-documented. Selected captioned

photographs of the site are included at the end of this report. Observations from our reconnaissance level mapping are included in the map book a the end of this report. Our observations, notes regarding specific site features, and reconnaissance level mapping were plotted onto the DMS.

Discussion of our site observations are followed by recommendations for maintenance, monitoring, and remedial repairs. The purposes of our work were to observe the open space areas before the winter storm season and to provide recommendations for maintenance/mitigation of damages to the existing surface and subsurface drainage facilities and adverse soil and drainage conditions noted during the site visit.

The project area was historically divided into specific areas as originally designated in the provided as-built plan. We have referenced the original designations for landslide and drainage improvements and other callouts on the DMS. However, for the purposes of this report, our observations and recommendations discussed will reference these original designations, as warranted, as well as addresses or known existing site features.

4.1 HILLSLOPES

4.1.1 Graded Slopes

Graded slopes are present throughout the project area. We understand that most graded slopes were completed as part of the subdivision's original development. These slopes were primarily created by cutting into the hillsides and removing native soil and some of the underlying bedrock materials, placement of engineered fill, and during the remedial grading activities and previous landslide repairs.

In general, the graded slopes are performing as intended. Deep-seated movement or reactivation of the areas that received remedial grading or repairs of the landslide features was not observed. Portions of these graded slopes have experienced areas of severe soil creep and isolated shallow slope failures. Additionally, isolated areas within these graded slopes have experienced some localized areas of erosion and activity from rodent burrows (Photo 1).

4.1.2 Recommendations - Graded Slopes

It is recommended that the condition of the graded slopes be observed on an annual basis. The observation should be completed before the winter storm season. Additional monitoring is recommended following periods of significant rain and a large seismic event. Additionally, particular attention should be given to the previously repaired slope behind 15 Brightwood Drive where extensive burrowing and creep were observed. The shallow

movement and loose soil has impacted the v-ditch and drop inlet below. We recommend monitoring this area bi-annually before and following the winter storm season.

4.1.3 Landslides

Prior to the mass grading within the project area, significant portions of the hillside and swale areas were impacted by landslides. Most of the mapped landslide features in this project area appear to have been mitigated by removal and replacement with under-drained buttress fills. We identified several subdrain outfall pipes discharging into various drop inlets and concrete-lined v-ditches throughout the project site (Photo 2). The majority of the cleanouts shown on the as-built plans were located during our August 2022 site reconnaissance. However, a significant number of the cleanouts were not located, likely due to terminating at the ground level, obscuring from dense vegetation, or damage from weed abatement or fire suppression mowing/discing efforts (Photos 3 and 4). Several of the subdrain cleanouts were broken off at ground level or did not contain caps (Photos 5 and 6). Several more cleanouts that we located were not called out on the as-built plans. The conditions or observed damage to each identified cleanout is included in the DMS.

We did not observe readily identifiable evidence of reactivation of the previously repaired slide areas. It should be noted that during our August 2022 site reconnaissance, we mapped a landslide above the previous failure repair northwest of 23 Brightwood Court and a smaller surficial failure within the same repair. Our observations indicated that the overall repair is stable, and deeper-seated movement was not observed.

The as-built mapped landslide features that were not repaired were observed during our August 2022 site reconnaissance. Of particular note are the large landslide features behind 9 and 11 Brooktree Drive and the slides upslope of 35 and 39 Brightwood Lane. The landslide and drainage pathways appear to pose a potential risk to the downslope improvements.

During our site reconnaissance, we identified a significant number of smaller landslides and colluvial deposits. The thickness of these deposits is estimated to range from several feet to tens of feet. These smaller slope instability features are primarily located near the base of slopes behind the residences. They are judged to be localized within the surficial soils and generally set within the swales and drainage areas of the project site. Movement appears to be gradual with localized deposition of soil into the surface drainage facilities and impacting property fence lines (Photo 7). Lager landslide features were identified at various locations throughout the site.

Our August 2022 observations indicate the large landslide complex behind 124 Shadewell Drive appears to be active. Observations of fresh head scarps, areas of bare soil, and increased moisture compared to other areas in the vicinity indicate the slide-prone area has ongoing downslope migration of the landslide debris (Photo 8). Significant amounts of soil have been deposited behind the gabion wall at the base of this landslide complex indicating this has been an ongoing and progressive occurrence (Photo 9). Additionally, a 3-foot-tall steel post and wood lagging catchment wall was observed behind the residence. This wall is leaning and has several feet of material retained behind the wall (Photo 10).

Another large feature was identified within the graded slope above and to the south of Magee Ranch Road. Evidence of recent movement of this slide was not observed. However, the mapped limits of the slide was interpreted to pose a potential threat to the surface drainage facilities within the slide mass.

A third large slide of note is located within the large ravine area west of Saddleback Court. This feature is located away from any improvements and has been judged to pose a low risk to any downslope improvements.

Near the northeastern corner of the project site and upslope of Saddleback Drive, a small to medium size landslide feature was observed. This feature appears active as evidenced by a somewhat fresh headscarp. Near the toe of this feature is an older 3-foot-tall wood catchment wall. This wall was observed as failing (Photo 11). A new cast-in-place retaining/catchment wall was observed at the base of the slope along Saddleback Drive below this feature. This structure was observed in good condition.

4.1.4 Recommendations - Landslides

The previously repaired landslides within the project area appear to be relatively stable. We did not observe readily identifiable evidence of global instability nor failure of any of the slide repair features. It is recommended that these slide areas be observed at least once a year as part of the recommended annual inspection. Cleanouts and outfalls for subdrains should also be located and observed as part of the annual inspection. To limit damage during moving/discing operations, we recommend the cleanout risers should be protected and or made visually apparent with the installation of T-posts. Cleanout risers that area at the ground surface should be extended to a minimum of 18-inches above the ground surface. Damaged riser pipes should be repaired and missing riser caps should be replaced to limit the introduction of soil or debris into the subdrain system (Photo 12). Consideration should be made to inspecting or cleaning of the subdrain systems where soil and or debris may have been allowed to enter. A significant number of cleanouts identified on the as-built plans were not located during our August 2022 site reconnaissance. This may be due to the accuracy of

the as-built plans, damage from past activities, or being buried due to soil creep. Consideration should be made to locating each cleanout riser identified on the as-built plans, extending them above the ground surface, and repairing/cleaning the subdrain system as warranted. Maintaining the subdrain system's functionality will reduce the potential for the repairs to fail and will reduce the risk to nearby improvements.

The slide complex behind 124 Shadewell Drive has deposited significant amounts of debris behind the gabion wall near the base of the slope. We recommend the removal of the deposited material and restoring capacity in the basin behind the wall. Additional remedial measures for the gabion wall are not warranted at this time. Evidence of recent movement in this area indicates that landsliding is progressive and ongoing. We recommend monitoring this area a minimum of bi-annually before and following the winter storm season. This area should also be monitored following periods of intense rainfall or a large seismic event. If evidence of increased risk to downslope improvements is observed, consideration for additional remedial or protective measures should be made. Consideration should also be made to repairing or replacing the failing wood catchment wall near the base of the slope behind the residence.

Consideration should be made to installing improvements to protect the residences located at 9 and 11 Brooktree Drive. The geomorphology indicates there is a significant risk from surface drainage and sediment deposition during a large rain event that may impact these residences. Surface drainage facilities behind these residences were not observed. Although we did not observe evidence that this landslide experienced recent movement, the potential for reactivation of this feature should be considered high. Debris from this slide may migrate downslope and impact the residences. Consideration should be made to installing protection measures for these residences. We recommend that a geotechnical investigation and design of a catchment and or retentions system be completed. This area should be closely monitored before and after the winter storm season.

The slides observed to the west of Shadwell Drive and Shadwell Court did not appear to pose significant risk to the downslope improvements. At this time remedial measures are not warranted. However, consideration should be made to repairing or replacing the failed catchment wall near the northeastern corner of the GHAD boundary. We recommend continued monitoring of these slides areas on an annual basis.

Smaller landslides and colluvial deposits were observed throughout the project area. Evidence of recent or significant movement of these features was not observed. At this time remedial measures are not warranted. We recommend monitoring these features annually. If evidence of progressive downslope movement increases the risk to nearby improvements is observed, we will provide recommendations at that time.

4.1.5 Areas of Active Soil Creep

Areas of active soil creep were identified throughout the hillside area during our August 2022 site reconnaissance. Areas identified with significant soil creep are delineated on map book and DMS as curved pointed arrows. These areas exhibited signs of active shallow downslope creep of the surface soils. The areas are characterized by hummocky and undulating ground surfaces (Photo 13). These features have generally developed in areas of over-steepened slopes, areas subject to increased landsliding, or which were previously impacted by grading and have been disced for fire control. As the soil from the creep-prone areas migrates downslope, it has contributed to the development of separation cracks, offsets, accumulation of debris, and ongoing distress to the surface drainage facilities and property fence lines at some locations.

4.1.6 Recommendation - Creep Prone Slopes

It is recommended that the areas of active soil creep be observed on an annual basis. Any significant changes should be noted and documented. Consideration may be made to reducing the potential for soil entering the surface drainage facilities in the areas where the soil has been observed cascading in into the v-ditches and drop inlets. This may be accomplished by removing of the soil directly upslope and adjacent to the v-ditches and drop inlet structures and installing straw wattles along the upslope sides of the v-ditches.

4.1.7 Animal Burrows

Numerous animal and or rodent burrows were observed at various locations within the hillside areas. The burrows were often located adjacent to and above the concrete-lined v-ditches. These burrows have resulted in the deposition of excess soil into the v-ditches and some undermining of the v-ditches at some locations (Photo 14). These burrows can reduce the underlying support of the ditch, increase the potential for excess cracking or offsets within the ditches, reduce the functionality of the surface drainage facilities via the introduction of debris into the system, and have the potential to create potential localized shallow landsliding or slumping within the hillside areas.

4.1.8 Recommendations – Animal Burrows

We recommend that areas, where undermining of the v-ditches has occurred, should be repaired. This may be accomplished by filing the burrow's void with the placement of neat cement grout or compacted soil under the v-ditches.

Considering the concentration of animal burrows observed, there is a moderate potential for the development of soil slumps in the hillsides within these areas. In general, soil slumps

would be expected to develop from these animal activities as observed at similar hillside areas within the vicinity of the project area.

It is recommended that the areas with significant animal burrow activities be monitored for future movement. Repair of soil slumping would be warranted if the soil moves downslope and impacts the surface drainage facilities or other improvements. Consideration should be given to implementing a rodent abatement project for these areas.

4.2 AREAS OF SIGNIFICANT EROSION AND DETENTION BASINS

The drainage ravine to the south of 138 Windover Drive has experienced significant erosion, downcutting and embankment failures (Photo 15). The result of this has been the significant deposition of sediment into the three basins south of 138 Windover Drive. Our observations indicate that previous attempts to limit this downcutting have been made. A rip-rap blanket was installed at the southern end of this erosion-prone area as an energy dissipation structure for the outlet pipe for the basin to the south (Photo 16). However, the drainage from this 8-inch pipe has resulted in the migration of the drainage pathway west of the rip-rap blanket. Downcutting appears to be ongoing and progressive.

Additional drainage pathways were observed throughout the project area. Minor amounts of erosion were observed at various locations within the project area. Some areas downslope of slopes that have experienced significant erosion appeared to have been mitigated with the installation of gabion walls and detention basins. The basins were observed as performing as intended. However, several basins have reached capacity. The three basins behind 138 Windover Drive and the one basin behind 124 Shadewell Drive are full and at capacity. The other basins were observed with significant soil deposition.

It should also be noted that the stacked rock wall between the three basins behind 138 Windover Drive were beginning to fail (Photo 17). The central wall had a small section of rock missing, exposing the deposited soil behind the wall. The rock appeared to be stacked with evidence of filter fabric or structural control measure for the wall not observed. Our observations indicated that water and sediment have overtopped these structures, likely contributing to the failures.

4.2.1 Recommendations – Areas of Significant Erosion and Detention Basins

The area south of Windover Drive will likely continue to down-cut and be a significant source of sediment transported northward toward the downslope improvements. Consideration should be made to establishing and improving the erosion and sediment control measures within this area. We recommend the placement of additional rip-rap at the outlet location

for the 8-inch pipe at the southern end of the areas of significant erosion. Additionally, we recommend the removal of the sediment from the basin and the repair or construction of new walls between the basins. This area should be monitored a minimum of bi-annually before and following the winter storm season. Consideration should also be made to monitoring these areas following periods of significant rain.

We recommend the basins behind each of the gabion walls be cleaned. At this time, we do not have data on the rate of sediment deposition behind each gabion wall or within each basin. Consideration should be made to restoring the capacity of each basin to design grades. We recommend monitoring the rate of sediment deposition within each basin annually. The rate of deposition should be compared with annual precipitation rates and specific storm event data as warranted. This will allow for predictive modeling and evaluation to be completed through subsequent monitoring cycles. The data can then be used to determine an updated schedule for future sediment removal and required maintenance operation items for each basin.

4.3 DRAINAGE FACILITIES

4.3.1 Surface Drainage Facilities

The surface drainage facilities within the project site consist of a system of concrete-lined ditches, drop-inlet structures, and outfall pipes. These surface drainage facilities were intended to collect the surface water runoff from the hillside areas within the project site and to convey the captured water to the storm drain system for the Magee Ranch development. These facilities were also intended to reduce the amount of surface water runoff that reaches the private properties and the streets below. The approximate locations of the surface drainage features are shown on Map Book and DMS.

In general, most of the concrete-lined surface drainage ditches are in good serviceable condition. We did, however, note that minor cracks have developed in some of the concrete ditches (Photo 18). These minor cracks are not currently impacting the performance of the ditches and are generally considered cosmetic in nature. In some areas, cracks have been previously repaired with caulking (Photo 19).

Minor vertical and horizontal offsets were also observed at a few locations (Photos 20 and 21). Offsets of up to two inches were observed. Offsets may impede flows within the ditch, creating dams for debris to accumulate. Debris was observed at several of the offset locations.

In addition, we observed soil deposition in the v-ditches from creep and animal burrows at some locations. The soil reduced the capacity of the ditch and appeared to reduce the functionality and flows within the ditch. Soil deposition was generally located to areas adjacent to significant areas of creep, landslides, and significant animal burrow activity immediately adjacent to the v-ditches.

Significant portions of the concrete-lined ditches within the project site are partially filled with organic debris (Photo 22). The majority of the organic debris is composed of cuttings from the annual weed abatement program and leaves from trees and bushes. The debris appears to have been wind-blown into the ditches. At some locations, the native grasses and bushes have grown over the top and within the ditches. These grasses and bushes have also dropped significant organic debris into the ditches (Photos 23 and 24).

At some locations, debris and soil have collected at the drop-inlet structures along the concrete-lined ditches (Photo 25).

At several locations, solid drain pipes discharge into the concrete-lined ditches (Photo 26). These pipes appear to be the outfall lines for buried subdrains and possibly from the yard areas of upslope properties. A few of the discharge pipes are damaged and partially blocked by soil and vegetative debris (Photo 27).

It should be noted that the culvert pipe southeast of 138 Windover Drive and crossing under the fire road is blocked. We observed the inlet receiving the surface drainage for the ravine to the east is partially blocked by debris. However, our observations indicate that the outlet for this pipe is buried and blocked (Photos 28 and 29). The geomorphology suggests that unless the functionality of the culvert pipe is restored, the drainage from this ravine will flow onto the fire road and likely create erosion and potential impacts to the downslope improvements.

It should also be noted that the drop inlet located north of 10 Hunters Terrace is missing the cover grate (Photo 30).

Notes of these observations and areas of distress are contained within our DMS and callouts out on the map book.

4.3.2 Remedial Measures and Maintenance of Surface Drainage Facilities

It is recommended that all of the debris in the concrete surface drainage ditches be removed annually. This will facilitate the free flow of water and reduce the potential for blockage of the ditches and inlet structures and subsequent overflowing of water onto the private properties below. The debris removal should be completed prior to the onset of the winter

storm season. The winter storm season in the greater Bay Area is generally considered to occur between October and April, therefore, the annual inspection should take place around August of each year to allow the appropriate time to address any recommended remedial measures.

The drop-inlets for the concrete ditches should be visually inspected and cleaned annually prior to the onset of the winter rains. This work should be done concurrently with the debris removed from the concrete ditches. It is recommended that additional periodic monitoring of these inlet structures be completed throughout the winter storm season and following significant rain events be completed. The potential for additional debris to collect and block the drop-inlet structures during significant rain events should be anticipated. We also recommend the replacement of the missing cover grate over the drop inlet near 10 Hunters Terrace.

It is also advisable to trim or prune the vegetation that overhangs or is growing within the drainage facilities. Pruning the vegetation should help reduce the amount of vegetative debris which falls into the surface drainage facilities.

Segments of the concrete ditches are damaged and require repairs. It is recommended that the sections of the ditch which have developed cracks greater than ½-inch, missing portions, and offsets that impede flows or functionality be repaired using a high-strength concrete. Cracks less than ½-inch may be patched using a high-strength masonry caulking. It is likely that following the removal of vegetative and soil debris that additional damage to the v-ditch will be exposed. Repair to these damaged sections should be completed concurrently with the cleaning operation. Repairs to the v-ditch should be completed before the upcoming winter storm season.

Damaged pipes discharging into the v-ditches from subdrains and residences should be repaired. We recommend extending these pipes into the v-ditch or providing additional protection measures to avoid damage or blockage.

The culvert located southeast of 138 Windover Drive should be repaired to restore functionality. The outlet pipe location for this culvert should be directed into an energy dissipation system or routed into the basin below.

4.3.3 Additional Observations and Recommendations

The v-ditch located behind 102 Shadewell Drive was observed with wiring loosely set within the ditch (Photo 31). The wiring within the ditch was a connection of several wires that did not appear to be watertight. The wiring appeared to be part of the lighting system for the

residence. It is recommended that this be removed from the GHAD-managed area and the owner properly address the wiring to reduce the potential for damage to improvements and increase public safety.

Portions of the v-ditches cross into private parcels. In some areas, the fencing for these parcels extends into the v-ditch at the locations. This fence installation within the ditches is likely to prevent animals from entering the properties. However, this often allows debris to accumulate against the fence within the ditch (Photo 32). We recommend these barriers be removed, modified, or cleaned periodically to restore functionality to the ditches.

4.4 SUNHAVEN TRAIL

We observed the conditions the paved sewer easement trail, surrounding hillsides, and retaining wall between 134 Sunhaven Road and the trail intersection with Laurelwood Drive. In general, the condition of the pavement is good. However, we observed zones where cracking and settlement were pronounced (Photo 33). These areas coincided with areas where we mapped instabilities in the slope above the trail and the creek bank below. We interpreted the settlement of the trail as evidenced by the sanitary sewer manholes raised relative to the pavement grades. Cracking of the pavement was generally tightly spaced and sub-parallel to the alignment of the downslope edge of the slope.

Slope instabilities were primarily mapped within the drainage ravines. The direction of movement was east to west. Some of the instabilities were interpreted to cross through the sewer easement trail to the creek below. This was evident due to the sudden drop in grades within the pavements and geomorphology of the creek bank.

We observed the crib wall near the central portion of the trail alignment. The crib wall appeared to be functioning as intended and undamaged. It should be noted that north of the crib wall, a drainage pathway has developed an erosion rill. The material from this erosion feature has deposited a minor amount of soil onto the east side of the road.

4.4.1 Recommendations – Sunhaven Trail

In general, the trail appears in good condition. We recommend monitoring on an annual basis. Closer attention should be made to the areas of the identified instabilities for additional distress. Consideration should be made to observing the trail following a significant seismic event. Consideration should also be made to notifying Contra Costa Central Sanitary District of these findings so they may determine if inspection of the pipeline is warranted.

5.0 CLOSURE

We have employed accepted engineering geologic procedures and our professional opinions and conclusions are made in accordance with generally accepted engineering geology principles and practices. This standard is in lieu of all warranties, either expressed or implied.

We trust this report provides you with the information required to proceed. If you have any questions, please call us.

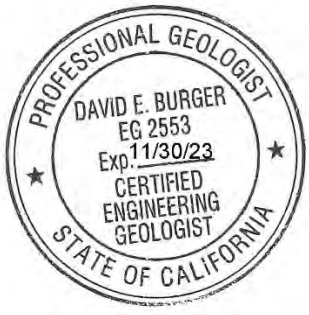
Sincerely,

CAL ENGINEERING & GEOLOGY, INC.

Jennifer Phau-Flores
Staff Geologist

Reviewed by:

David Burger, P.G., E.G.
Principal Geologist



SITE PHOTOGRPAHS

Photo 1. View of soil creep and rodent burrows on the previously graded slope above Brightwood Circle.

Photo 2. View of subdrain pipe discharging into a concrete-lined v-ditch.

Photo 3. View of subdrain cleanout near ground level and obscured by vegetation.

Photo 4. View of subdrain cleanout at ground level, hidden by vegetation, damaged, and missing a cap.

Photo 5. View of a damaged subdrain cleanout riser.

Photo 6. View of a subdrain cleanout riser missing a cap and debris allowed to enter the pipe.

Photo 7. View of a shallow landslide impacting fence line to property below.

Photo 8. View of recently active landsliding behind 124 Shadewell Drive.

Photo 9. View of a basin behind gabion wall upslope of 124 Shadewell Drive full of sediment/debris.

Photo 10. View of a leaning wall behind 124 Shadewell Drive.

Photo 11. View of a failed wood catchment wall upslope of Saddleback Drive.

Photo 12. View of a damaged cleanout riser without a cap – debris observed within pipe and the T-post marker knocked over.

Photo 13. View of creeping soil impacting fence line.

Photo 14. View of an animal burrow within shallow slope failure.

Photo 15. View of the significant erosion in the drainage channel south of 138 Windover Dr.

Photo 16. View of an 8-inch outlet pipe with downcutting along limits of rip rap.

Photo 17. View of the failed stacked rock wall south of 138 Windover Drive.

Photo 18. View of minor cracking of concrete-lined v-ditch.

Photo 19. View of ongoing cracking at previous repair location within the v-ditch.

Photo 20. View of a vertical offset of a v-ditch.

Photo 21. View of horizontal and vertical offsets with damming impacting flows of v-ditch.

Photo 22. View of vegetative debris in v-ditch.

Photo 23. View of significant vegetative growth in and adjacent to the v-ditch.

Photo 24. View of vegetation overhanging the v-ditch.

Photo 25. View of debris blocking drop inlet.

Photo 26. View of an outlet pipe into v-ditch, outlet pipe is damaged.

Photo 27. View of a subdrain outlet pipe blocked by vegetation.

Photo 28. View of the partially blocked inlet for culvert pipe crossing under fire road south of 138 Windover Drive.

Photo 29. View of the missing section of the culvert pipe outlet crossing under fire road south of 138 Windover Drive.

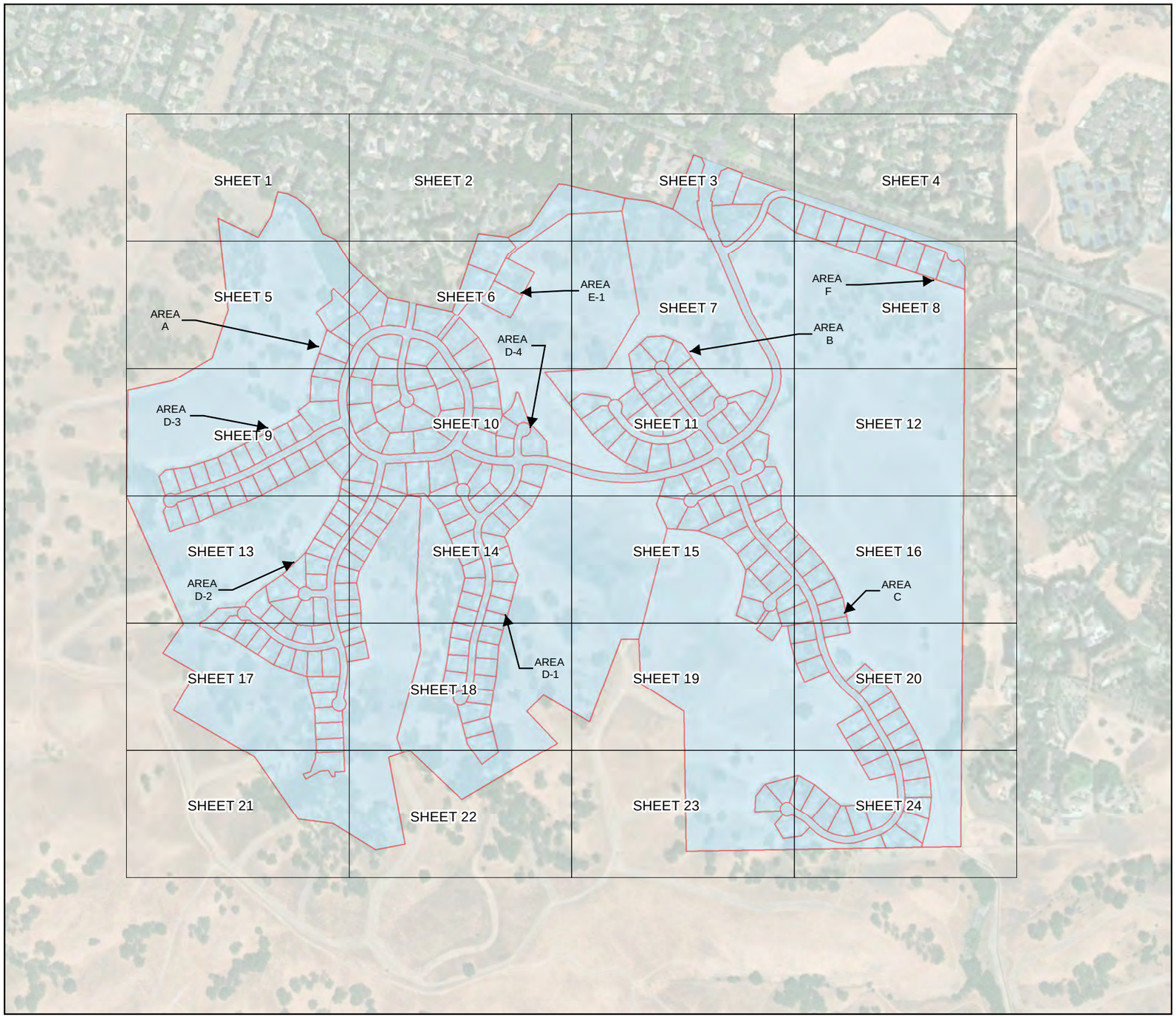
Photo 30. View of missing cover grate for drop inlet near 10 Hunters Terrace.

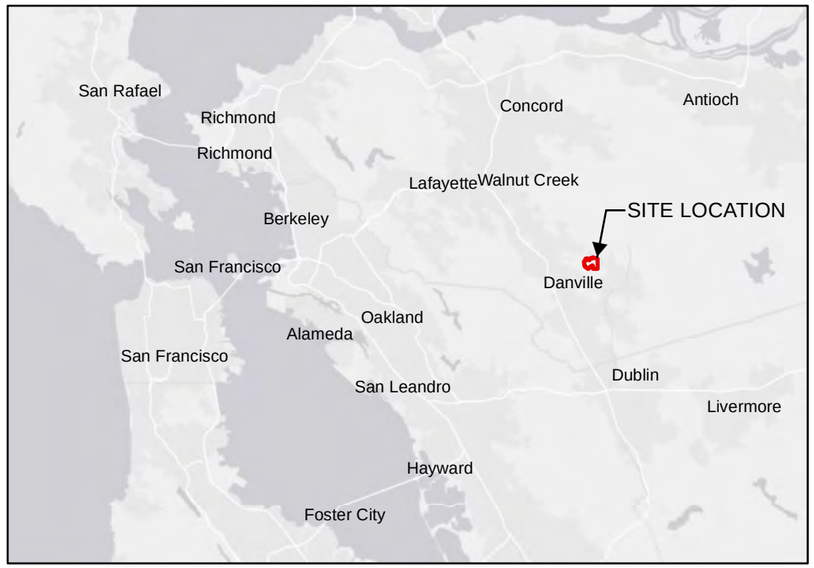
Photo 31. View of exposed wiring in v-ditch behind 102 Shadewell Drive.

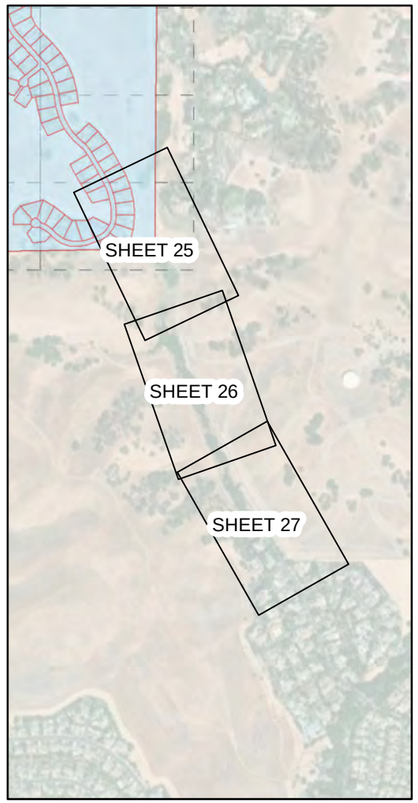
Photo 32. View of fencing extending to v-ditch and blocking debris.

Photo 33. View of pavement cracking and settlement on Sunhaven Trail.

Attachment A. Map Book







MAP UNIT DESCRIPTION

- FIELD ANNOTATIONS
- BURROW HOLES
- CLEANOUTS
- DROP INLET
- CRACKED ASPHALT
- V-DITCH
- SUBDRAIN APPROX
- ROCKWALLS & BERMS
- REPAIR LIMITS
- EROSION FAILURE
- BASINS
- CEG MAPPED GEOLOGIC FEATURE
- CREEP
- Qls — LANDSLIDE - ARROW SHOWS DIRECTION OF MOVEMENT
- Qc — COLLUVIUM

BASEMAP REFERENCE

1. ORTHOIMAGERY FROM ESRI, MAXAR 2019.

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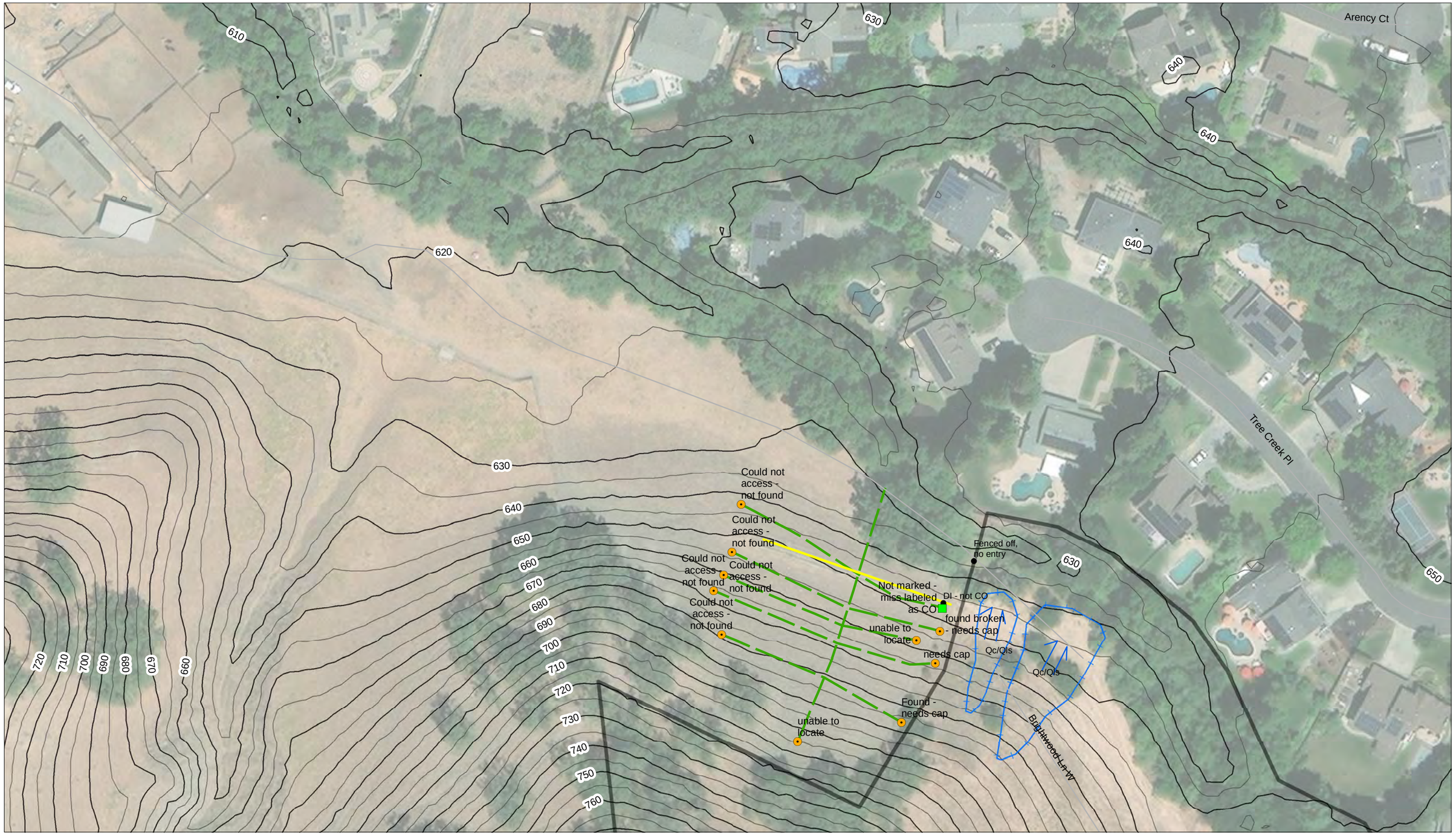

BASEMAP REFERENCE

1. ORTHOIMAGERY FROM ESRI, MAXAR 2019.
2. CONTOURS FROM USGS 2018 LIDAR, ACCESSED ONLINE JUNE 29 2022. CONTOUR INTERVAL = 5 FT.
3. QC = COLLUVIUM ; QLS = LANDSLIDE
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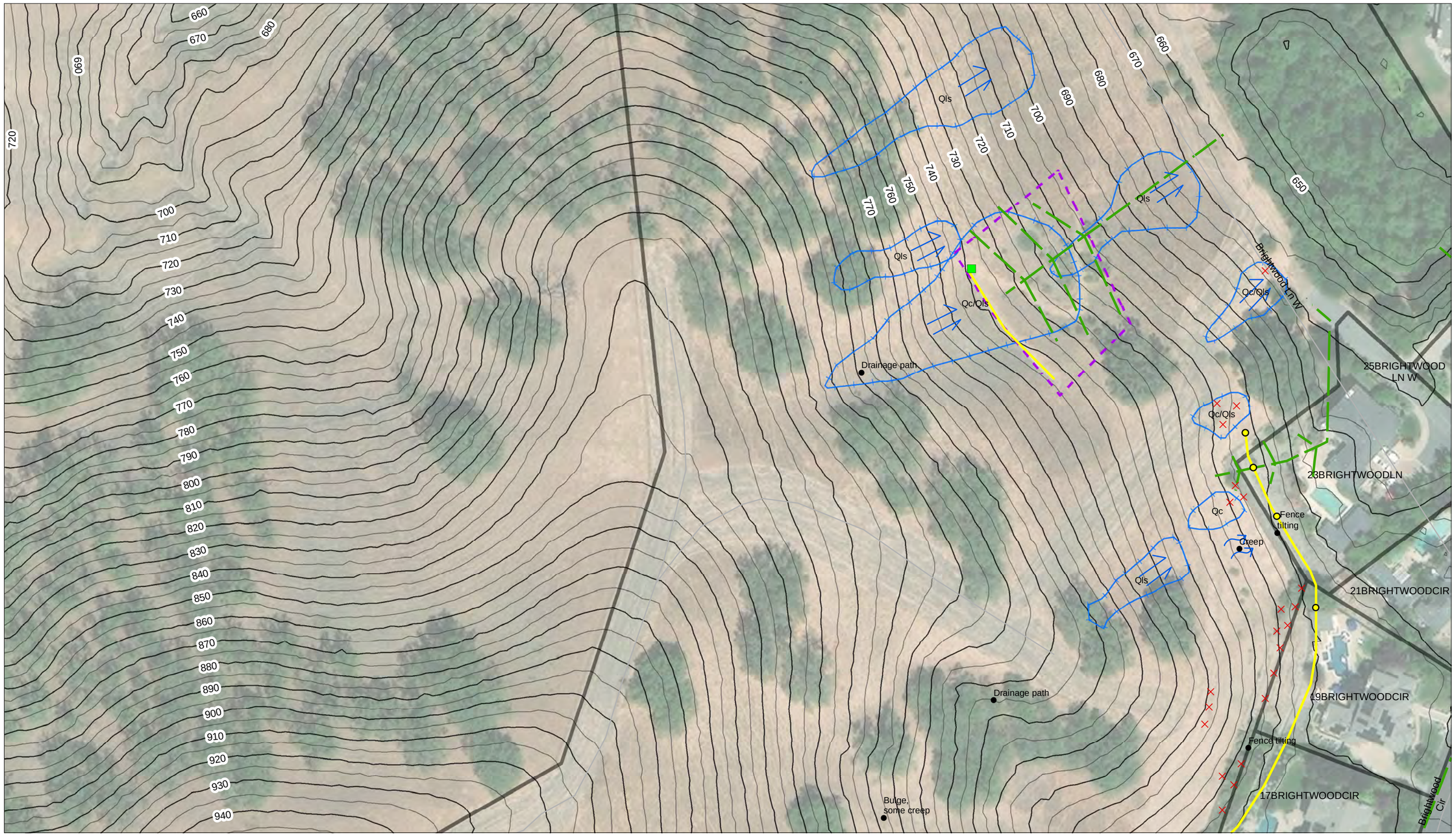

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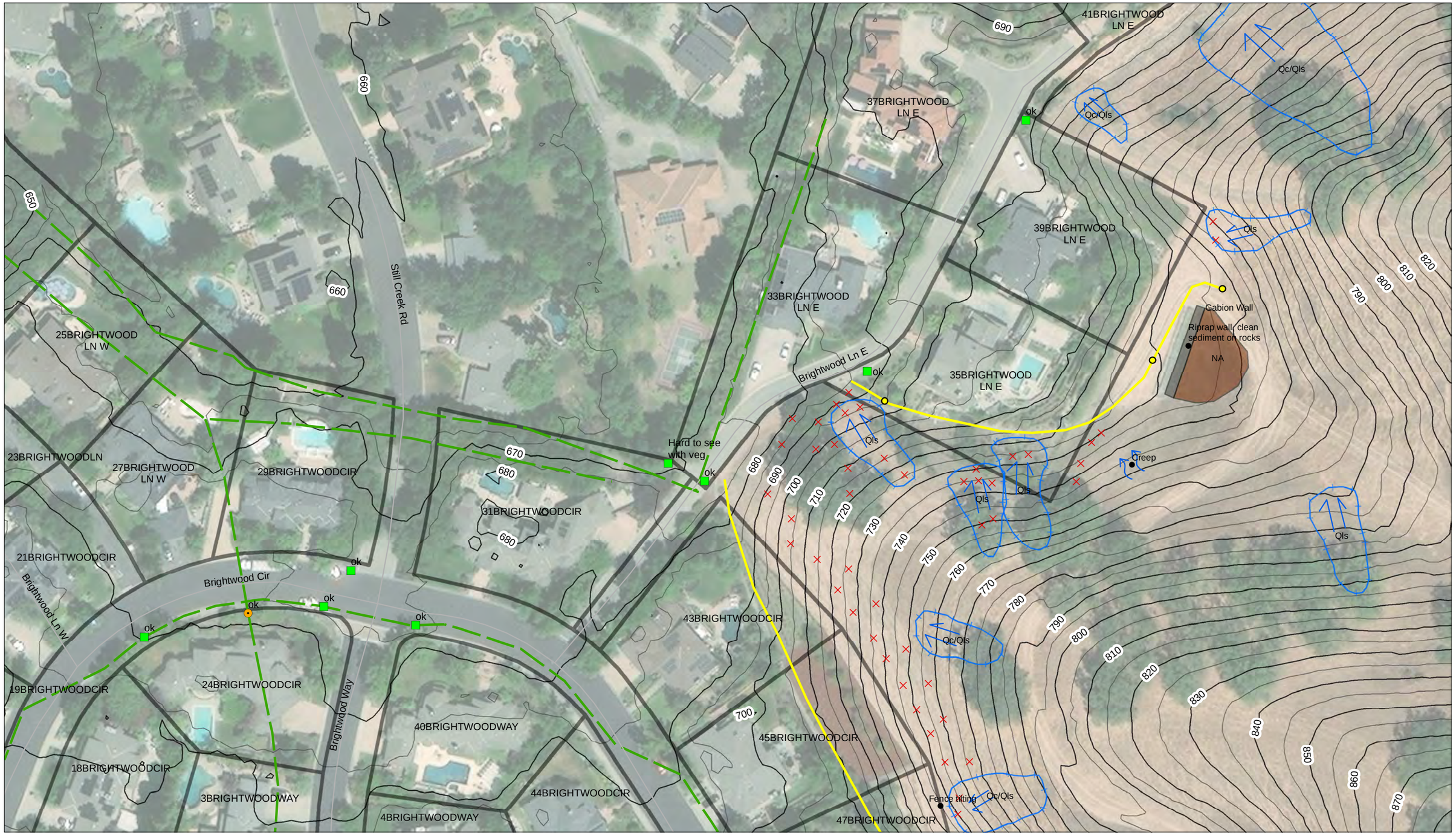

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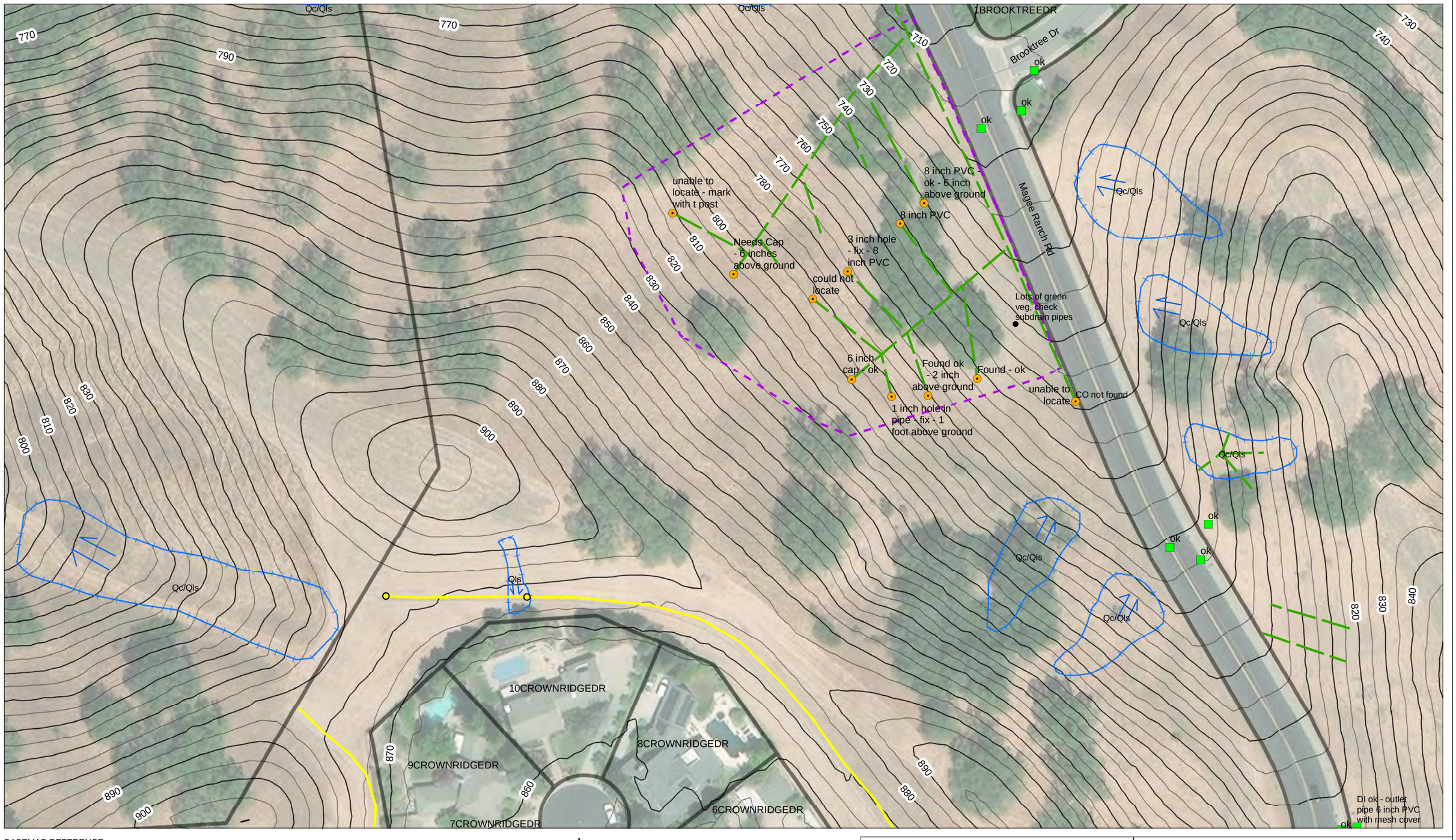

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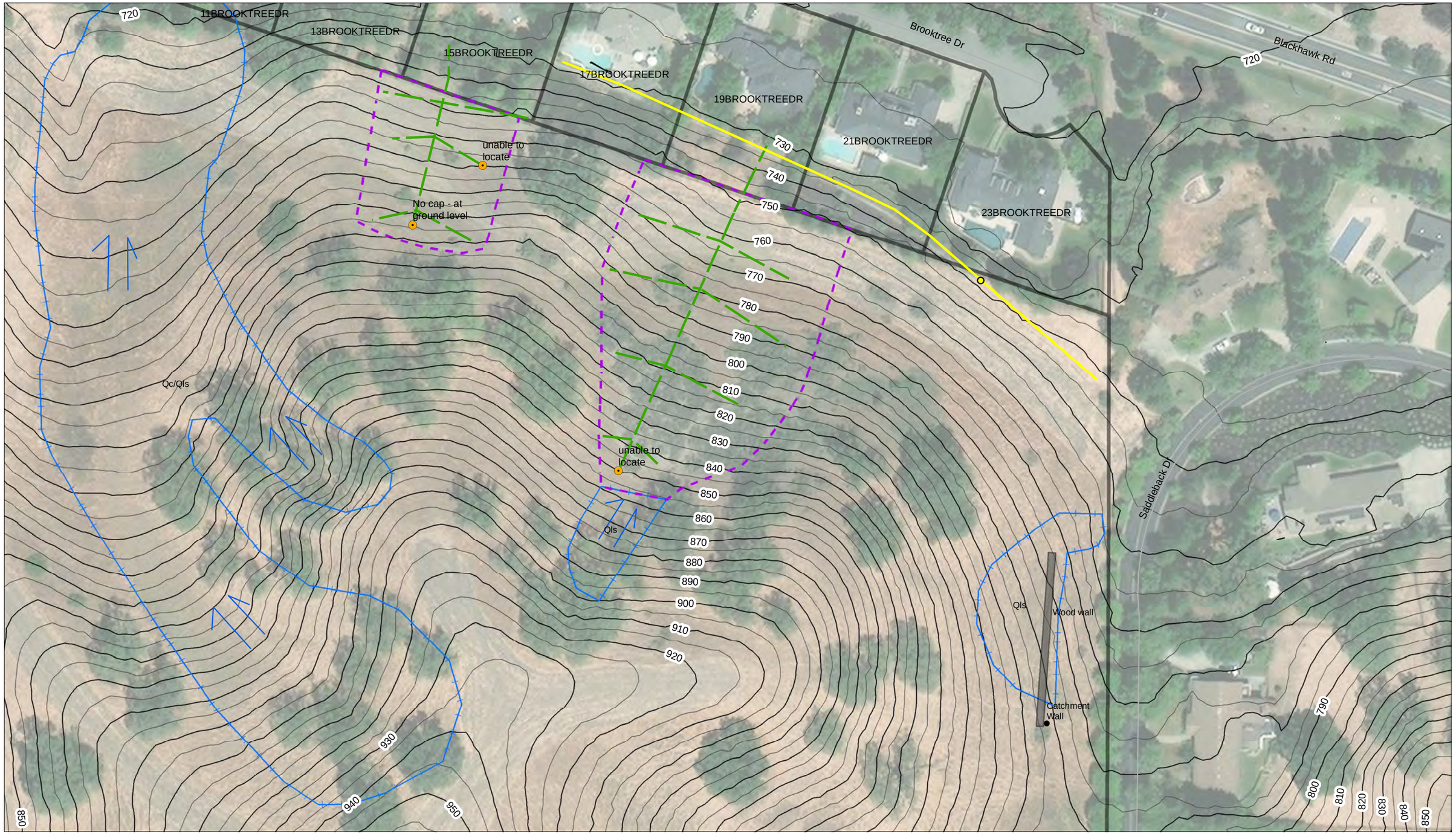

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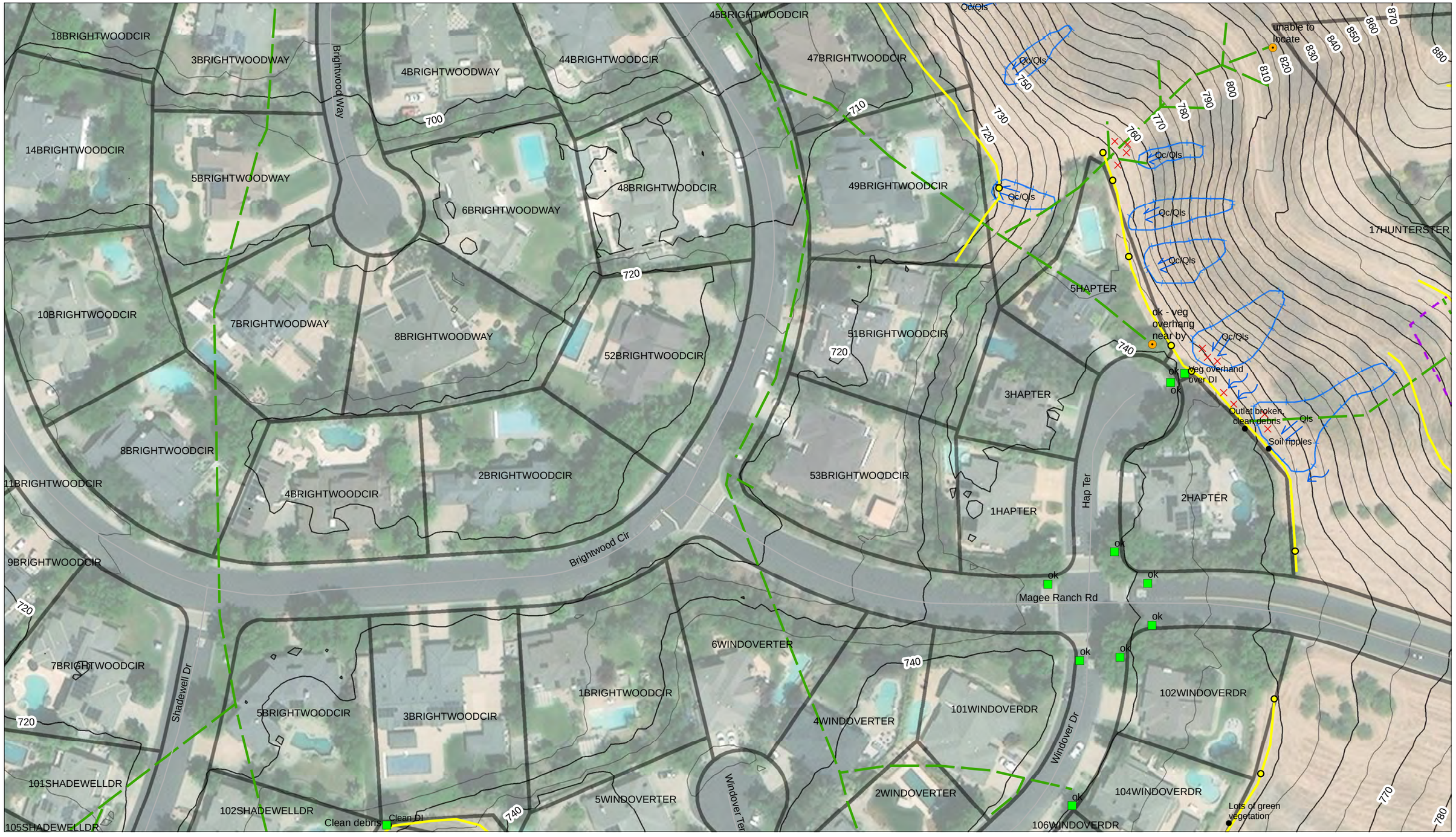

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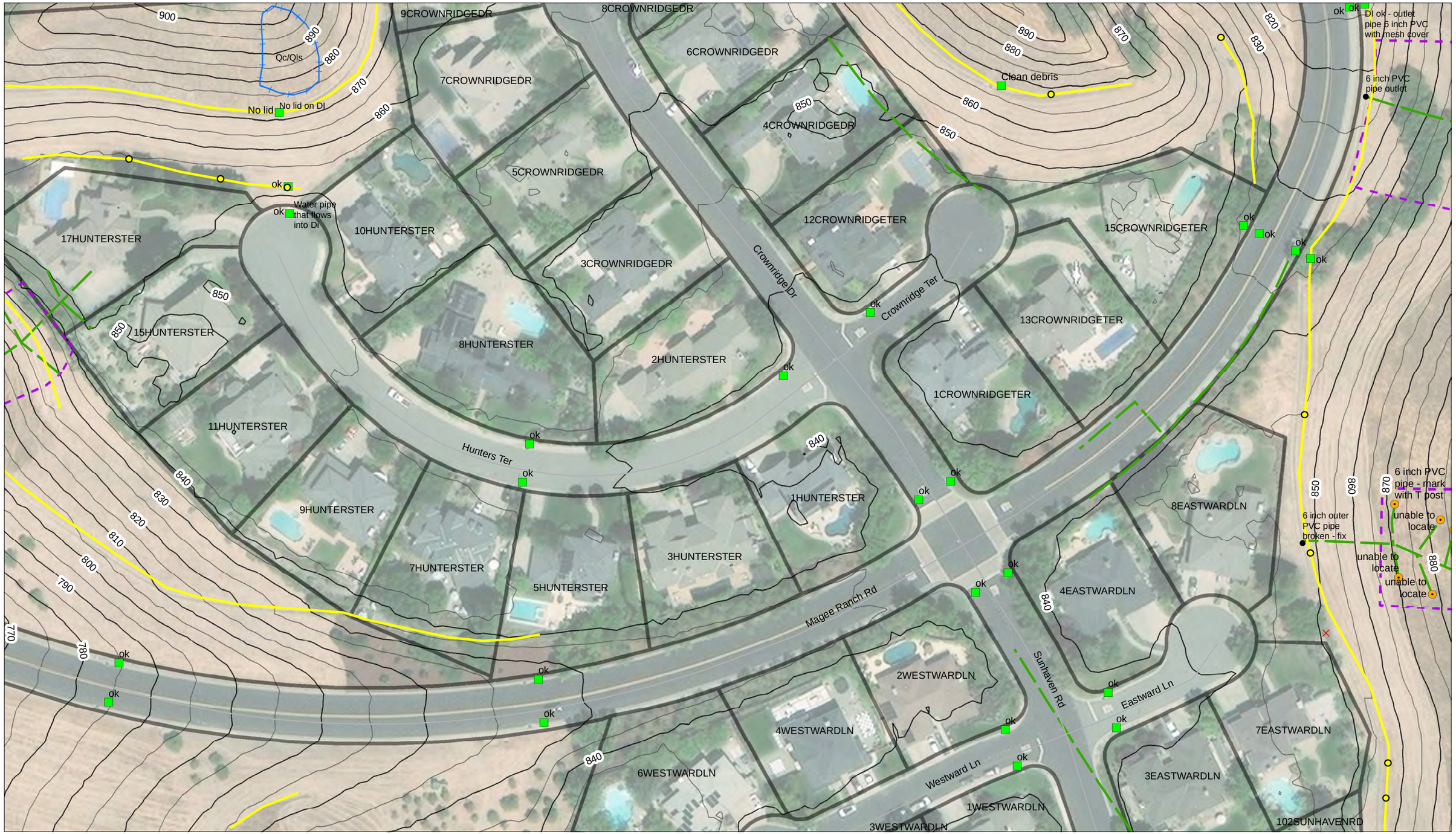

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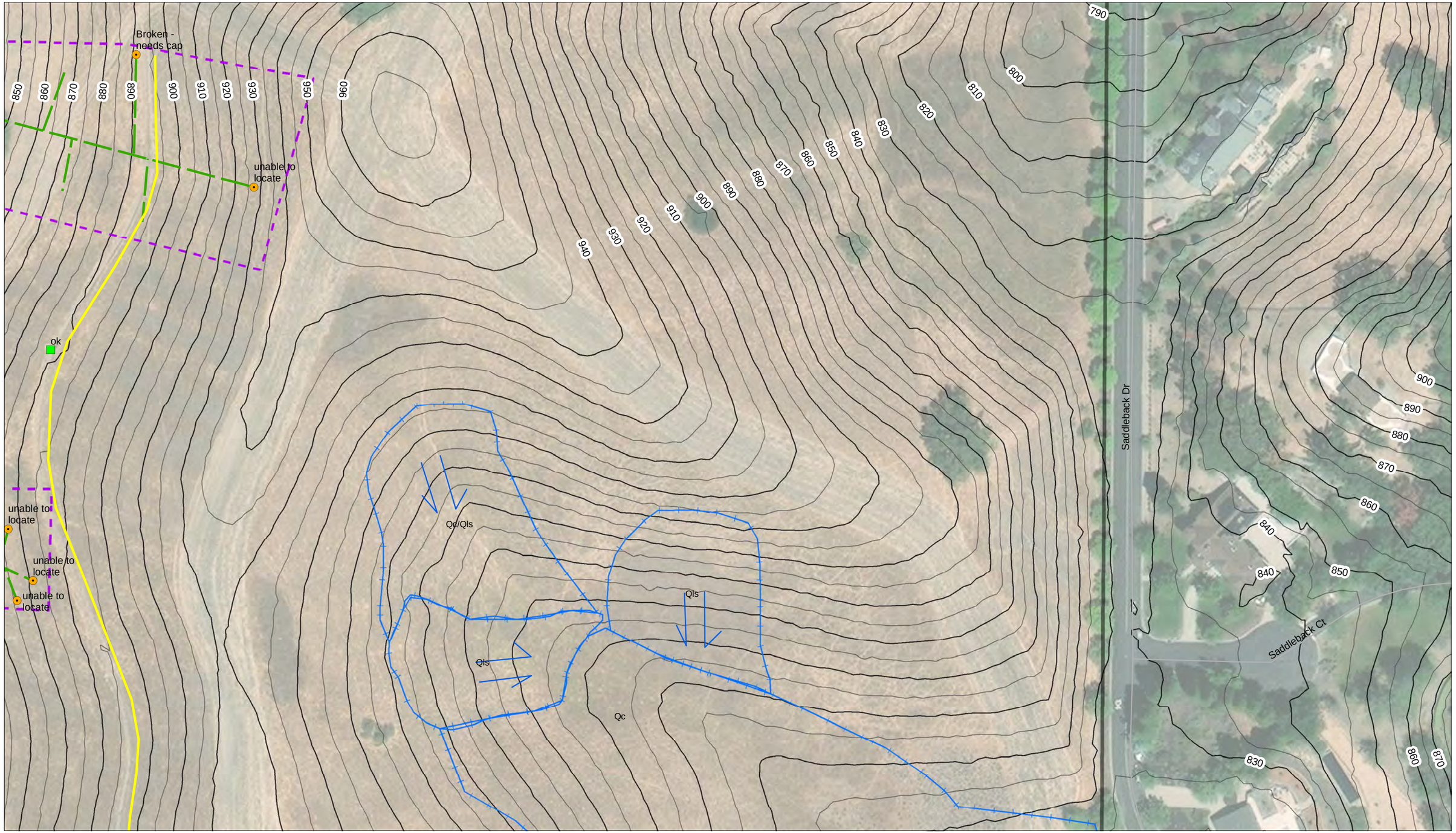

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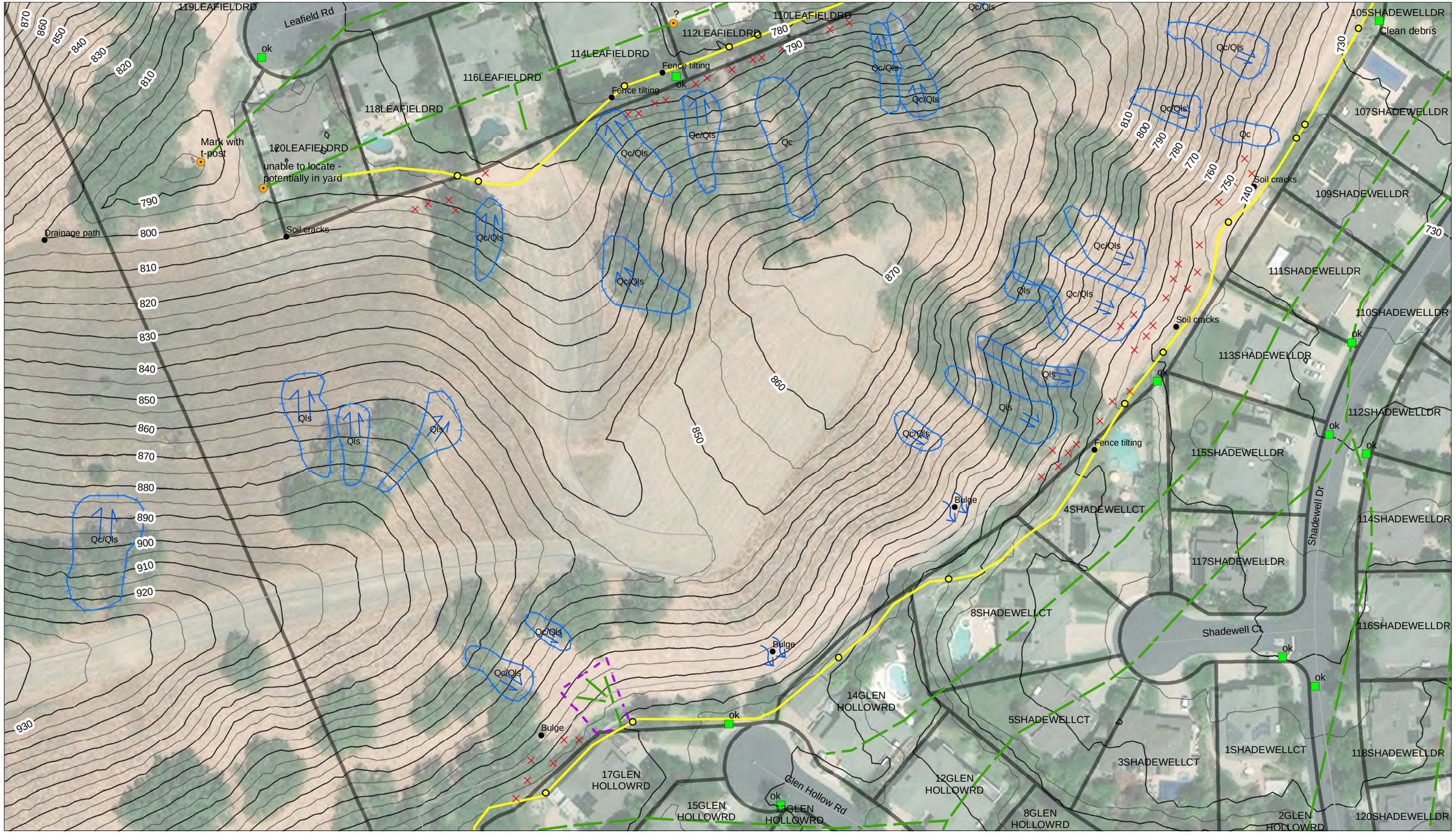

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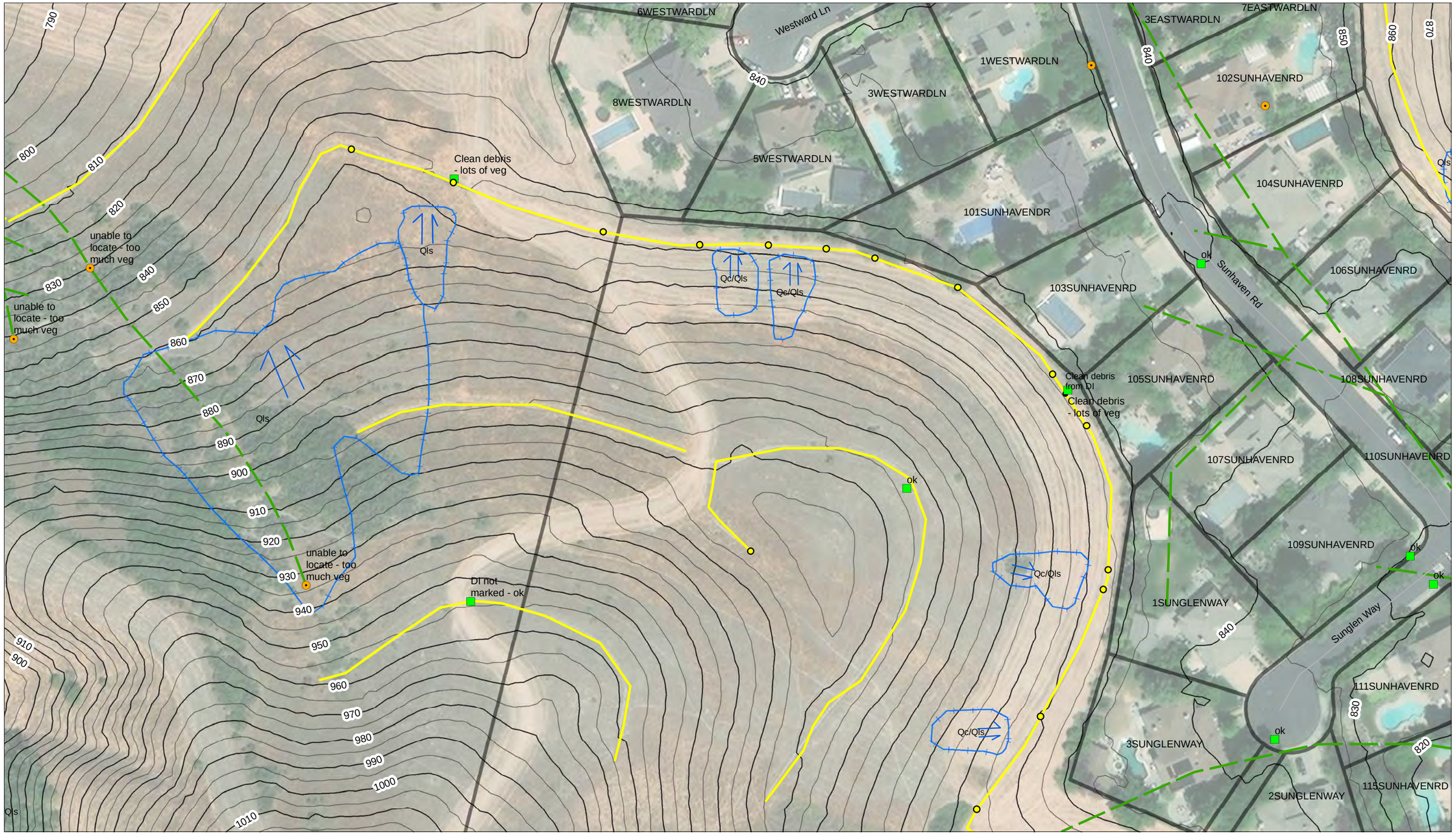

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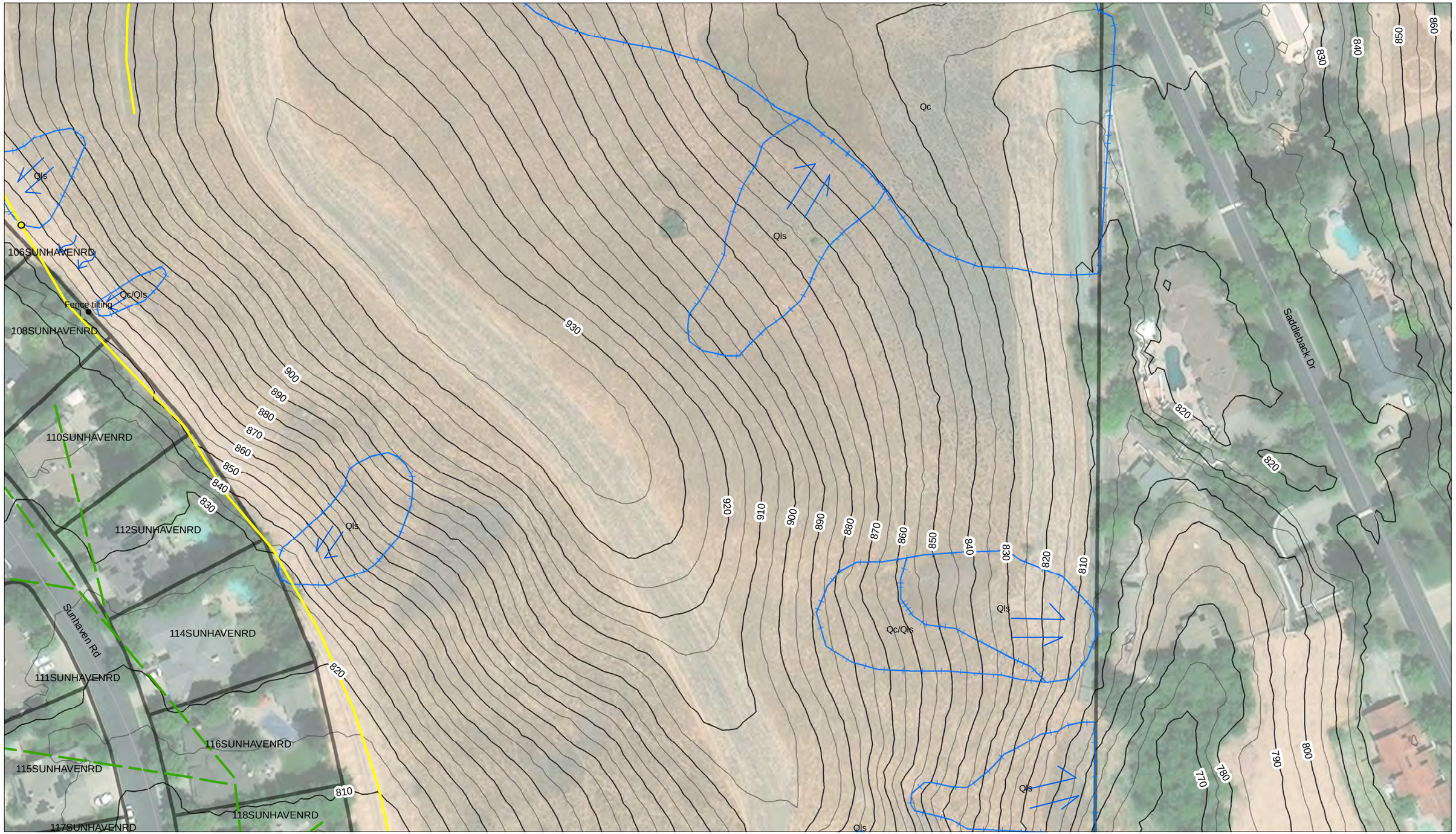

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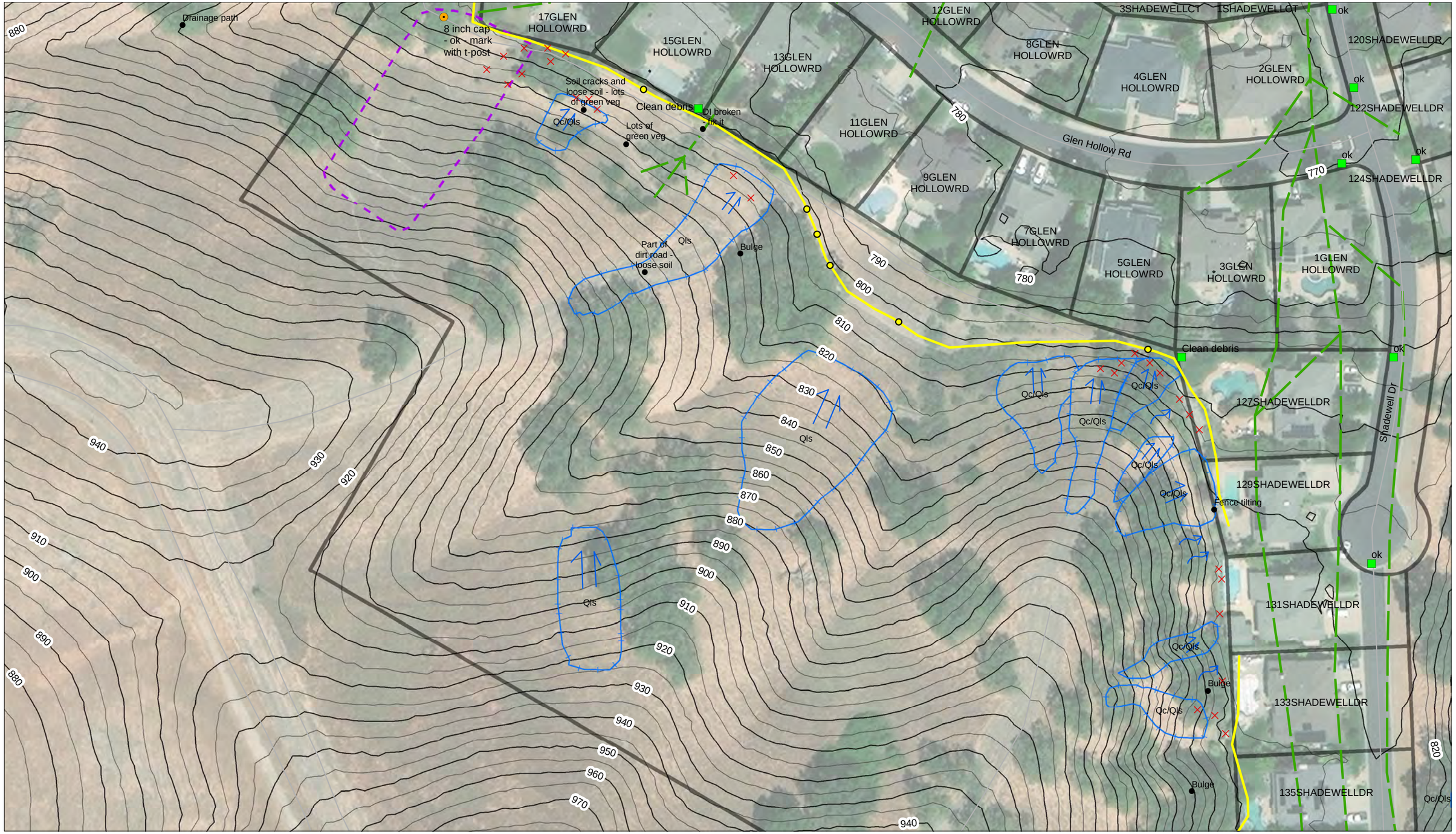

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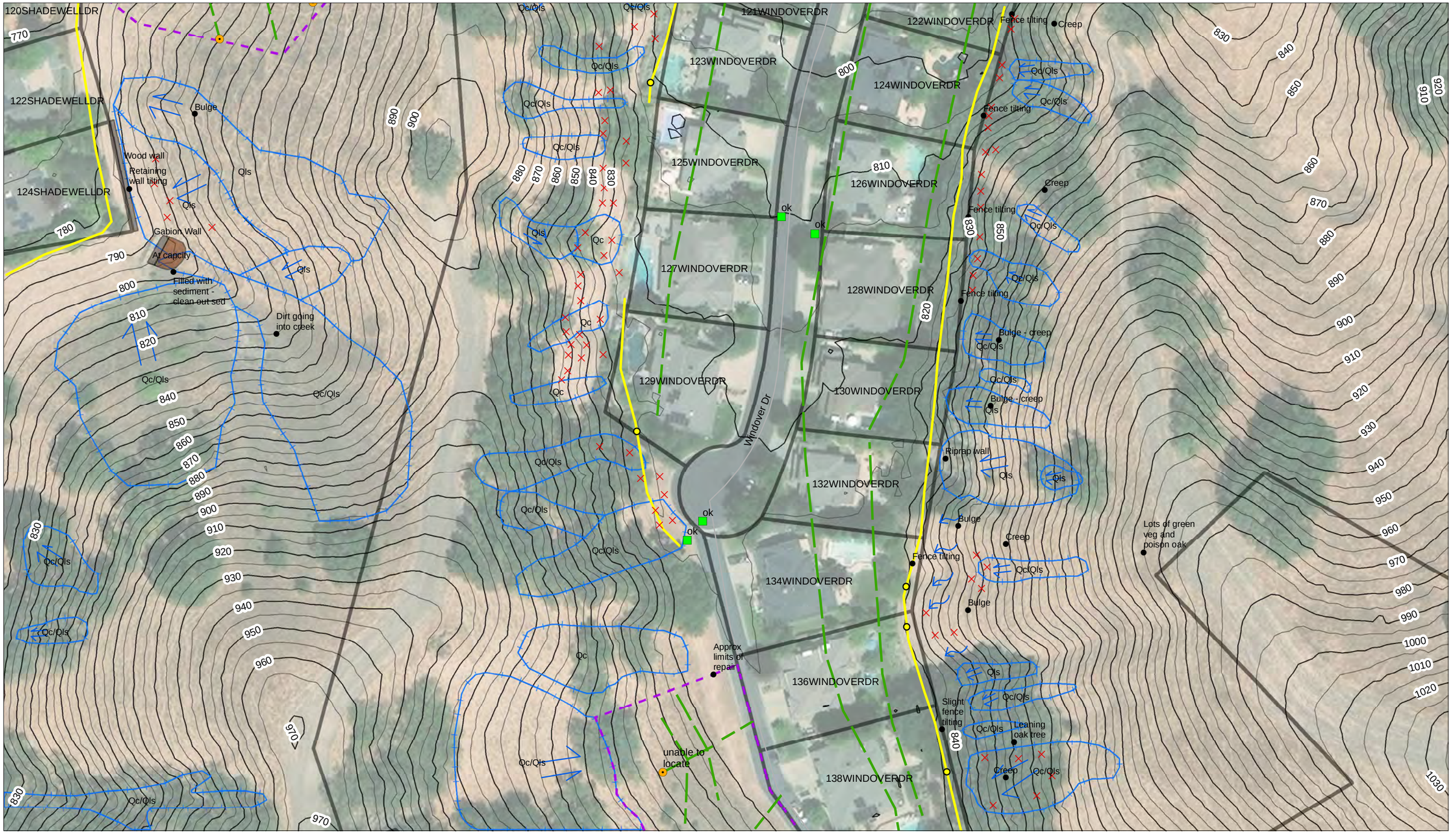

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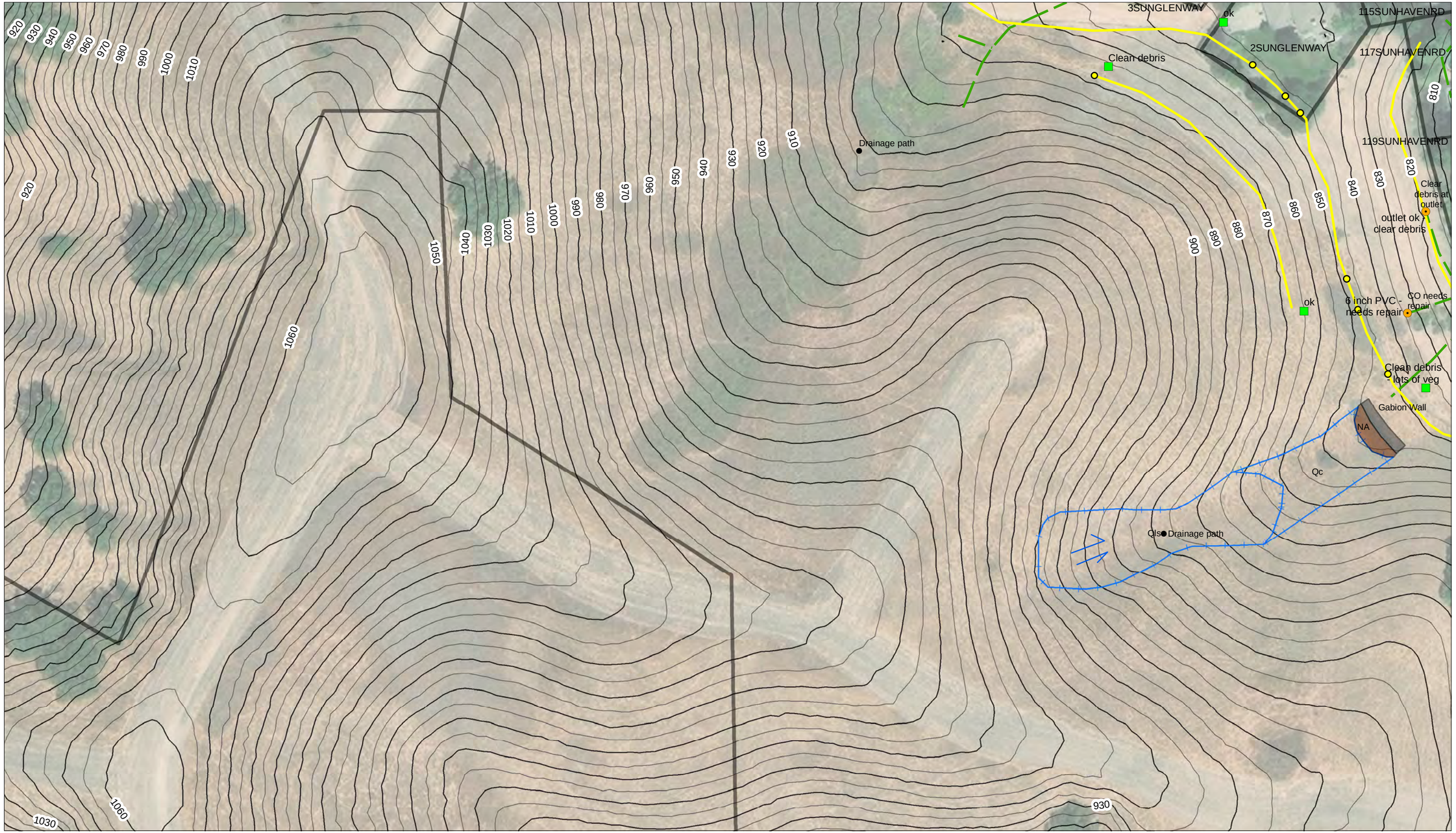

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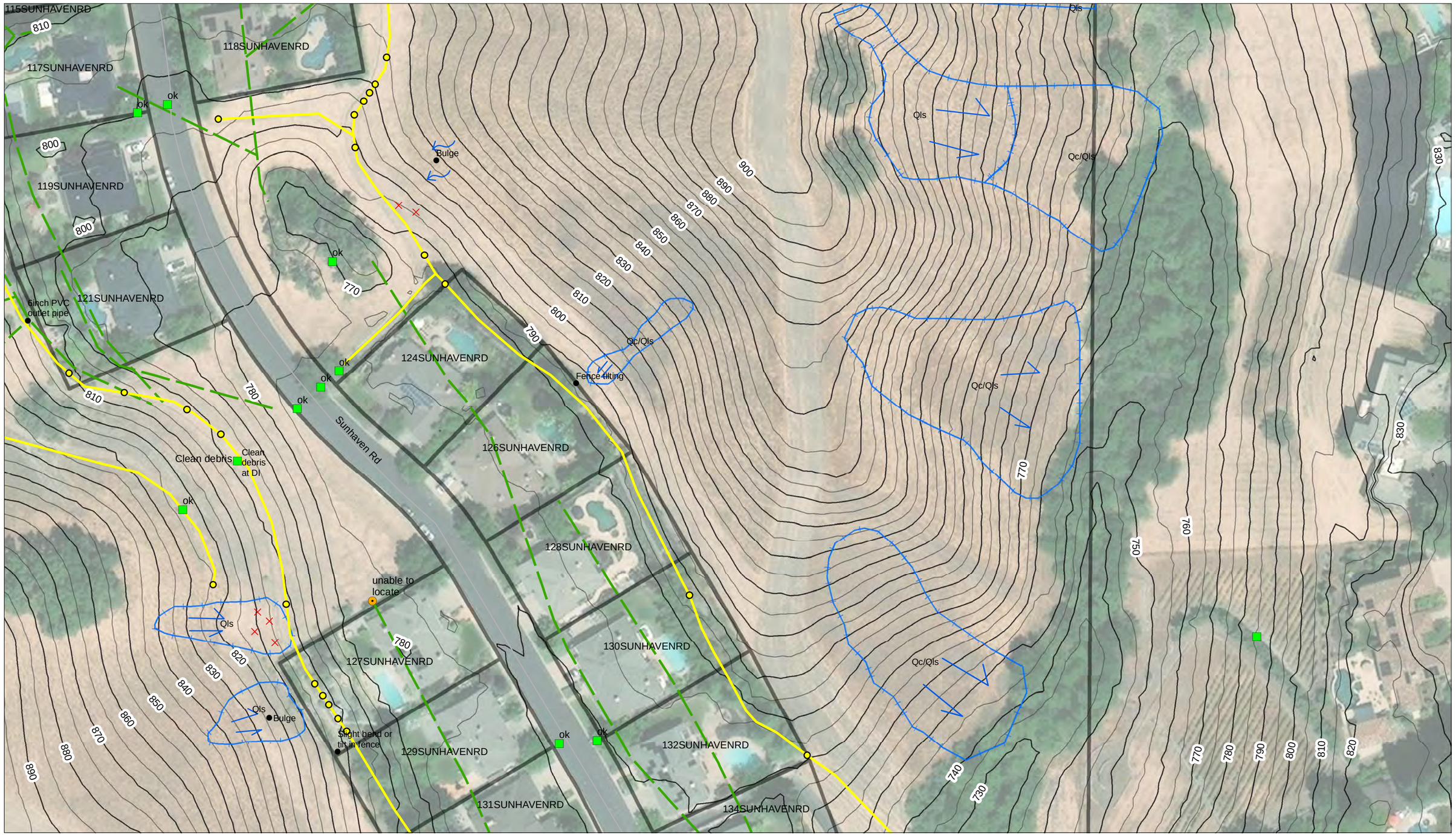

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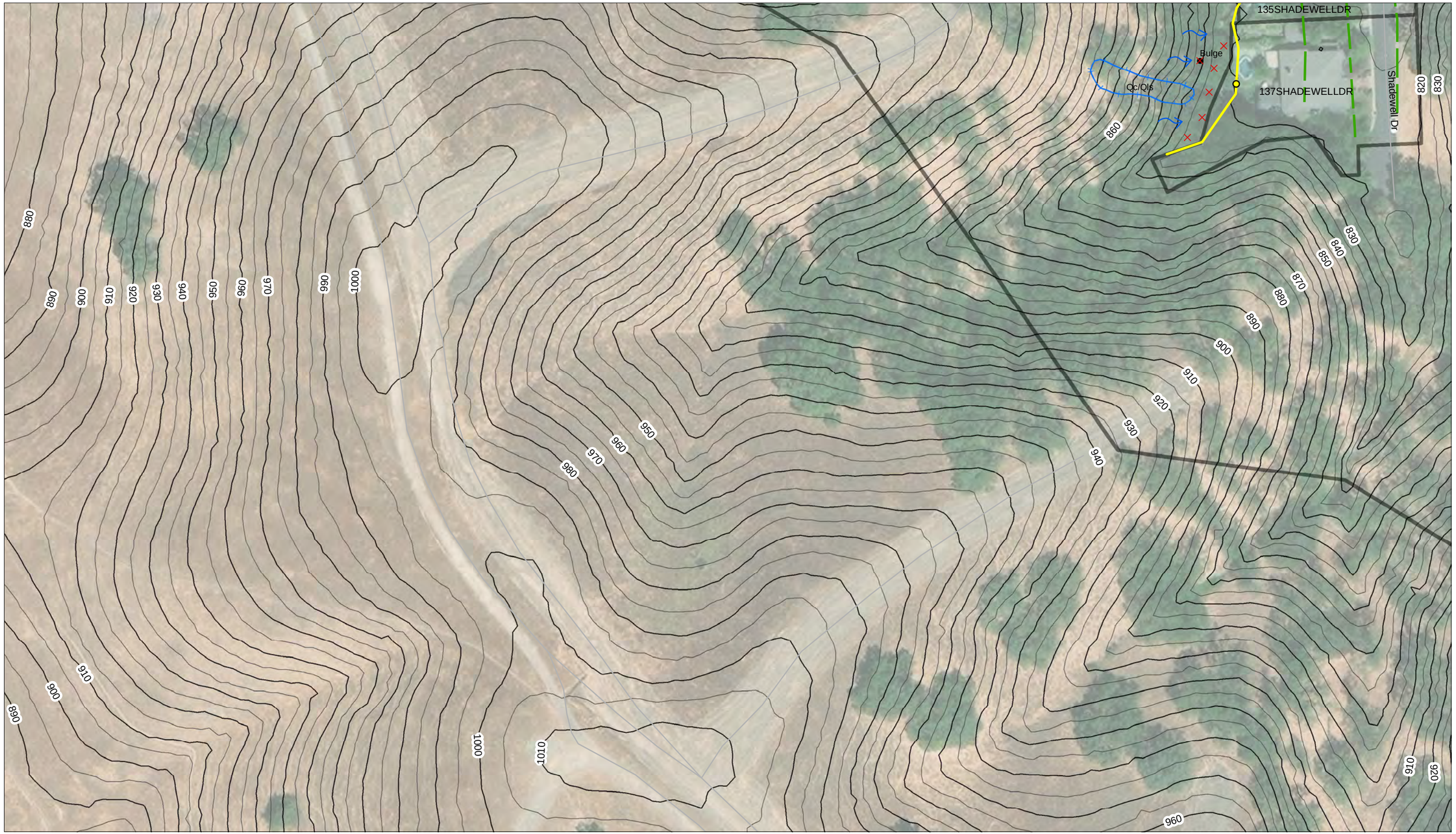

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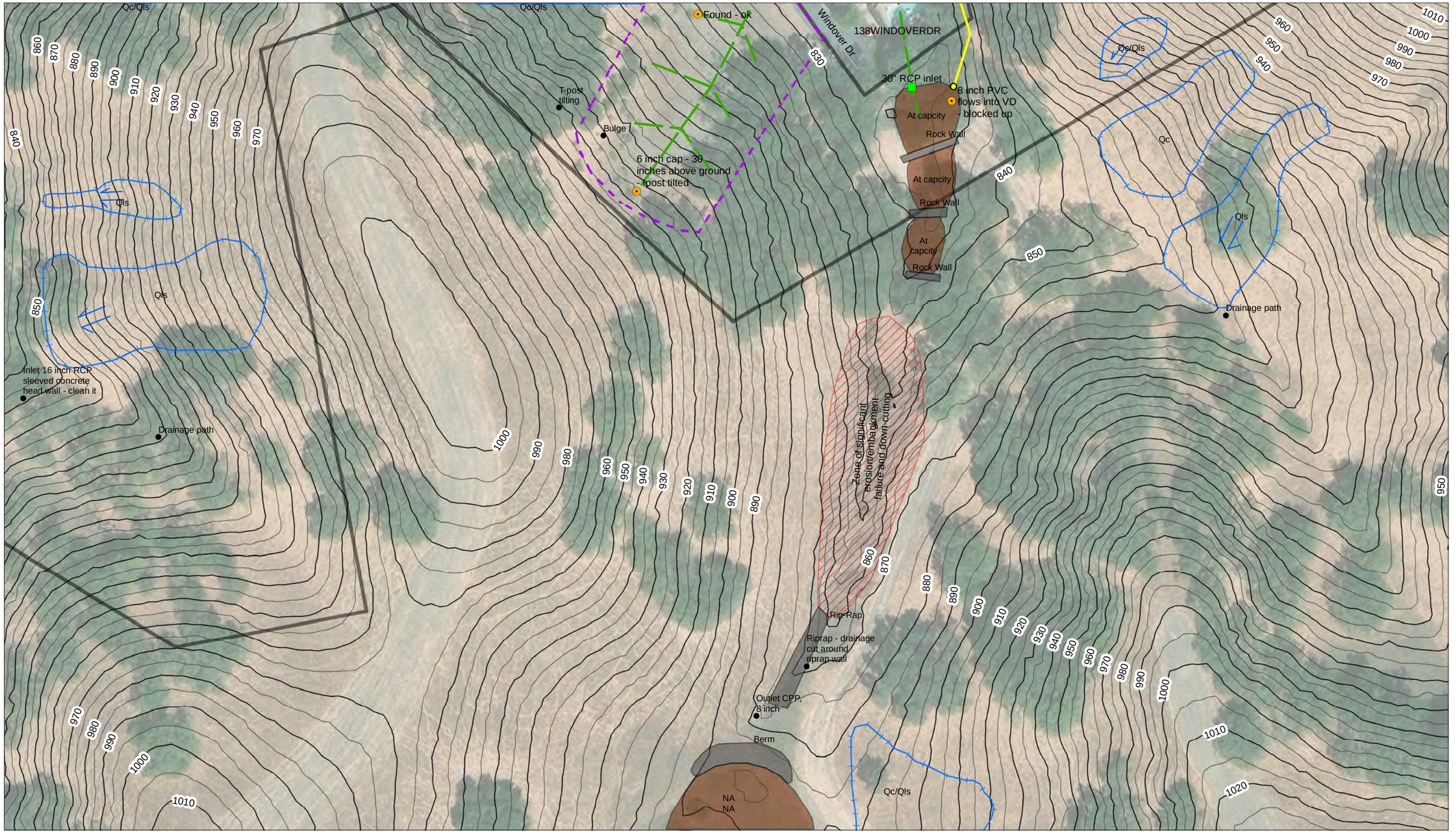

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220560	SEPTEMBER 2022	SHEET 23

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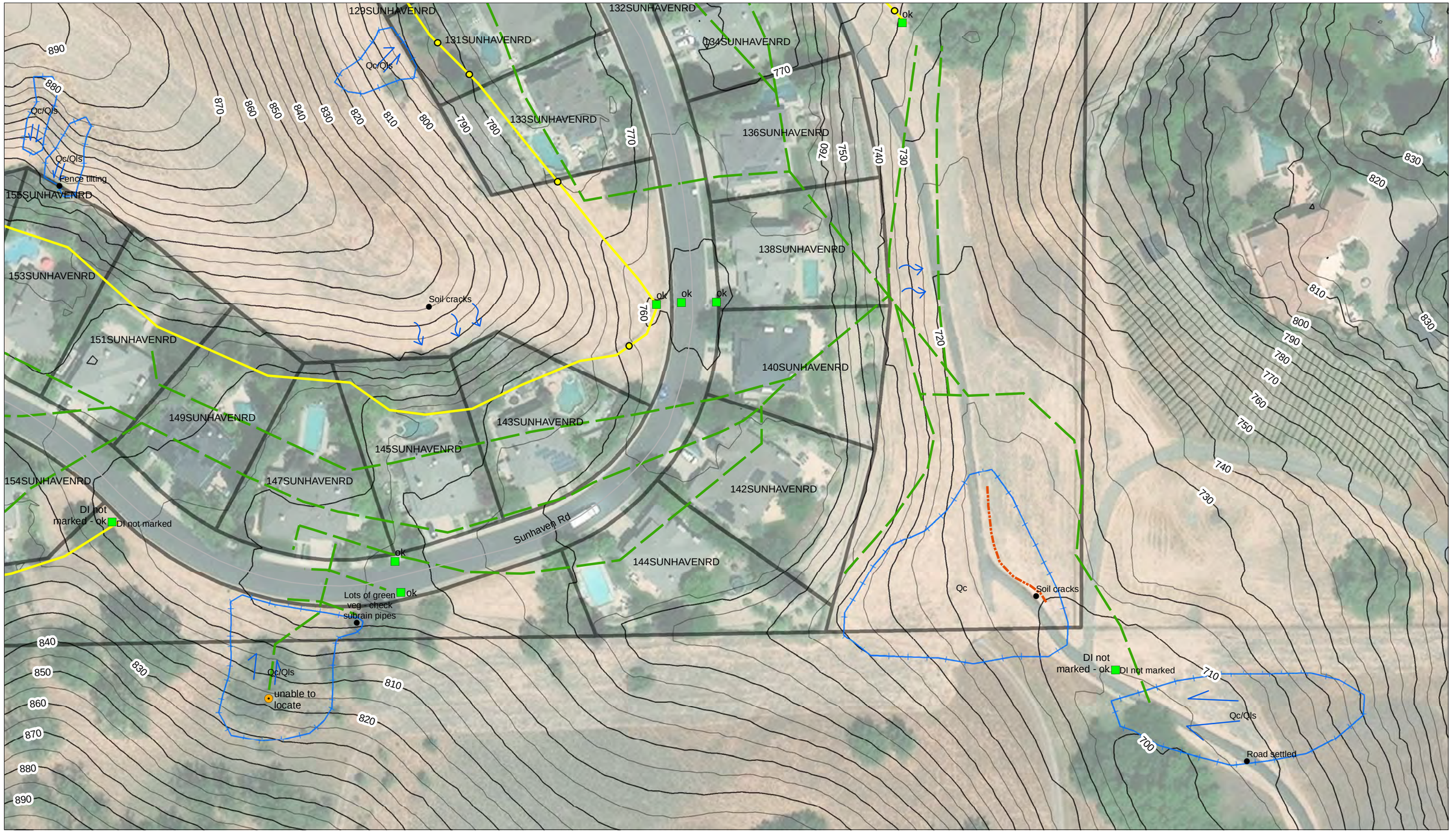

BASEMAP REFERENCE

1. ORTHOIMAGERY FROM ESRI, MAXAR 2019.
2. CONTOURS FROM USGS 2018 LIDAR, ACCESSED ONLINE JUNE 29 2022. CONTOUR INTERVAL = 5 FT.
3. QC = COLLUVIUM ; QLS = LANDSLIDE
   ARROWS SHOW DIRECTION OF MOVEMENT

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FEET

CE&G
CAL ENGINEERING & GEOLOGY
1870 Olympic Blvd.
Suite 100
Walnut Creek, CA 94596
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MAGEE RANCH GHAD
DANVILLE, CALIFORNIA
SITE OBSERVATION AND MAPPING

220560	SEPTEMBER 2022	SHEET 24

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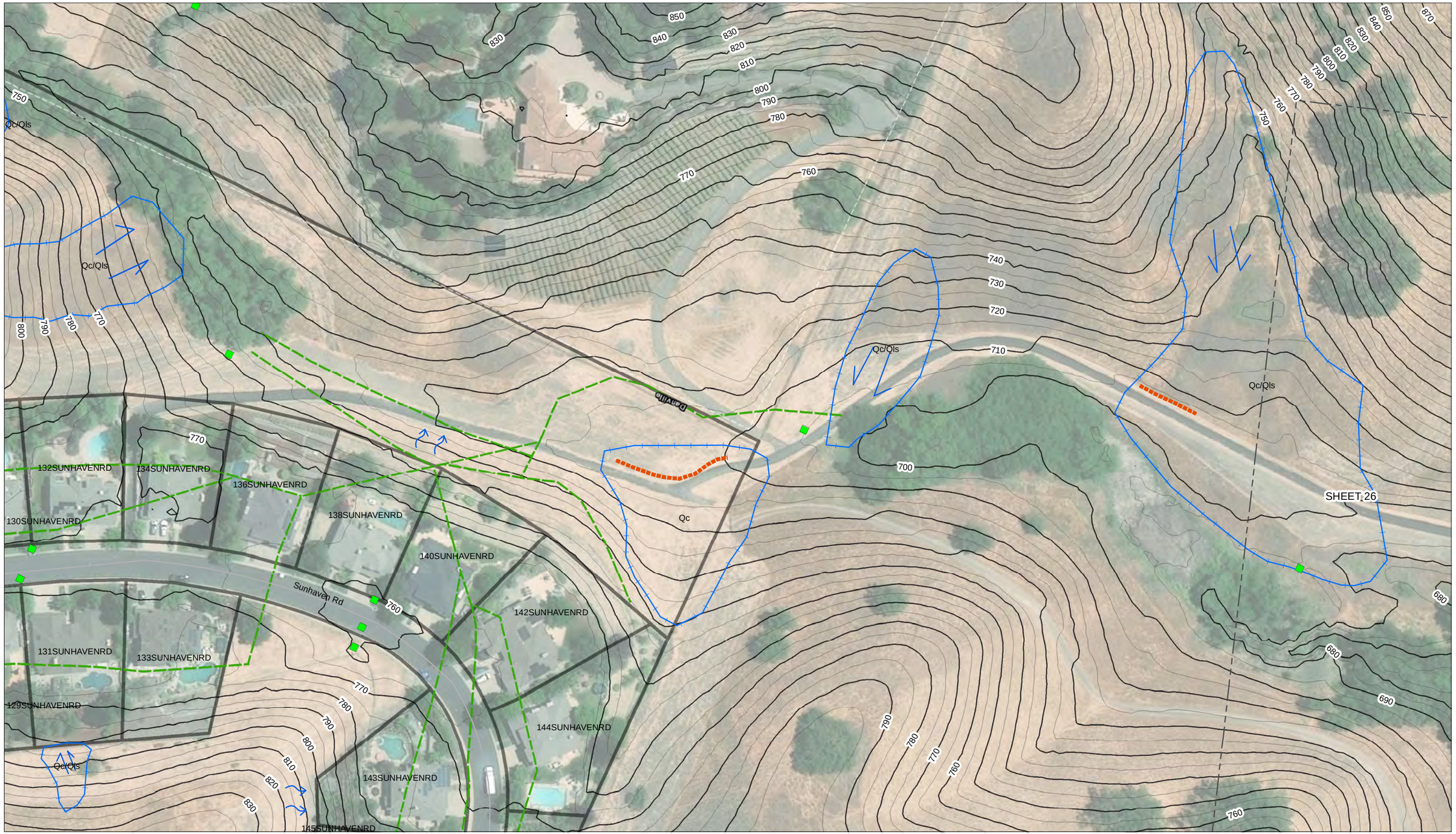

BASEMAP REFERENCE

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2. CONTOURS FROM USGS 2018 LIDAR, ACCESSED ONLINE JUNE 29 2022. CONTOUR INTERVAL = 5 FT.

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MAGEE RANCH GHAD
DANVILLE, CALIFORNIA
SEWER EASEMENT

220560	SEPTEMBER 2022	SHEET 25

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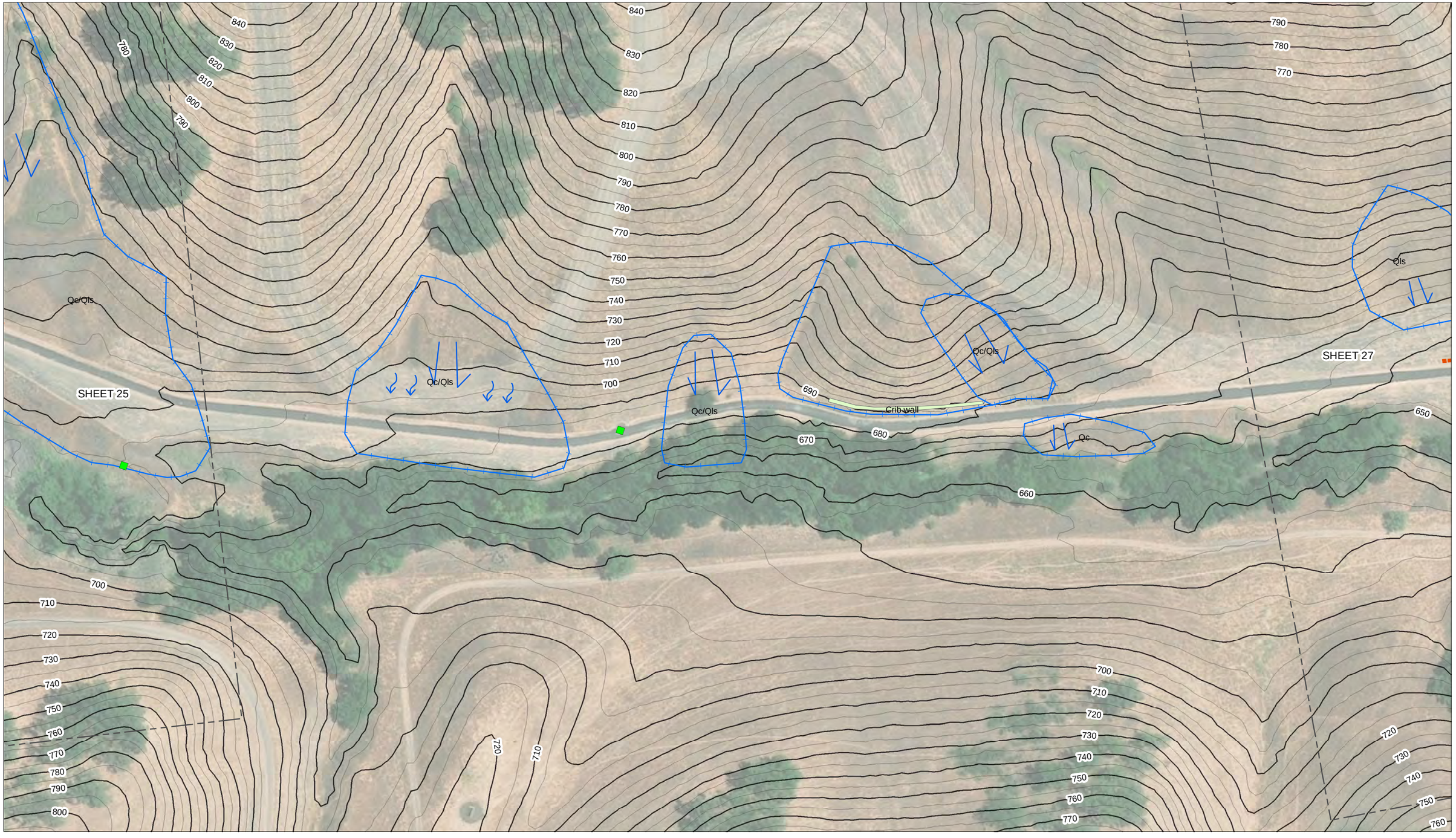

BASEMAP REFERENCE

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2. CONTOURS FROM USGS 2018 LIDAR, ACCESSED ONLINE JUNE 29 2022. CONTOUR INTERVAL = 5 FT.

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SEWER EASEMENT

220560	SEPTEMBER 2022	SHEET 26

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BASEMAP REFERENCE

1. ORTHOIMAGERY FROM ESRI, MAXAR 2019.
2. CONTOURS FROM USGS 2018 LIDAR, ACCESSED ONLINE JUNE 29 2022. CONTOUR INTERVAL = 5 FT.

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SEWER EASEMENT

220560	SEPTEMBER 2022	SHEET 27

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