H. T. HARVEY & ASSOCIATES
Ecological Consultants

Memorandum

October 23, 2017 **Project #3863-02**

To: **Rosy Ko, Top Elegant, LLC**

From: **Kelly Hardwicke, Ph.D., Principal Plant Ecologist**

Subject: **Lot 7 Drainage Assessment – 28030 Natoma Road, Los Altos Hills (Natoma Subdivision)**

Dear Ms. Ko:

This memorandum was prepared as per your request to document the site conditions within Lot 7 with respect to the potential for jurisdictional wetlands or streams to occur, and to provide information in response to the comments received from the Open Space Committee at the September 7, 2017 planning commission meeting for the Natoma Subdivision site. The comments on Lot 7 indicated the presence of a "drainage" in the central and western portions of the lot, and there were questions about whether proposed remedial grading or other development associated with Lot 7 would impact a jurisdictional drainage or riparian vegetation and therefore be subject to additional General Plan requirements for riparian areas. For the purpose of this memo, "project" refers to the construction of the Lot 7 site, including site preparation/remedial grading, house and driveway construction, and a stormwater outfall from the property, rather than referring to the larger Natoma Subdivision as a whole. After a field assessment by H. T. Harvey & Associates (HTH), the project has been readjusted, and this memo also presents our analysis of this adjusted design for potential impacts to jurisdictional features.

Our findings from the field assessment found that there are no field indicators of an incised jurisdictional drainage in the majority of Lot 7. A small ephemeral tributary occurs in the western portion of the lot, outside the home site and remedial grading area. A willow thicket on the east end of the lot is not associated with a drainage feature and instead is a potential seep wetland. As portrayed in the project design plans provided by Jeff Peterson, P.E. at Wilsey Ham on October 5, 2017, the proposed outfall will now be located just north of the ephemeral drainage, and the proposed driveway will be moved to avoid the willow thicket near the western edge of Lot 7. By avoiding these two features, regulatory agency permits would not be required, no new impacts not covered by the existing CEQA analysis would occur, and the project would be in compliance with Los Altos Hills General Plan policies and programs regarding riparian habitat avoidance.

This memo provides a summary of the wetland and waters assessment conducted on September 14, 2017 by HTH, a map delineating the jurisdictional limits of the existing features on site (Figures 1 and 2), an updated design plan sheet (Attachment A), and the regulatory definitions for jurisdictional features regulated under the Clean Water Act, the Porter Cologne Act, and/or Section 1600 et seq. of the State Fish and Game Code.

Background

A planning commission meeting was held on September 7, 2017 to discuss the design plans proposed for the Natoma Subdivision project. Several committee groups were present to comment on the proposed project including the Open Space Committee, which commented on potentially sensitive features in Lot 7, including a potentially unstable "bowl", a drainage within the bowl, and willow-riparian vegetation. They indicated that the remedial grading and development of Lot 7 would impact these features. In response to these comments, HTH was requested by Top Elegant Investment, LLC, to investigate the existing field conditions to accurately map features that may be defined as jurisdictional under Clean Water Act, the Porter Cologne Act, and/or Section 1600 et seq. of the State Fish and Game Code and to assist the design team in avoiding any such features. Below are details on the field methodology used to assess existing conditions, survey results, as well as the regulatory framework used to define jurisdictional boundaries.

Survey Methods

A jurisdictional assessment of the bowl landscape formation in Lot 7 and an ephemeral drainage, tributary to Matadero Creek, was conducted by HTH on September 14, 2017. In addition, a potential seep wetland dominated by red willow (*Salix laevigata*) located at the top of the bowl in the eastern area of Lot 7 was evaluated by HTH Principal Plant Ecologist Kelly Hardwicke, Ph.D. Prior to conducting the field work, Dr. Hardwicke reviewed the project background, site topography, aerial imagery, and online databases including U.S. Fish and Wildlife (USFWS) National Wetlands Inventory (NWI), California Department of Fish and Wildlife (CDFW) Biogeographic Information and Observation System (BIOS), USFWS Environmental Conservation Online System (ECOS), historic aerial imagery (Google Earth) as well as U.S. Geological Survey (USGS) National Hydrography Dataset (NHD).

The purpose of the survey was to identify the extent and distribution of wetlands and other waters of the U.S. that may be subject to regulation under Section 404 of the Clean Water Act (CWA) administered by U.S. Army Corps of Engineers (USACE) in accordance with the *Corps of Engineers 1987 Wetlands Delineation* (Environmental Laboratory 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0)* (USACE 2010a) and *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West* (Version 2.0 (USACE 2008) to document site conditions relative to hydrophytic vegetation, hydric soils, and wetland hydrology. Additionally, HTH examined the bowl area of Lot 7 for waters of the State that may be subject to regulation under the Porter Cologne Water Quality Control Act, which is administered by the Regional Water Quality Control Board (RWQCB), in addition to any riparian habitat subject to Section 1600 et seq. of the State Fish and Game Code administered by California Department of Fish and

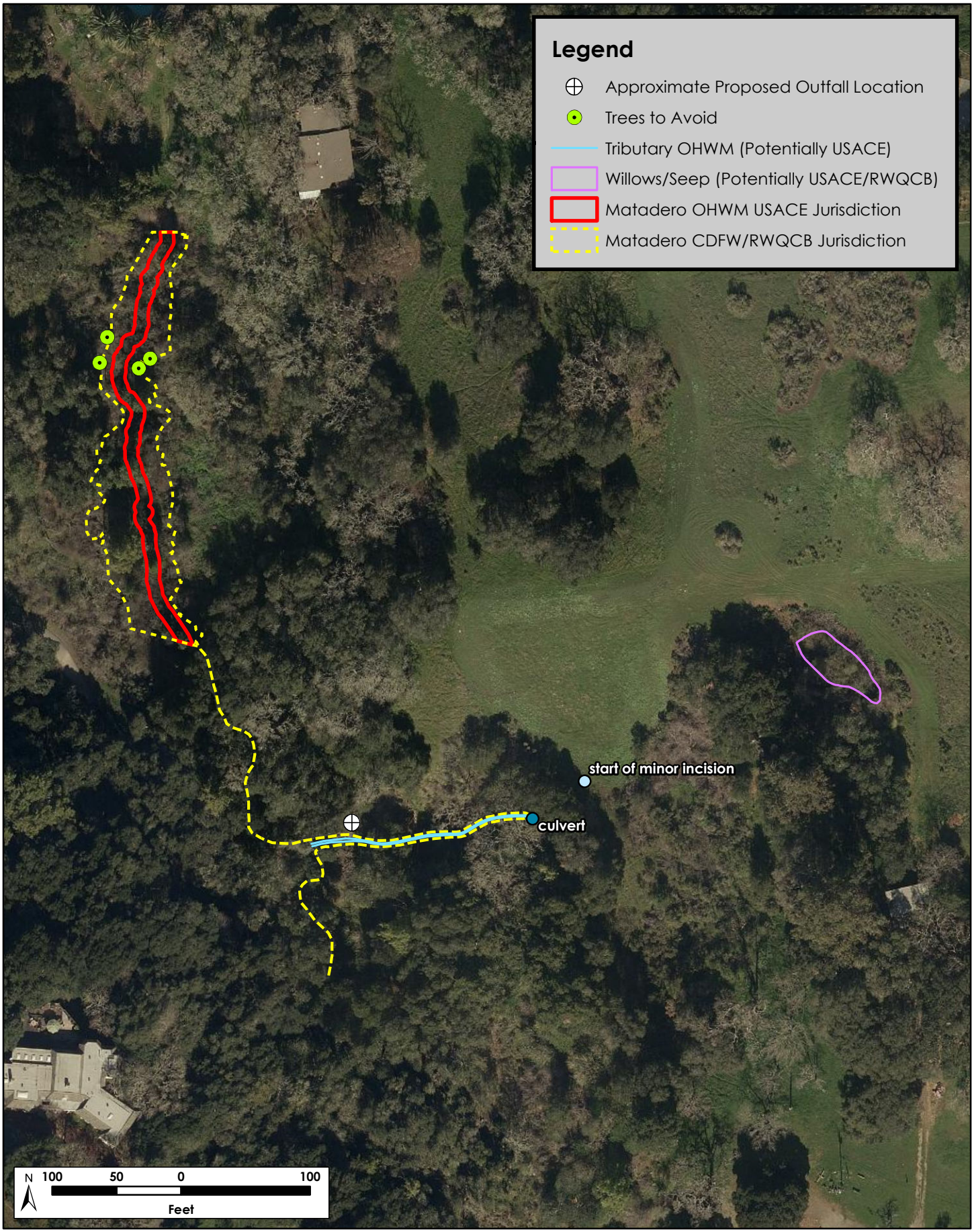

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Figure 1. Sensitive Habitats
Natoma Subdivision (3863-02)
October 2017

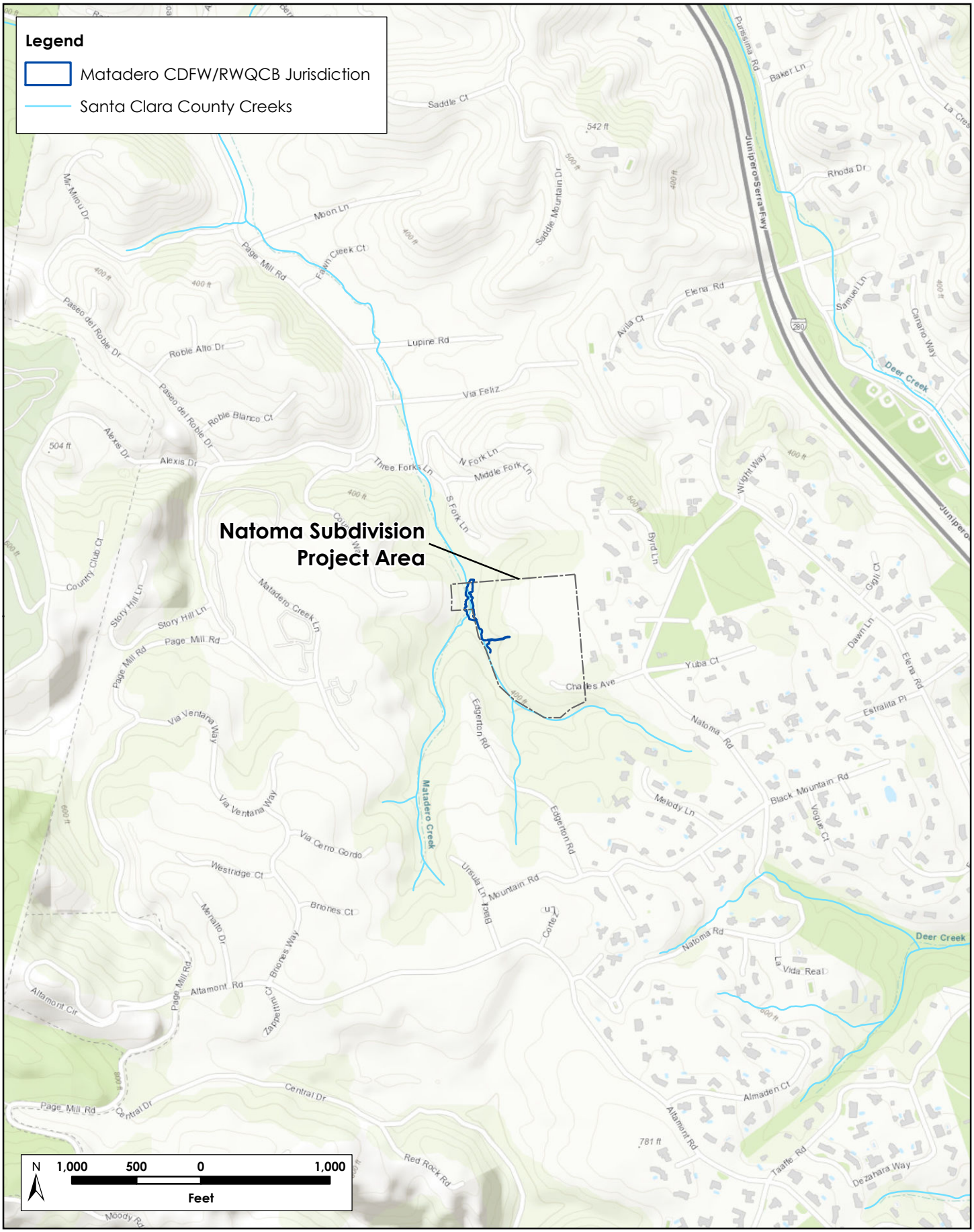

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Figure 2. Natoma Subdivision Topographic Map

Natoma Subdivision (3863-02)
October 2017

Wildlife (CDFW), to address the Open Space Committee's questions about whether a riparian drainage exists on the lot.

The USACE provides the most detailed guidance on the determination of whether an area should be regulated as a stream, even if the stream is fully ephemeral and only conveys concentrated flows during and after rainfall events. In non-tidal waters, USACE jurisdiction extends to the ordinary high water mark (OHWM) which is defined in 33 CFR Part 328.3 as "the line on the shore established by the fluctuations of water and indicated by physical characteristics, such as a clear, natural line impressed on the bank, shelving, changes in the character of the soil, destruction of terrestrial vegetation or the presence of litter and debris."

The USACE has provided further guidance in interpreting the code for this region, expanding the types of indicators considered to be useful for determining OHWM. Five relatively recent publications have attempted to further refine the definition of OHW and the delineation of the OHWM in the arid west (including California):

- *Review of Ordinary High Water Mark Indicators for Delineating Arid Streams in the Southwestern United States* (USACE 2004)
- *Distribution of Ordinary High Water Mark (OHWM) Indicators and Their Reliability in Identifying the Limits of "Waters of the United States" in Arid Southwestern Channels* (USACE 2006)
- *Review and Synopsis of Natural and Human Controls on Fluvial Channel Processes in the Arid West* (Field and Lichvar 2007)
- *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States: A Delineation Manual* (Lichvar and McColley 2008)
- *Updated Datasheet for the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (USACE 2010)

In addition, *Regulatory Guidance Letter 05-05* (dated 7 December 2005) deals specifically with the topic of OHWM identification. That publication lists the following physical characteristics that should be considered when making an OHWM determination: (1) natural line impressed on the bank; (2) shelving; (3) changes in the character of the soil; (4) destruction of terrestrial vegetation; (5) wracking; (6) vegetation matted down, bent, or absent; (7) sediment sorting; (8) leaf litter disturbed or washed away; (9) scour; (10) deposition; (11) multiple observed flow events; (12) bed and banks; (13) water staining; and (14) and change in plant community.

Dr. Hardwicke surveyed the entire area on foot, and looked for indications of all of the above within the Lot 7 bowl and downslope areas. Regulated habitats and data points were mapped using a Trimble GeoXT™ with submeter accuracy and rangefinder technology, in addition to aerial imagery available from Google Earth Pro software (Google Inc. 2017) and ArcGIS® software (Esri 2015), and topographic line data provided by Wilsey Ham Engineering, Surveying, and Planning. The Trimble GeoXT™ GPS unit included the 2016 and 2017 jurisdictional assessment data conducted by WRA and HTH, respectively, so the prior delineation work could be

used in the field to calibrate mapping of the drainage confluence with Matadero Creek. The site visit allowed for a detailed analysis of the jurisdictional limits for waters of the U.S./State, as well as an impact analysis (Figure 1).

Regulated Habitat Survey Results

Ephemeral Drainage Tributary to Matadero Creek

There is an ephemeral drainage tributary (Figure 1, see blue OHWM lines) that originates from a 12-inch culvert outlet approximately 125 feet east of Matadero Creek. This ephemeral tributary was not mapped by the NHD, NWI, nor other agency online resources including BIOS or ECOS. The stream feature is clearly incised, with regular OHWMs indicated by shelving and changes in vegetation including exposed roots. The beginning of the drainage feature was characterized by gently-sloping banks approximately 2 feet deep with an earthen bed approximately 1 foot wide (Photo 1). As the drainage continues west towards Matadero Creek, the banks become more incised with heights of approximately 5 to 6 feet (Photo 2). At the confluence, the banks are deeply-incised at approximately 8 feet in height with an unvegetated, gravelly bed approximately 10 to 12 feet wide (Photo 3). Vegetation within the drainage, which was sparse due to scouring flows, was dominated by non-native grasses and poison oak (*Toxicodendron diversilobum*).

Erosive Incision and Lack of Jurisdictional Drainage in Eastern Portion of Lot 7

To the east of this tributary, uphill within the bowl, there is some slumping and erosion that does not form a clear channel, but instead appears to be a series of erosive features caused by a heavy storm event (as opposed to regular flows). The eastern, uphill limit of this area is shown on Figure 1 as "start of minor incision". Although it is not HTH's opinion that the feature is jurisdictional, or exhibits the indicators of regular flows between this location and the upstream terminus of the tributary at the culvert as shown on the map, there is a possibility one or more regulatory agencies would disagree and claim jurisdiction at the beginning of the erosion (i.e. at "start of minor incision" shown on Figure 1). Uphill from this location into the bowl, no indicators of incision in either a U- or V- channel form, vegetation drainage patterns, leaf litter movement consistent with streams, knick points, or sediment sorting were observed. The "bowl" area is a local topographic low point between the ridgeline to the south and the gently sloping northern rim of the bowl. Stormwater runoff will sheet flow down through the bottom of the bowl during and after storm events, but it does not do so at regular enough intervals, or at speeds or depths sufficient to create a channel or other signs of regular flows that constitute a jurisdictional drainage. No true wetland vegetation was observed in this area, though a large stand of senesced poison hemlock (*Conium maculatum*), an invasive weed which is rated as sometimes occurring in wetlands but in our experience is more of an indicator of disturbance, was noted just uphill of where the minor erosion began.

Although our background research did not indicate any previously mapped streams in Lot 7, there is an unnamed blue line stream, forming a stem of Matadero Creek, mapped by NHD (USGS 2017) and BIOS (CDFW 2017) that occurs southeast of the ephemeral drainage as shown in Figure 2, and this mapped tributary flows directly into the mainstem of Matadero Creek. This feature may be the drainage identified by the Open Space Committee during the planning commission meeting. Regardless, the small ephemeral drainage at the western end of Lot 7

that was verified in the field is not identified on any topographical map or stream database layer published for this area that HTH is aware of. We overlaid the Santa Clara County stream layer on the project design map (Figure 2, Attachment A) to determine whether this nearby unnamed tributary was within the Lot 7 area, and as shown in Attachment A, this mapped tributary does not affect development on any of the Natoma Subdivision lots. Below is a description of our jurisdictional conclusions.

Matadero Creek is a tributary to a navigable water (the San Francisco Bay via Mayfield Slough) and it is therefore a waters of the U.S. up to the OHWMs on each bank and the lateral extent of any adjacent wetlands or associated tributaries. This equates to the low flow channel of Matadero Creek within the project site (indicated in red on Figure 1). Within Matadero Creek, as well as within the tributary, incision can be noted along the toe of the steeply sloped banks as well as at the confluence with the OHWM of the ephemeral drainage tributary (Photo 3; Figure 1). Waters of the state jurisdiction administered by RWQCB incudes Matadero Creek and the ephemeral tributary channel described above up to the top of banks or to the outer edge of the riparian vegetation, whichever is greater. The CDFW jurisdiction equates to the same areas. In the case of the tributary, the drainage channel was mapped from top of bank to top of bank due to a lack of overhanging tree cover from riparian trees, though overhanging tree canopy from the Matadero Creek mainstem was mapped as riparian jurisdiction on the south side of the confluence. It is our opinion that the jurisdictional stream ("tributary") within Lot 7 terminates at the culvert as shown on Figure 1.

Willow Thicket/Potential Seep

With regards to adjacent wetlands, no wetland vegetation was observed within or adjacent to the banks of the drainage during the field survey. However, a potential wetland seep dominated by red willow was detected near the top of the ridgeline and bowl approximately 300 feet east of the culvert and upstream terminus of the tributary in a nearly flat grassy section of the hillside crest (Photo 4; Figure 1). This stand is a mature-to-decadent, well established thicket. There are no associated bed and banks within the thicket, or any indicators of incision or regular flows. Typically, features such as this are fed by groundwater upwellings, and there were indicators of hydric soils within the thicket that could indicate such a source of hydrology for this stand (Figure 1, purple), although the hydric soils did not extend to the outer edges of willow canopy. Jurisdictional wetlands only occur where wetland vegetation, hydric soils, and active wetland hydrology co-occur.

The stand of willows appears to be on the decline as several piles of dead branches and debris were noted on the outer edges of the seep (Photo 5), and no young willow saplings are germinating in the thicket. The area appeared to have been piped at one point, with a pump house and tanks located a short distance down the hill from this thicket. A soil investigation noted redoximorphic features in the upper 12 inches of the soil profile indicating the presence of hydric soils (Photo 6); however, evidence of prolonged inundation (i.e., wetland hydrology) was not observed. There was no indication of differential soil moisture within the thicket compared to the surrounding uplands. Willows can exist as phreatophytes outside of wetland conditions, which means that they can grow deep roots to access soil moisture well below the normal 2 foot rooting depth, and can therefore persist in an area where the surface does not have wetland hydrology.

The willow thicket can be seen in historic aerials from the 1940s and 50s (Google Earth 2017), and was likely tapped for agricultural use at that time. It is possible that the willows were originally fed by a former seep that no longer functions as a wetland, due to groundwater subsidence and a gradually drying climate within the local region. Pumping near the seep may have also reduced the groundwater levels and available water source for the seep. Because the area supports wetland vegetation in the form of thick willow cover, and has indicators of hydric soils in the center of the willow thicket, we recommend the seep be revisited during the wet season of 2017-2018 to verify whether the area still functions as an active wetland seep and would thus be claimed as a waters of the U.S./state by observing the seep area during the time when groundwater rises and differential hydrology might be observed. No incision, bed or banks, or any other evidence of seasonal flows were observed in the area downslope of the seep (Photo 7), until the minor erosion indicated on Figure 1, but the potential seep is close enough to waters of the U.S. that we anticipate the USACE would consider this area, if it has all three parameters indicating jurisdictional wetlands, to be adjacent to waters of the U.S. and thus regulated. If the area is found to have wetland hydrology, it would also be claimed as a wetland by RWQCB. However, as it is not associated with a bed and banks drainage, the potential seep would not be claimed as riparian habitat by CDFW.

Photo 1. Beginning of the ephemeral drainage just downslope of the culvert outlet. Note the gently-sloping banks and incision from past flow events. The bed is approximately 1 foot wide.

Photo 2. **Midsection of the ephemeral drainage, about 50 feet downstream of the culvert. Note the steeper banks, exposed roots, and incision from past flow events. The bed is still approximately 1 foot wide.**

Photo 3. **The confluence of the ephemeral tributary with Matadero Creek. Note the deeply-cut banks and incised channel with exposed tree roots. The bed is approximately 8 feet wide.**

Photo 4. **Location of the willow-dominated potential seep near the top of the ridgeline and bowl adjacent to the proposed Lot 7 driveway. The willow thicket is comprised of mature willow trees and surrounded by upland vegetation.**

Photo 5. **Dead tree debris along the edge of the willow thicket and potential seep located near the top of the ridgeline near Lot 7. These are willow branches and are evidence of a mature, aging stand, and may also be evidence of less water within the thicket area over time.**

Photo 6. **Soil sample from the willow-dominated, potentially active seep with evidence of hydric soil indicators including low chroma soils and redoximorpic features located near the top of the ridgeline adjacent to the proposed Lot 7 driveway.**

Photo 7. **Location of willow thicket near the top of the ridgeline.**

Compliance with Los Altos Hills General Plan Policies on Drainage or Riparian Areas

Another purpose of our analysis was to determine whether the proposed Lot 7 improvements would impact a drainage or riparian area protected by Los Altos Hills General Plan Policies. There is no specific definition of minor creeks or drainages within the General Plan, so we feel the jurisdictional definitions and guidance provided by the USACE, RWQCB, and CDFW are best used to determine whether a riparian area or "creek", as discussed in General Plan Polices, exists in a given area and what the limits of that feature are. In this manner, we conclude that none of the Lot 7 "bowl" uphill of the ephemeral tributary and culvert meets the definitions of a jurisdictional creek or riparian area and is therefore not subject to General Plan policies restricting development in proximity to drainages, creeks, or riparian areas. Furthermore, the site as designed (Attachment A) is compliant with General Plan policies and programs such as:

- *Policy 1.1 Avoid fencing, piping, and channelization of creeks when flood control and public safety can be achieved through measures that preserve the natural environment and habitat of the creek.* There will be no piping or fencing of the tributary drainage or Matadero Creek related to the Lot 7 development.
- *Policy 1.3 Preserve the integrity of riparian corridors as unique and environmentally sensitive resources.* Lot 7 development, including remedial grading, is set back by 50 feet or more from the ephemeral tributary at the western end of Lot 7.
- *Program 1.2 Continue to require open space easements along creeks and riparian corridors to ensure that these areas remain in their natural condition.* Matadero Creek, as well as the tributary and a buffer around both features, will be set aside as open space easement, protecting this feature (Attachment A).
- *Program 1.3 Continue to comply with the requirements of CEQA (California Environmental Quality Act) for proposed development that might impact creeks and riparian corridors.* Other relevant local, state and federal agencies including the Santa Clara Valley Water District, the Regional Water Quality Control Board, the California Department of Fish and Game, and the U.S. Army Corps of Engineers are consulted as appropriate. The site plan as shown in Attachment A avoids impacts to jurisdictional wetlands and waters, including the potential wetland seep at the top of the bowl. Features were delineated based on the most comprehensive, recent guidance issued by these responsible agencies for both creeks/drainages and jurisdictional wetlands. Though it is not clear at the moment whether the willow thicket area still functions as a current wetland seep (as opposed to a historical feature), and further wet season work must be consulted to determine whether this is the case, the project has redesigned the Lot 7 driveway to fully avoid this feature and the trees within it (Attachment A). No new impacts to wetlands or waters not covered under the Project's existing CEQA analysis are anticipated based on the current Lot 7 design.

Conclusions

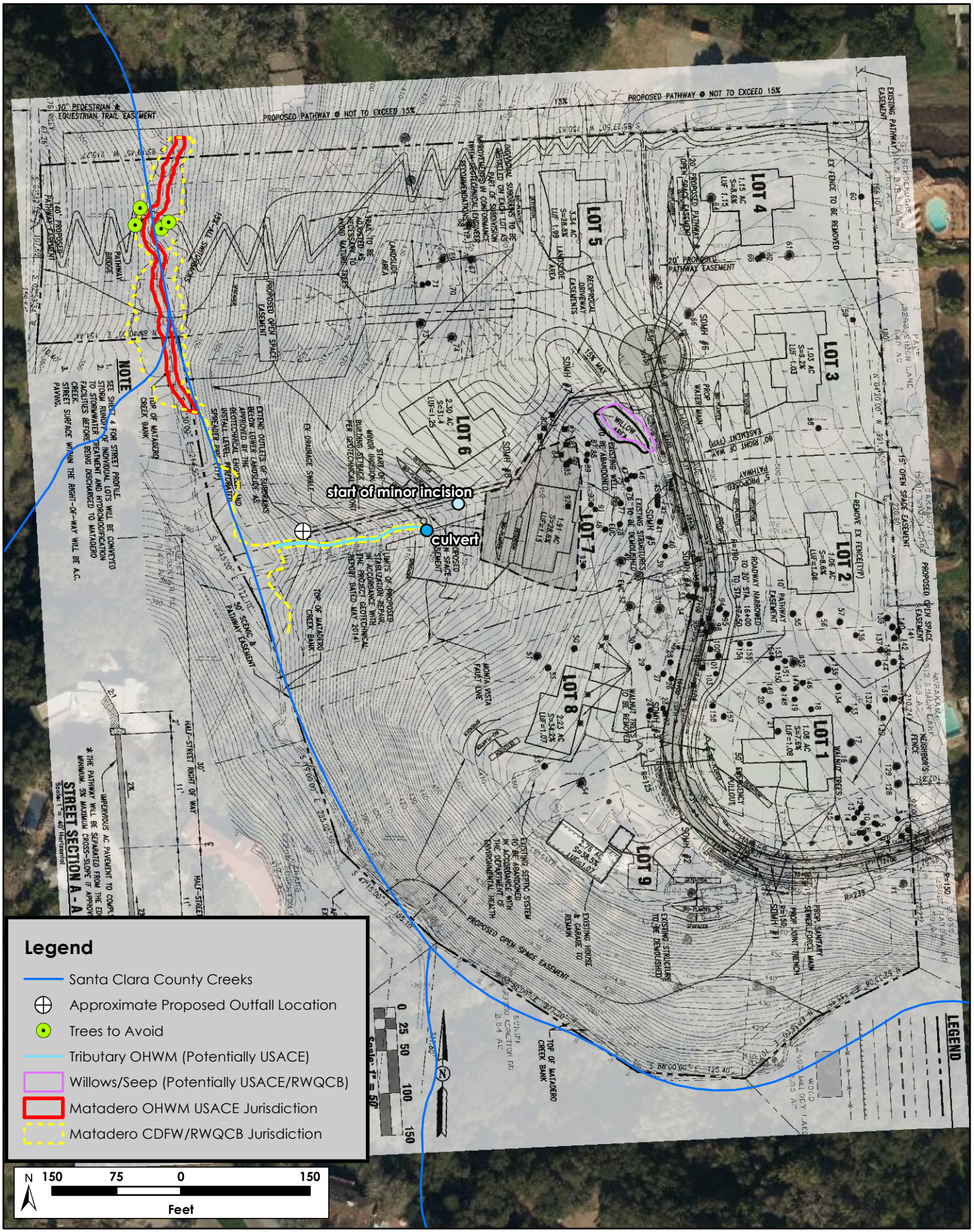
- Based on the site visits conducted by HTH, we conclude that the project can be designed and implemented in such a way as to avoid USACE, RWQCB, and CDFW jurisdiction.

- It is our opinion that a jurisdictional stream ("tributary") occurs within the western portion of Lot 7, and that this drainage's upstream terminus is at the culvert shown on Figure 1 and Attachment A.
- The ephemeral drainage at the western end of Lot 7 that was verified in the field is not identified on any topographical map or stream database layer published for this area that HTH is aware of.
- In the portions of the Lot 7 bowl to be developed or impacted by remedial grading, no indicators of incision in either a U- or V- channel form, vegetation drainage patterns, leaf litter movement consistent with streams, knick points, or sediment sorting, which are field indicators of a jurisdictional drainage, were observed.
- We conclude that none of the Lot 7 bowl uphill from the ephemeral tributary's upstream terminus meets any of the definitions of a creek or riparian area and is therefore not subject to General Plan policies restricting development in proximity to drainages, creeks, or riparian areas.
- To avoid permitting requirements associated with impacting these potential waters of the U.S./state and adjacent wetlands, the applicant shall commit to siting the outfall outside the banks of the tributary drainage, in a location and with a design that will prevent erosion to the nearby banks, as well as moving the proposed driveway further east to avoid the willow-dominated potential seep.
- Therefore, while there are areas of actual or potential stream jurisdiction/riparian areas on Lot 7, all of these features would be within the proposed open space easement and therefore would not be impacted by the proposed development of the lot. The willow thicket/potential seep area near the top of the lot, which is not "riparian" but is potentially within wetland jurisdiction, depending on further investigation of hydrology, would not trigger the assertion of agency jurisdiction and the need for discretionary permits from the USACE or RWQCB if the driveway is relocated as proposed.

Please do not hesitate to contact me if you have any questions regarding our assessment.

Sincerely,

Kelly Hardwicke, Ph.D.
Principal Plant Ecologist



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Attachment A. Natoma Subdivision Site Plan
Natoma Subdivision (3863-02)
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