TERRA SCIENCE, INC.
Soil, Water & Wetland Consultants

Stream Environment Zone Report
For Tahoe Valley Area Plan

July 2014

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CSLT Project: Tahoe Valley Area Plan

Funded by: Lake Tahoe Sustainable Communities Program (Grant)

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Report Date: July 2014

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Stream Environment Zone Report For Tahoe Valley Area Plan

1.0 Introduction

This report identifies current and historic extents of Stream Environment Zones (SEZs) for the Tahoe Valley Area Plan (TVAP). Terra Science, Inc. (TSI) examined and documented SEZs within TVAP boundaries (herein study area) at the request of the City of South Lake Tahoe (CSLT) and Tahoe Regional Planning Agency (TRPA). This report was funded by a grant from the Lake Tahoe Sustainable Communities Program (administered via TRPA). TSI conducted a field investigation, reviewed aerial photographs, and related materials to prepare maps of current and historical extents of SEZs within the study area. This report contains those maps and aerials, along with field documentation and selected photographs as evidence of (or basis for) adopting refined SEZ boundaries for this plan area.

CSLT and TRPA intend to supersede the "Bailey Overlay Map" for SEZs with this work product and related materials. This revised SEZ mapping, like the Bailey Overlay maps, would be considered a planning-level tool (albeit highly refined) that represents best available information regarding SEZs within TVAP. Parcel-specific TRPA land capability and SEZ verifications are still required to determine development potential and parcel entitlements.

1.1 Regulatory Background

SEZs are defined by TRPA Code of Ordinances (Chapter 90) as "generally an area that owes its biological and physical characteristics to the presence of surface or ground water."[1] These seasonally wet and riparian areas are shown on the "Bailey Land Capability Overlay maps". The Bailey mapping of SEZs (and other land capabilities) was largely based on the Soil Survey of Tahoe Basin, California-Nevada (Rogers and Soil Conservation Service, 1974) soils mapping, historic aerial photographs and corresponding field reconnaissance. The soil survey maps were created at a scale of 1 inch equals 2000 feet, and Bailey maps were enlargements from that base scale (hence, best available information at that time). Since the

[1] SEZ differ from "wetlands" by encompassing riparian and other transition zones, in addition to wetlands and streams. Thus, wetlands and streams are a subset of SEZs. Wetland are defined and delineated using the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys and Coast Region (Version 2).

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Bailey SEZ mapping is a planning-level tool, site-specific TRPA land capability verifications to confirm the extent of SEZ on a given parcel or larger study area are required. Over the past 40 years, significant technology improvements now allow incorporation of digital information (Aerials, LIDAR) and mapping techniques (GPS, GIS, AutoCAD). Such improvements increase the accuracy of mapping work, but do not change the fundamental standards to define SEZs or the required field data to substantiate revised boundaries. Consequently, revised SEZ should be considered an improved level of best available information.

SEZs can be obvious features, like perennial/intermittent streams, meadows and seepage areas. SEZs can also be subtle, like swales, depressions, hillside hollows, footslopes, ditches, and most notably, riparian zones adjacent to all of these features. Chapter 53 specifies the exact criterion for SEZ identification, which includes one of the following key indicators: 1) Evidence of surface water flow, including perennial, ephemeral and intermittent streams; 2) Primary riparian vegetation community (as per "Vegetation of the Lake Tahoe Region, A Guide for Planning", 1971); 3) Near surface ground water (within 20 inches of surface); 4) Lakes and ponds; 5) Beach soil; and 6) Specific soils having a seasonal high water table. When none of the key indicators are present, then secondary indicators are relied upon for identification, which include: A) Designated flood plain; B) Ground water between 20 and 40 inches from the surface; C) Secondary riparian vegetation (as per "Vegetation of the Lake Tahoe Region"); D) Additional specific soils having a seasonal high water table.

SEZs are recognized by TRPA's land capability system as Class 1b. Allowable coverage for SEZs is 1 percent and only for a specific set of uses (such as driveways and underground utilities). Restoration of SEZs is very important to the water quality and habitat around Lake Tahoe, since SEZs provide exceptional functioning for sediment trapping, nutrient uptake, carbon sequestration, aquatic and terrestrial habitat, wildlife feeding and nesting areas, flood storage and desynchronization, and open space. In urban areas, portions of SEZs have been drained, ditched, filled, excavated and often paved; thus, their function is lost or greatly diminished in such circumstances. Federal, state and local governments each participate in restoration of SEZs, such as removal of culverts, removal of fill material, re-establishment of native plant communities, and similar actions that restore near-original landscape conditions. These entities use previously generated maps showing SEZ extent, based on 1974 soil mapping (now obsolete), visual evidence (plant community) and TRPA land capability maps.

When examined on a site-specific basis, the Bailey land capability maps often show larger (wider) areas of SEZ than actually meet TRPA's key and/or secondary SEZ indicators. This has been documented hundreds of times by trained professionals and revised SEZ boundaries approved on case-by-case basis for over 30 years. With the adoption of the TRPA Regional Plan Update in 2012, one of the update's new provisions allows for land capability classes to be examined in closer detail on a local basis. Specifically, the TVAP is an Alternative Comprehensive Coverage

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Management System, as described in Chapter 13. When approved, the TVAP would utilize SEZ documentation provided in this report to demonstrate a more precise mapping of SEZs. In turn, this refined SEZ mapping would be utilized by the CSLT to identify specific parcels and/or areas where SEZ restoration should be prioritized. In some cases, the SEZ restoration would be done in conjunction with local storm water management projects. In other situations, the SEZ restoration would focus on habitat and connectivity functioning. Lastly, the refined SEZ mapping would help identify specific locations where the CSLT or individual property owners may opt to administratively designate as man-modified in accordance with Chapter 30.

1.2 Location

The TVAP consists of approximately 320 acres located in the southwest part of the City of South Lake Tahoe (CSLT). CSLT is situated in the northeast part of El Dorado County, California (Figure 1A). The focal point of the study area is the intersection of U.S. Highway 50 and California Highway 89. These roads are locally known as Lake Tahoe Boulevard and Emerald Bay Road (Figure 1B). The study area boundaries encompass the majority of commercial and industrial businesses in this portion of CSLT, as well as some residential housing, municipal services, and community hospital/medical offices.

2.0 Environmental Setting

The TVAP study area is part of a large glacial outwash terrace that is bounded by the mountain slopes to the south and west, Upper Truckee River to the east, and Lake Tahoe to the north. A glacial outwash terrace in the Lake Tahoe Basin, compared to a simple alluvial terrace, is a landform primarily created when glacial recession (melting) deposited massive amounts of sand (with lesser amounts of silt and clay). The glacial outwash terraces are typically broad, somewhat level terraces that gently sloped toward the center of the lake. Over the past 10,000 years, these terraces became dissected by creeks and swales, ranging from a few feet deep to over 10 feet deep. The Upper Truckee River is the most prominent example of a naturally incised stream system meandering through the glacial outwash sediments. While urban development and other disturbances have changed the surface of the terrace landform, the fundamental landscape undulations are still evident, albeit as fragments and relicts.

2.1 SEZ Overview

The TVAP contains four (4) SEZ drainage systems (Figure 4). In general, the SEZs slope from southwest to northeast. Some are well defined by topographic changes, while others are mostly obscured by roads, buildings and ongoing disturbance. Each system is considered a complex, since each mapped SEZ polygon contains

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varying degrees of hydrologic alteration, urban development and vegetated segments. The largest system (herein SEZ-A) originates southwest of Bonanza Avenue and slopes northeast through the east-center of the TVAP. SEZ-A continues north of the TVAP, where it merges with the Upper Truckee River floodplain. The next largest SEZ system (herein SEZ-B) is mostly parallel and immediately west of larger SEZ. This SEZ originates just south of Julie Lane and slopes northeasterly through commercial, industrial and residential lands. SEZ-B is hydrologically discontinuous due to interception by curbs, gutters, storm sewers, and urban development. It continues outside of the TVAP and merges with the open waters of the Tahoe Keys subdivision.

Further west, there is a smaller SEZ system (herein SEZ-C) that originates near Emerald Bay Road and Eighth Street and slopes to the northeast. This SEZ has been hydrologically altered with construction of several detention basins / swales to treat urban runoff from nearby lands. SEZ-C continues north of TVAP and eventually merges with SEZ-B – just northwest of Tahoe Valley Elementary School. The TVAP includes a fourth SEZ system (herein SEZ-D) associated with the Upper Truckee River floodplain. A significant portion of SEZ-D is filled for commercial uses and there was no publicly held lands to collect soils data. While the Upper Truckee River flows in a north to northwest direction, localized surface drainage can flow to the east and northeast (around old fill material).

3.0 Field Approach and Mapping Personnel

To map the historical SEZ extent, CSLT and TRPA contracted with Phil Scoles of Terra Science, Inc. to conduct a detailed field investigation that describes soil conditions, documents plant communities, and maps SEZ extent for the TVAP study area. Phil Scoles is Certified Professional Soil Scientist (CPSS) that has examined and documented thousands of soil profiles in California, Nevada, Oregon, Idaho and Washington. He has conducted numerous land capability evaluations and challenges in the Lake Tahoe Basin, both as a private sector consultant and as a TRPA subcontractor. He is also a former Soil Conservation and SEZ Program manager for TRPA.

3.1 Sample Locations and Evaluation Parameters

CSLT initially retained Cardno ENTRIX (Tim Hagan, soil scientist) to document SEZs within the TVAP, among other soils and storm water related topics. When Mr. Hagan left employment with Cardno ENTRIX, CSLT retained TSI to collect additional data, complete mapping of the SEZs and compile a summary report. Data for this report includes 18 soil locations reviewed by Cardno ENTRIX, plus 11 additional locations examined by TSI.
Collectively, all of the sample locations represent field conditions in, and adjacent to, the SEZ systems within the study area. The TSI field investigation occurred in May 2014, while the Cardno ENTRIX field work was done in August-September

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2013. Together, the TSI and Cardno ENTRIX soil descriptions document a wide range of SEZ and adjacent upland (non-SEZ). This range of soil descriptions facilitates a correlation between observed soil conditions, topographic setting, slope changes and subtle plant community changes. Soil profiles indicate depths below the surface where water persists for weeks or months in the growing season, as evident by redoximorphic features and high value/low chroma matrix colors.

The 11 locations examined by TSI occur on publicly held lands – either owned by California Tahoe Conservancy (CTC) or CSLT. Each location was examined above the surface for evidence of disturbance, plant community and changes in topography. Sampling locations were selected on basis of low topographic setting (where applicable), lack of recent disturbance, and ability to hand auger to 40 inches or more. Soils below the surface were examined with a standard bucket auger that typically retrieved soil in 3-inch intervals. Overall, retrieved soil was moist and in good condition to be evaluated for the following properties: Soil horizon and depth, color, texture, approximate gravel content, soil structure, consistence, plasticity, root presence, pore distribution, redoximorphic features and abundance, and lower boundary. In addition, the surface organic layer was documented, along with slope and landform interpretation. Fill material was evident at several locations – typically placed more than 30 years ago. Detailed descriptions of the soil profiles and corresponding photographs are included in Appendix B (for TSI soil pits) and Appendix C (for Cardno ENTRIX soil pits). Appendix D contains photographs for most sample locations (both TSI and Cardno ENTRIX).

3.2 Historic and Current Aerial Interpretation

In addition to soil sampling, three aerial photographs were utilized to supplement the field mapping of the historical SEZ extent. While the analysis focused on three aerial photographs from 1940 (Figure 2A), 1968 (Figure 2B) and 2012 (Figure 2C), additional historical aerial images from Google Earth were examined to better understand vegetation clearing, past grading and related disturbances. On historic and current aerial photographs, SEZs tend to have increased plant growth, due to wetter soil conditions in spring and early summer. They often contain deciduous shrubs (and scattered trees) that can be distinguished from the conifer-dominated uplands. The table on the following page itemizes useful observations and interpretations from these historical photographs.

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Table 1. Land use interpretation using historic and current aerial photographs.

Year	Land Use Condition	SEZ Correlation
1940 (Black and white, USGS)	Few roads and buildings within TVAP. Hwy. 50 is most prominent created landmark. Where undeveloped, density of tree cover is moderate; however, such cover is roughly 40 percent less than 1968.	Tree and shrub density significantly higher in SEZ mapped areas.
1968 (Black and white, USGS)	Most roads within TVAP constructed. Increased tree cover due to natural forest regeneration (tree growth). About 20 percent of residential land occupied by dwellings. Approx-imately 40 percent of commercial and industrial land developed. Substantial increase in impervious cover along and within one block of Hwy. 50, Emerald Bay Road and Lake Tahoe Boulevard. Portion of Upper Truckee River floodplain filled for commercial development.	Due to urban vegetation clearing, SEZ mapped areas have lower correlation to tree and shrub densities. Minor, but not significant, tonal variation between SEZ and nearby pine-dominated lands.
2013 (Color, Google Earth)	Few additional roads constructed since 1968. Greater than 85 percent of residential lands now have homes, while roughly 80 percent of commercial and industrial lands developed. Most notable vegetative change is overall decrease in tree and shrub cover within 2 to 3 blocks of arterial streets.	Due to increased urban development and vegetation removal (disturbance), SEZ mapped areas have lower correlation to aerial tones, patterns and natural areas (when compared to earlier aerials).

3.3 SEZ and Previous Soil Mapping Correlation

Lastly, the project team examined the correlation between the TSI 2014 SEZ mapping, 1974 SCS soil map (Figure 3A), 2007 NRCS soil map (Figure 3B) and Bailey Land Capability map (Figure 3C). The 1974 soil survey was published by the Soil Conservation Service (SCS), which served as the basis for the Bailey Land Capability map (U.S. Forest Service in cooperation with TRPA). Specifically, the Bailey Land Capability map (and adjoining report) utilized the SCS soil mapping and slope classes, but also integrated other factors such as near-surface water, stoniness, and erosion hazard to assign allowable maximum land coverage standards. The 2007 soil survey was digitally published by Natural Resources Conservation Service (NRCS) and supplemented field sampling with historic and current aerial photography. The table on the following page itemizes useful observations and interpretations from the soil surveys and Bailey report.

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Table 2. SEZ mapping comparison to original and current soil mapping and Bailey land capability report.

Year	Soil Map Units	SEZ Correlation / Comparison
1974 Soil Survey (SCS)	EfB – Elmira-Gefo loamy coarse sand Ev -- Elmira loamy coarse sand, wet variant (SEZ) Lo – Loamy alluvial land (SEZ)	SEZ mapping typically 50 percent narrower than Elmira loamy coarse sand, wet variant soil map unit. High correlation with Loamy alluvial land mapping (Upper Truckee River floodplain)
2007 Soil Survey (NRCS)	7041 – Tahoe complex (SEZ) 7043 – Tahoe mucky silt loam, drained (SEZ) 7444 – Christopher-Gefo complex 7461 – Jabu coarse sandy loam 7471 – Marla loamy coarse sand (SEZ) 7541 – Ubaj sandy loam	SEZ mapping typically 30 percent narrower than Marla loamy coarse sand soil map unit; however, SEZ mapping extends further southwest than NRCS map unit. High correlation with Tahoe complex and mucky silt loam mapping (Upper Truckee River floodplain)
Bailey Land Capability Map (1974, USFS)	Class 1b -- Elmira loamy coarse sand, wet variant and Loamy alluvial land (SEZ) Class 7 – Elmira-Gefo loamy coarse sand	Same correlation / comparison as 1974 soil survey.

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4.0 Results and Discussion

Figures 4 and 5 in Appendix A show the historic and current SEZ extent as determined by the TSI and Cardno ENTRIX investigations. The maps were prepared in AutoCAD, using linework transcribed from field maps (aerials and parcel maps). Such SEZ mapping utilized multiple parameters to assure accurate boundaries, particularly for situations having naturalistic conditions. Said differently, the refined SEZ mapping is the product of several layers of investigation, not reliance only soils and/or vegetation observations. In addition, the refined SEZ mapping reflects over 60 hours of field examination for the 320 acre study area. Such effort is substantially greater and more detailed than previous soil mapping and vegetation observations for the same area.

4.1 Historic SEZ Extent

Figure 4 shows the historical extent of SEZ within the Tahoe Valley Area Plan study zone. For regulatory purposes, TRPA relies upon the historical SEZ mapping extent (rather than current conditions). Such mapping verifies that the study area contained the same four SEZ complexes, as described in Section 2 of this report. These SEZs were sustained by a combination of rainfall, snowmelt and seasonal high water table. They were historically wettest in winter and spring. Except for the lower portions of the Upper Truckee flood plain, these SEZs became dry in summer when the elevation of the seasonal water table would drop in response to increasing evapotranspiration and decreasing rainfall. The following table compares the SEZ acreages determined by this report to currently adopted, TRPA land capability maps (Bailey Class Ib).

Table 3. Acreage comparison for historic, current SEZ mapping and Bailey land capability mapping.

Year	Report/Mapping Source	SEZ Acreage
1940	Historic SEZ Extent (TRPA regulated) *[from 2014 Terra Science and Cardno ENTRIX investigations]*	50.35
1974	Bailey Land Capability Class 1b [from USFS and TRPA]	122.4
2014	Current, Vegetated SEZ Extent (for restoration and potential man-modified purposes) *[from 2014 Terra Science and Cardno ENTRIX investigations]*	10.0

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Without the aid of a time machine, it is impossible to positively assert that the refined historical SEZ extent met criteria in Chapter 53 of TRPA Code of Ordinances. Still, SEZs are the product of changes in natural landforms, presence of seasonal high water table, and a plant community typically adapted to seasonally moist to wet soil conditions. Over the span of almost 75 years (1940 to present), the natural landforms in the TVAP have been modified in some places and not in others. There is sufficient number of locations having intact natural landforms that a qualified professional can "stitch together" the historic drainage patterns. Similarly, a qualified soil scientist can typically differentiate between natural and disturbed/created soils, as well as conclude on presence/absence of a seasonal high water table. And using current and historical aerial images, it is possible to track changes in vegetative cover, tonal patterns and land use. Consequently, the refined historic SEZ extent shown on Figure 4 is reliable and well documented.

4.2 Current SEZ Extent

Figure 5 shows the current extent of vegetated SEZ that likely meets the criterion specified in TRPA Chapter 53. That is, the field investigation for this report confirmed presence of key and/or secondary indicators for each of these polygons. Specifically, vegetated SEZs are differentiated from adjacent uplands on the basis of topographic setting, plant community, soil conditions, water table in the upper part, and similar attributes. It is self-evident that only scattered remnants of SEZ exist (when compared to the historic SEZ extent). Some of the remnants are hydrologically connected, while others are isolated or terminate at a storm sewer or edge of urban development.

The field investigation also confirmed that the cross-hatched areas are places where historic SEZ was filled, ditched, or otherwise removed and no longer meet SEZ identification criteria. Further analysis, such as shallow hydrology monitoring, is necessary to determine potential for restoring SEZ function, since field conditions differ on basis of adjacent land use, presence of underground utilities, presence/ absence of old fill material, opportunity to receive treated storm water, and related factors. NOTE: The cross-hatched areas in Figure 5 do not infer that such lands have been administratively changed to a different land capability classification using the man-modified procedures. TRPA maintains a database of site-specific locations where man-modified procedures have been applied and approved by a hearings officer.

5.0 Limitations of this Report

Terra Science, Inc. did not investigate or describe existing conditions beyond the study area (Figure 1B). The data presented in this report was collected, analyzed and interpreted using standards of skill, care, and diligence ordinarily provided by a qualified earth science professional, in accordance with TRPA Code of Ordinances.

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The report findings are based on information from CSLT, TRPA, the observations of the project team, and limitations of bucket auger soil sampling. The report findings and their significance should not be extrapolated beyond the scope of this field study. Terra Science, Inc. shall not be liable beyond the fees paid for its services for errors and omissions.
This report was generated for the express use of City of South Lake Tahoe, Tahoe Regional Planning Agency, Lake Tahoe Sustainable Communities, and their designates. These parties shall not interpret the report findings or conclusions any differently than stated without prior discussion with Terra Science, Inc.

Respectfully submitted,

Phil Scoles, CPSS
Soil and Water Scientist

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South Lake Tahoe. 38º54'51.08" N and -120º00'06.15" W. December 31, 1968 (Aerial Image). U.S. Geological Survey. Accessed May 2014 (via Google Earth program).

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Appendix A

Project Figures

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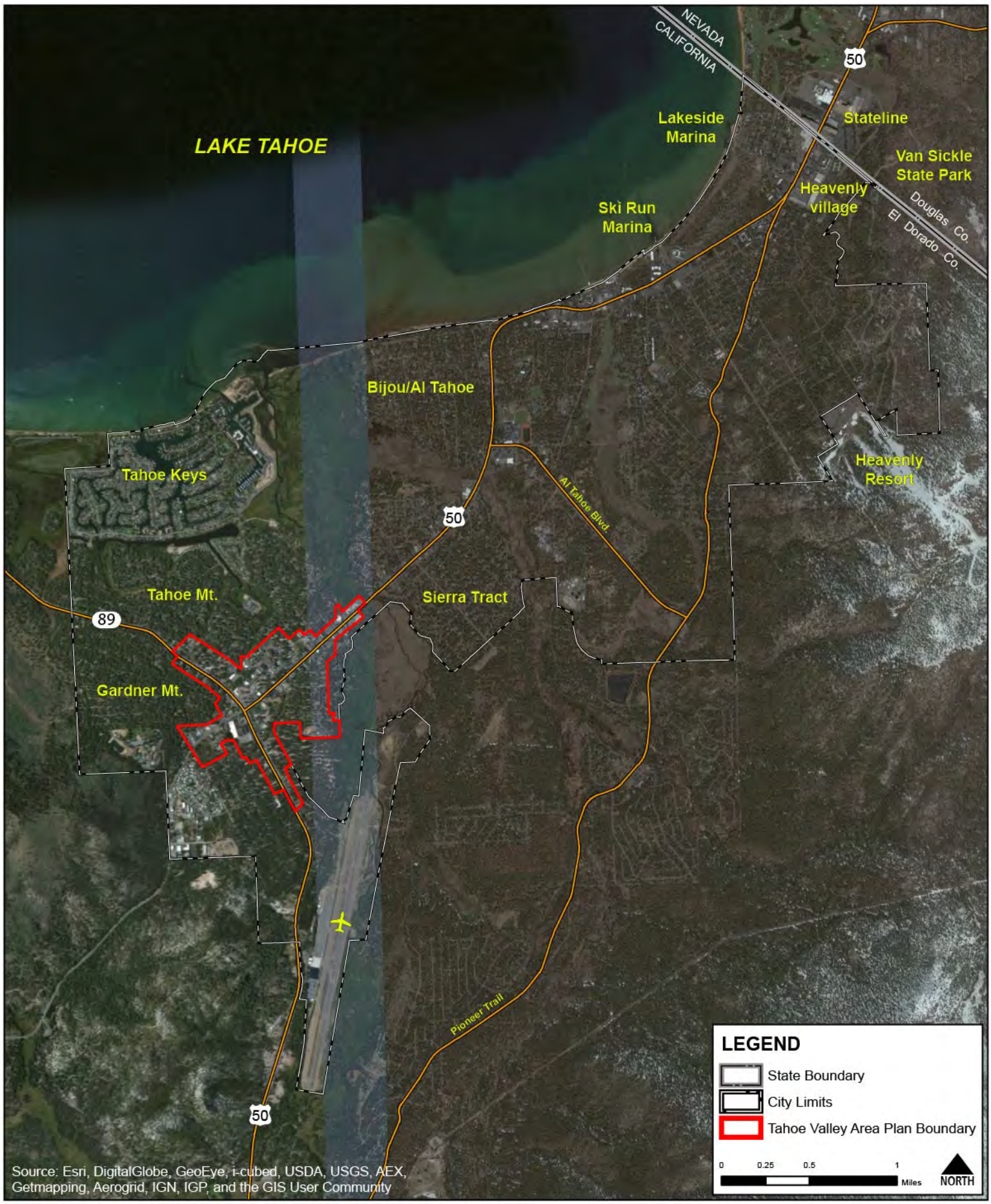
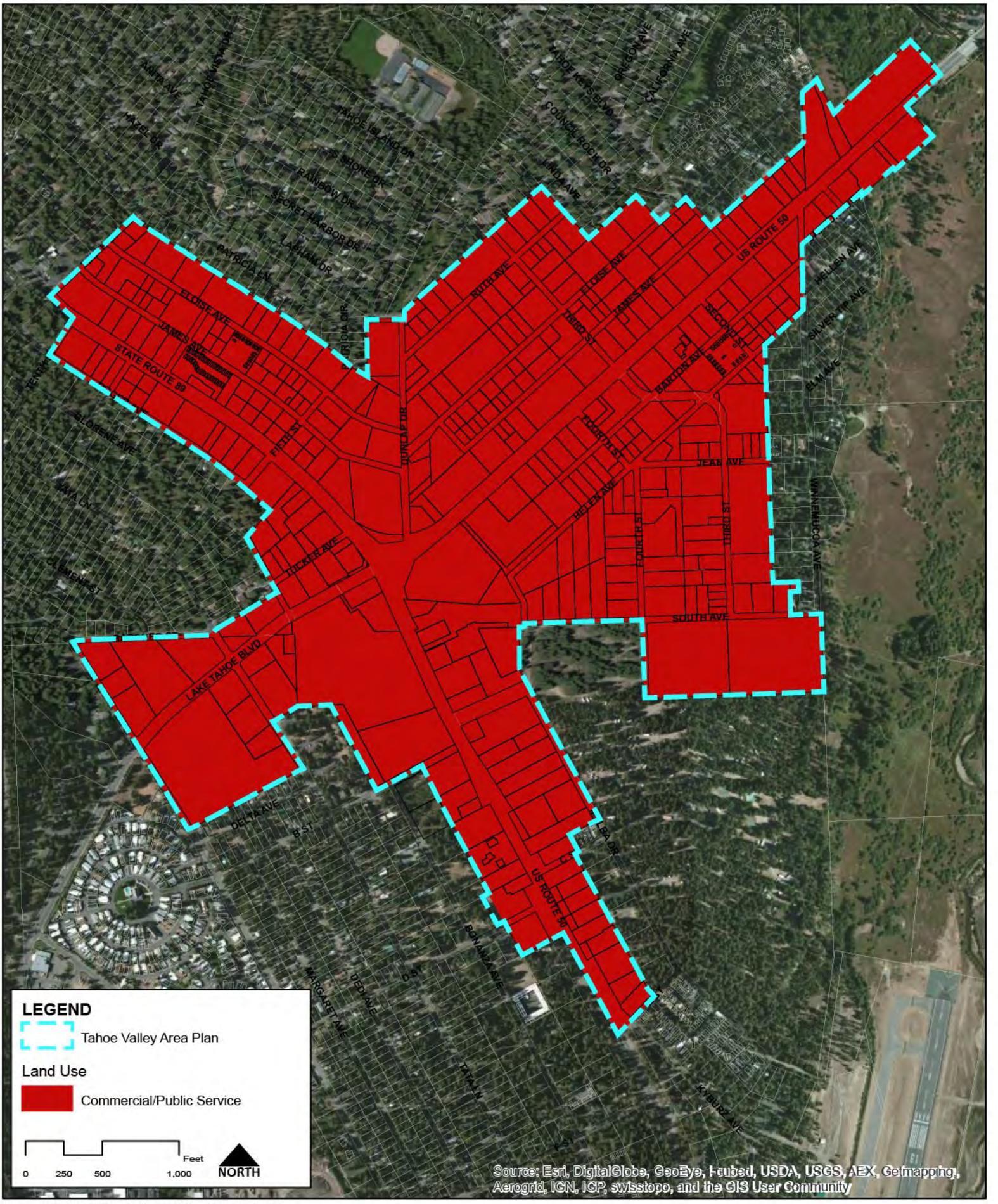


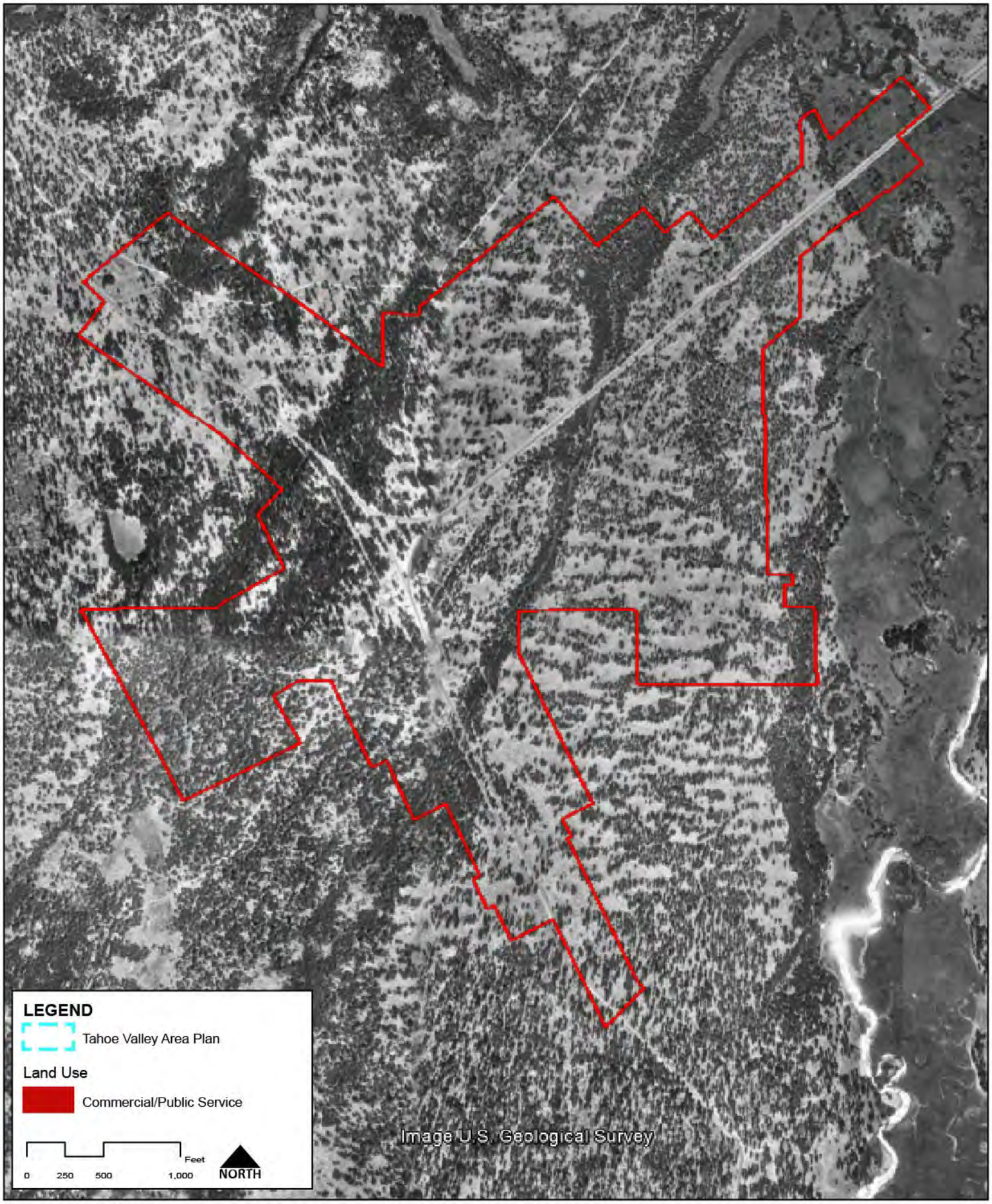
Source: TRPA GIS, 2014; adapted by City of South Lake Tahoe.

Figure 1A
Vicinity Map
Stream Zone Report for the Tahoe Valley Area Plan



Source: TRPA GIS, 2014; adapted by City of South Lake Tahoe.

Figure 1B
Study Area
Stream Zone Report for the Tahoe Valley Area Plan



Source: Google Earth, 2014; adapted by City of South Lake Tahoe.

Figure 2A
1940 Aerial Photograph
Stream Zone Report for the Tahoe Valley Area Plan

Source: Google Eearth, 2014; adapted by City of South Lake Tahoe.

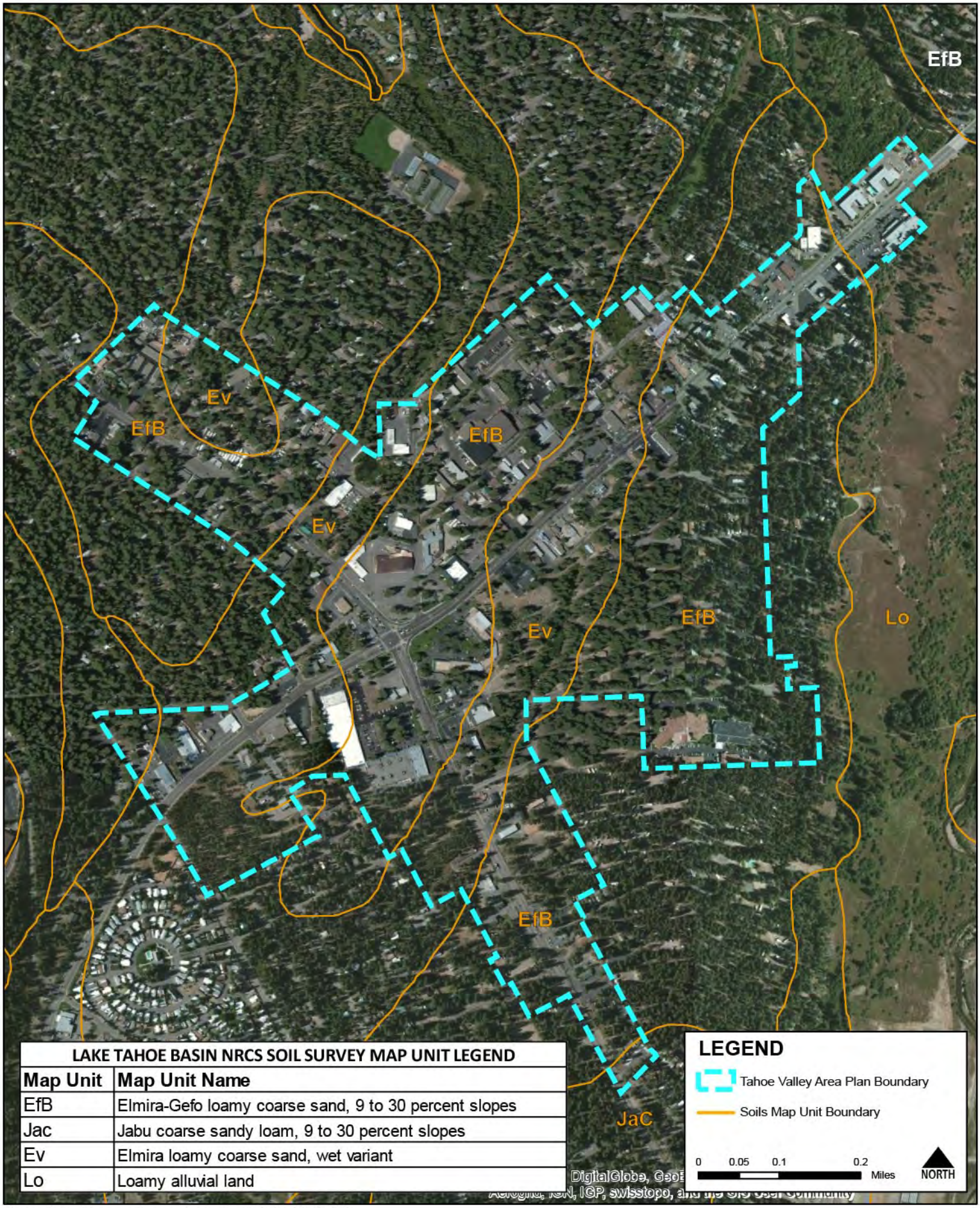
Figure 2B

1969 Aerial Photograph

Stream Zone Report for the Tahoe Valley Area Plan

Source: Google Earth, 2014; adapted by City of South Lake Tahoe.

Figure 2C
2012 Aerial Photograph
Stream Zone Report for the Tahoe Valley Area Plan



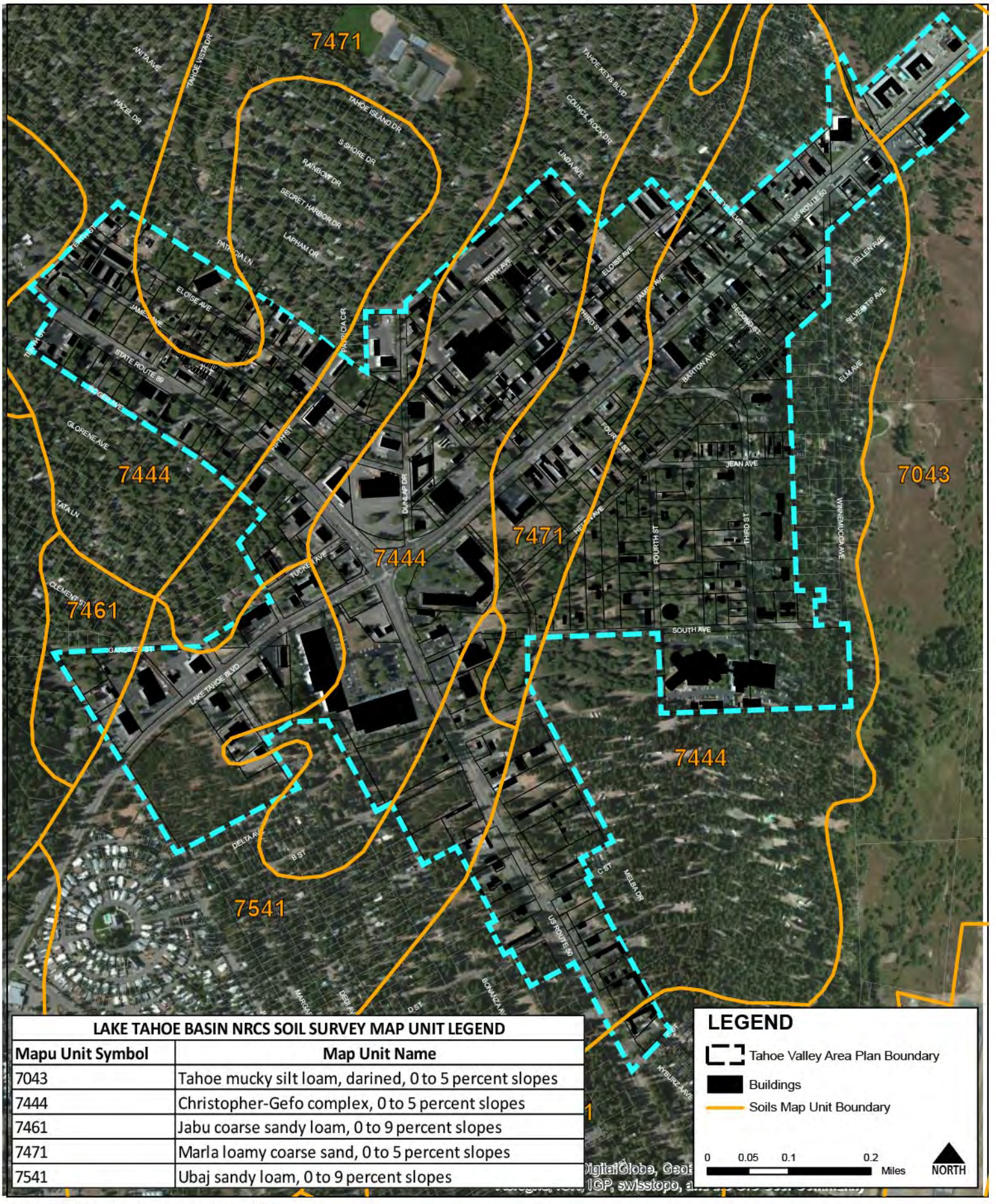
LAKE TAHOE BASIN NRCS SOIL SURVEY MAP UNIT LEGEND	
Map Unit	**Map Unit Name**
EfB	Elmira-Gefo loamy coarse sand, 9 to 30 percent slopes
Jac	Jabu coarse sandy loam, 9 to 30 percent slopes
Ev	Elmira loamy coarse sand, wet variant
Lo	Loamy alluvial land

Source: Natural Resource Conservation Service, 2014 & TRPA GIS, 2014.

Figure 3A

1974 NRCS Soil Mapping

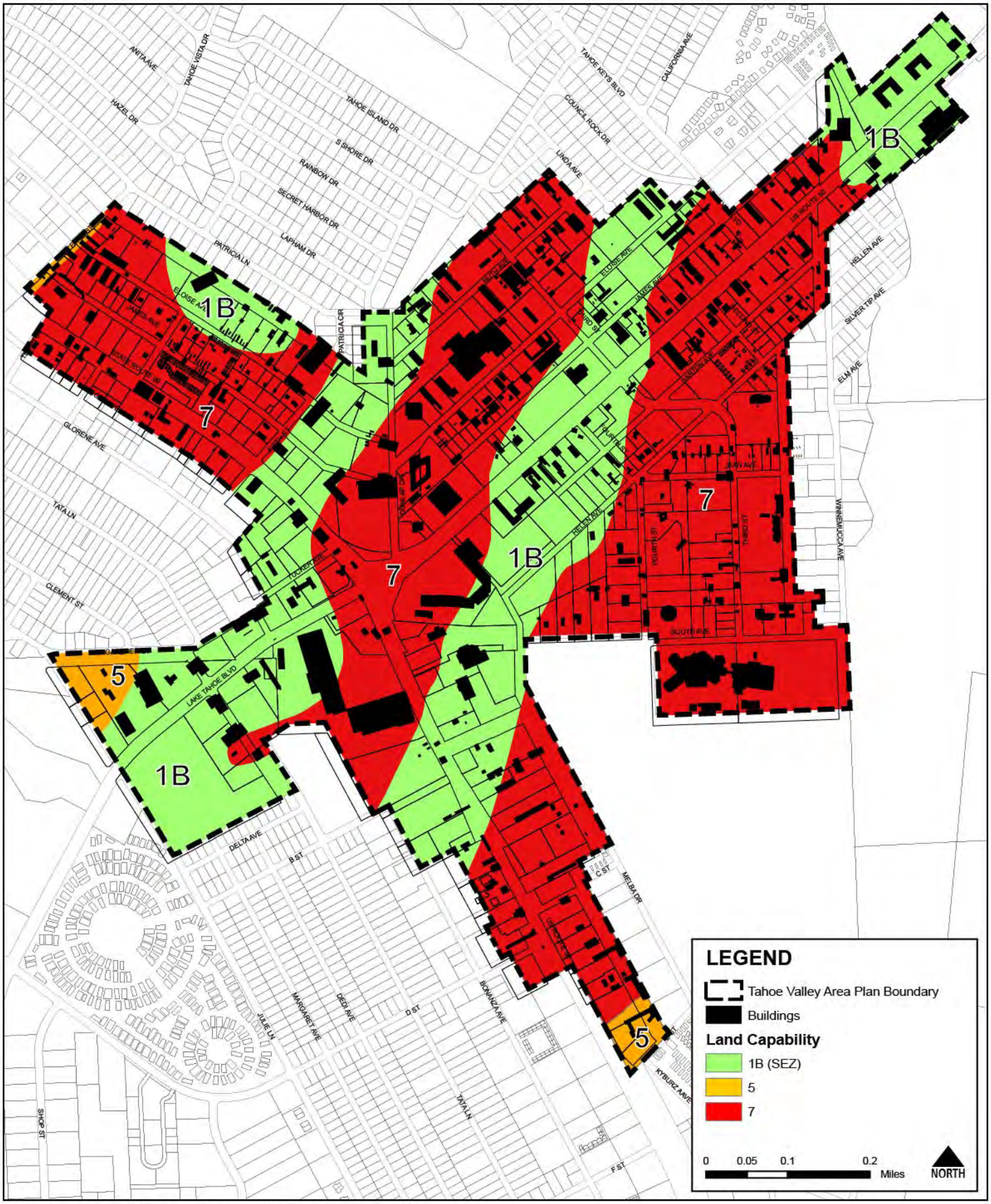
Stream Zone Report for the Tahoe Valley Area Plan



LAKE TAHOE BASIN NRCS SOIL SURVEY MAP UNIT LEGEND	
Mapu Unit Symbol	**Map Unit Name**
7043	Tahoe mucky silt loam, darined, 0 to 5 percent slopes
7444	Christopher-Gefo complex, 0 to 5 percent slopes
7461	Jabu coarse sandy loam, 0 to 9 percent slopes
7471	Marla loamy coarse sand, 0 to 5 percent slopes
7541	Ubaj sandy loam, 0 to 9 percent slopes

Source: Natural Resource Conservation Service, 2014.

Figure 3B
2007 NRCS Soil Mapping
Stream Zone Report for the Tahoe Valley Area Plan

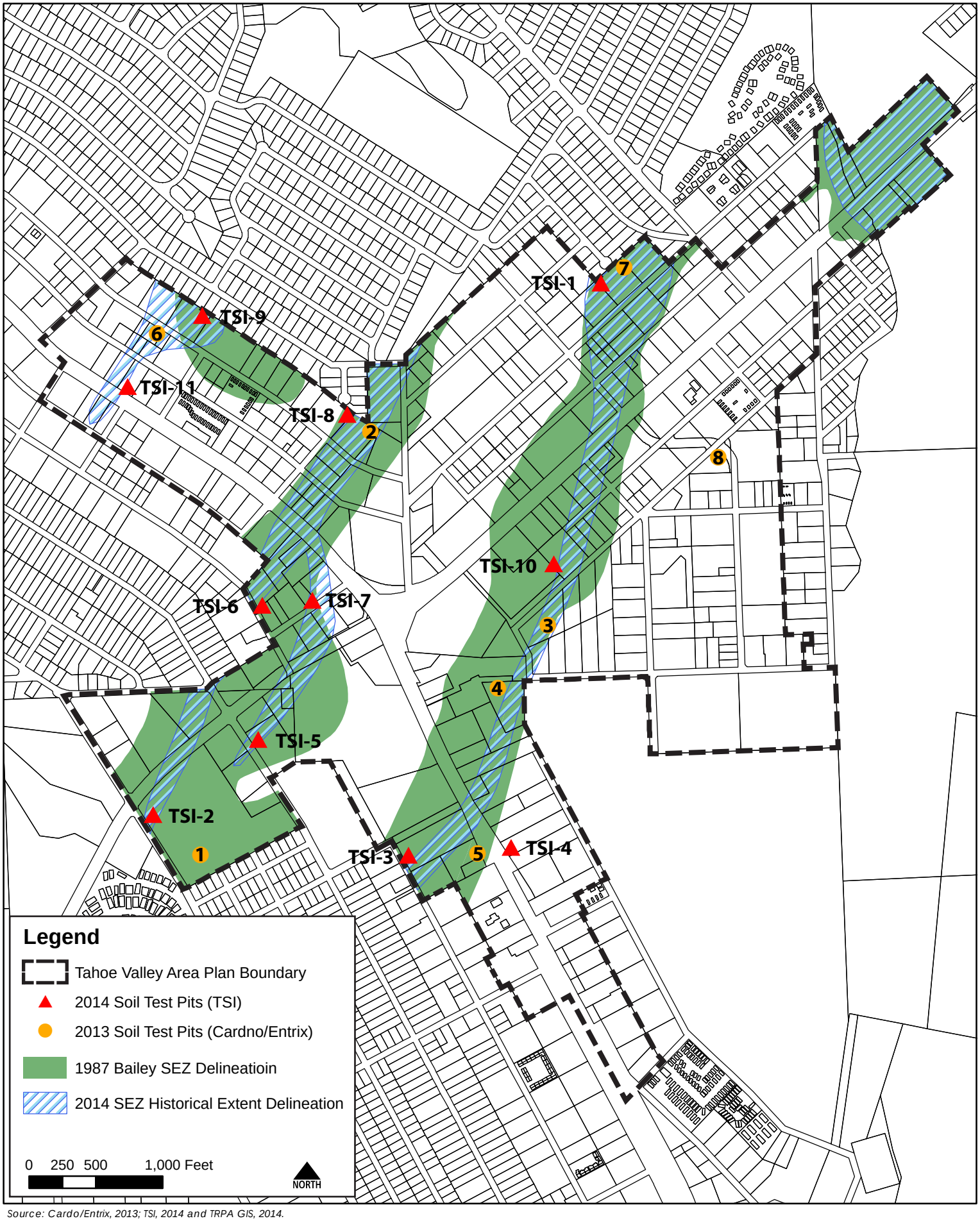


Source: TRPA 1987 Land Capability Maps; adpated by the City of South Lake Tahoe.

Figure 3C

Bailey Land Capability Mapping

Stream Zone Report for the Tahoe Valley Area Plan

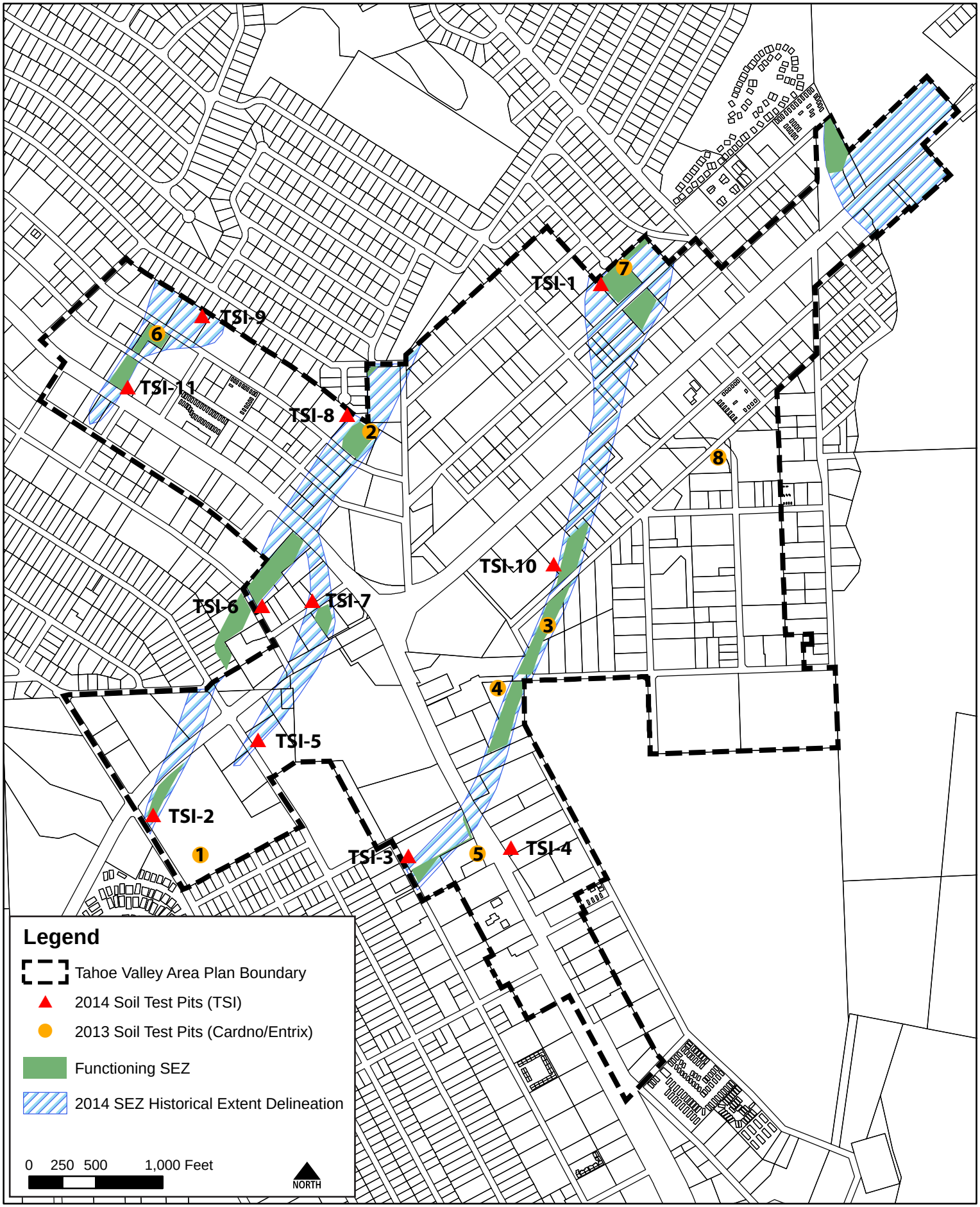


Source: Cardo/Entrix, 2013; TSI, 2014 and TRPA GIS, 2014.

Figure 4

2014 Mapping of Historic SEZ Extent

Stream Zone Report for the Tahoe Valley Area Plan



Source: Cardo/Entrix, 2013; TSI, 2014; and TRPA GIS, 2014.

Figure 5

2014 Mapping of Current (Vegetated) SEZ Extent

Stream Zone Report for the Tahoe Valley Area Plan

Appendix B

TSI Soil Profile Descriptions

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TSI-1 Soil Profile Description: (Stream Environment Zone)

Location: CTC lot, northwest of Eloise Street, southeast of Ruth Street, south of Linda Street terminus. Sample plot in west corner – about 15 feet northeast of cobble-boulder fill slope (3 feet high). Driest part of site.

Landform: Broad swale flanked by lake terrace (18 to 24 inches higher)
Slope: 2%, sloping to northeast
Surface Complexity: Smooth, subtle undulations

Plant Community: Pinus contorta and saplings (FAC), Salix spp. (FACW, est.), Carex spp. (FACW, est.), Juncus spp. (FACW, est.), Poa compressa (FACU), plus 20 percent twigs, thatch, pine needles, etc.

1974 Soil Series: Ev -- Elmira loamy coarse sand, wet variant, 0 to 5 percent slopes
2007 Soil Series: 7471 – Marla coarse loamy sand, 0 to 5 percent slopes
2007 Soil Classific.: Sandy, mixed, frigid Aquic Dystroxerepts [2]
Verified Soil Map Unit: Elmira, wet variant (1974); Marla (2007)
Drainage: Poorly Drained
Hydrologic Soil Group: D (season high water table at 5 inches below surface)

Oi 0.5 to 0 inches; conifer needles, twigs, thatch and duff; abrupt boundary.

A1 0 to 4.5 inches; dark brown (10YR 2/2) moist; sandy loam, weak medium granular structure; very friable, nonsticky, nonplastic; many fine roots, common very fine and fine interstitial pores; no redoximorphic features; <5 percent gravel; abrupt boundary.

Bw 4.5 to 13.5 inches ; brown (10YR 4/3) to dark yellowish brown (10YR 4/4) moist; loamy coarse sand; single grain structure; very friable, nonsticky and nonplastic; common fine and medium roots; many very fine and fine interstitial pores; many, medium to coarse, prominent yellowish red (5YR 4/6) iron redox soft masses; <5 percent gravel; gradual boundary.

C1 13.5 to 35 inches; grayish brown (2.5Y 5/2) moist; loamy coarse sand; single grain structure; very friable, nonsticky and nonplastic; common fine, and few, medium roots; many very fine and fine interstitial pores; common to many, fine to medium, prominent brown (7.5YR 4/4) to strong brown (7.5YR 3/ 4) iron redox soft masses; <5 percent gravel; gradual boundary.

C2 35 to 47 inches; light olive brown (2.5Y 5/3) moist, loamy coarse sand; single grain structure; very friable, nonsticky and nonplastic; no roots observed but few, coarse roots likely; many very fine and fine interstitial pores; many, fine and medium, prominent brown (7.5 YR 3/4) iron redox soft masses; <5 percent gravel; gradual boundary.

C3 47 to 51+ inches; dark yellowish brown (10YR 4/4) moist, loamy coarse sand; single grain structure; very friable, nonsticky and nonplastic; no roots observed but few, coarse roots likely; many very fine and fine interstitial pores; few, fine and medium, prominent brown (7.5 YR 3/4) iron redox soft masses; <5 percent gravel.

[2] Soil taxonomy from NRCS official series description (https:// soilseries.sc.egov.usda.gov/osdnamequery.asp)

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TSI-2 Soil Profile Description: (Stream Environment Zone – Partially Drained)

Location: CTC lot, south of Lake Tahoe Boulevard and northeast of Julie Street. Sample plot in west corner – about 125 feet southeast of Lake Tahoe Blvd. and 110 feet northeast of Julie Street (3 feet high). Plot representative of broad swale that slopes from southwest to northeast.

Landform: Broad swale flanked by lake terrace (12 to 18 inches higher)
Slope: 1%, sloping to northeast
Surface Complexity: Smooth, no significant undulations

Plant Community: Pinus contorta and saplings (FAC), Rosa spp. (FAC, est.), Ribes sanguineum (FACU), Potentilla spp. (FAC, est.), Poa compressa (FACU), Plantago spp. (FAC, est.), Achillea millefolium (FACU), Fragaria spp. (FACU), plus 20 percent twigs, thatch, pine needles, etc.

1974 Soil Series: Ev -- Elmira loamy coarse sand, wet variant, 0 to 5 percent slopes
2007 Soil Series: 7541 – Ubaj sandy loam, 0 to 9 percent slopes
2007 Soil Classific.: Fine-loamy, mixed, superactive, frigid Ultic Haploxeralfs[3]
Verified Soil Map Unit: Elmira, wet variant (1974); Marla (2007)
Drainage: Poorly Drained (historically) to Somewhat Poorly Drained (currently)
Hydrologic Soil Group: D (season high water table at 11.5 inches below surface)

Oi 0.5 to 0 inches; conifer needles, twigs, thatch and duff; abrupt boundary.

A1 0 to 5.5 inches; dark brown (10YR 2/2) moist; sandy loam, weak medium granular structure; very friable, nonsticky, nonplastic; many fine and medium roots, many very fine and fine interstitial pores; no redoximorphic features; <5 percent gravel; clear boundary.

A2 5.5 to 11.5 inches ; very dark grayish brown (10YR 3/2) moist; sandy loam; weak fine granular parting to single grain structure; very friable, nonsticky and nonplastic; many fine and medium roots; many very fine and fine interstitial pores; no redoximorphic features; <5 percent gravel; clear boundary.

C1 11.5 to 31 inches; grayish brown (2.5Y 5/2) to light olive brown (2.5Y 5/3) moist; loamy coarse sand; single grain structure; very friable, nonsticky and nonplastic; common fine, and few, medium roots; many very fine and fine interstitial pores; common to many, fine to medium, prominent strong brown (7.5YR 4/6) iron redox soft masses; <5 percent gravel; clear boundary.

C2 31 to 52+ inches; grayish brown (2.5Y 5/2) to light olive brown (2.5Y 5/3) moist, loamy coarse sand; single grain structure; very friable, nonsticky and nonplastic; very few fine and few medium roots, no roots observed below 43 inches, but few coarse roots likely; many very fine and fine interstitial pores; few to many, fine and medium, prominent strong brown (7.5 YR 4/6) iron redox soft masses; <5 percent gravel.

[3] Soil taxonomy from NRCS official series description (https:// soilseries.sc.egov.usda.gov/osdnamequery.asp)

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TSI-3 Soil Profile Description: (Stream Environment Zone – Previously Filled)

Location: CTC lot, west of Emerald Bay Road (Calif. Hwy. 89), east of Bonanza Avenue, south of Barton Ranch property. Sample plot in south corner – about 75 feet northeast of Bonanza Avenue and 75 feet northwest of small ditch along south property line (about 2 feet deep). South side of broad swale that slopes from southwest to northeast. NOTE: Vicinity was previously graded – cut slopes to the north, fill areas to the east and south.

Landform: Fill terrace over broad swale (flanked by lake terrace, 18 to 24 inches higher)
Slope: <1%, sloping to northeast
Surface Complexity: Smooth, no significant undulations (post-graded condition)

Plant Community: Pinus contorta (FACU), Pinus jeffreyi saplings (UPL), Rosa spp. (FAC, est.), Carex spp. (FACW, est.), Poa compressa (FACU), Plantago spp. (FAC, est.), Lupinus spp. (FAC-FACU, est.), Wyethia mollis (UPL), plus 70 percent twigs, thatch, pine needles, etc.

1974 Soil Series: Ev -- Elmira loamy coarse sand, wet variant, 0 to 5 percent slopes
2007 Soil Series: 7541 – Ubaj sandy loam, 0 to 9 percent slopes
2007 Soil Classific.: Fine-loamy, mixed, superactive, frigid Ultic Haploxeralfs [4]
Verified Soil Map Unit: Old fill material over Elmira, wet variant (1974); Marla (2007)
Drainage: Poorly Drained (historically) to Somewhat Poorly Drained (currently)
Hydrologic Soil Group: D (historically), C (currently)

Oi 0.25 to 0 inches; conifer needles, twigs, thatch and duff; abrupt boundary.

AC1 0 to 1.5 inches; very dark grayish brown (10YR 3/2) moist; sandy loam, weak medium granular structure; very friable, nonsticky, nonplastic; common fine plus few, medium roots, many very fine and fine interstitial pores; no redoximorphic features; 10 percent gravel; clear boundary.

AC2 1.5 to 8 inches ; dark yellowish brown (10YR 4/4) moist; sandy loam, weak fine granular structure; very friable, nonsticky, nonplastic; common fine plus few, medium roots, many very fine and fine interstitial pores; no redoximorphic features; 10 percent gravel; abrupt boundary.

AC3 8 to 20 inches; brown to strong brown (7.5YR 4/4 to 4/6) moist; sandy loam, weak medium granular structure; very friable, nonsticky, nonplastic; few fine and medium roots, many very fine and fine interstitial pores; no redoximorphic features; 10 percent gravel; clear boundary.

Ab 20 to 29 inches; brown to strong brown (10YR 4/3) moist; fine sandy loam, weak medium granular structure; very friable, nonsticky, nonplastic; few fine and medium roots, many very fine and fine interstitial pores; many, medium and coarse, prominent yellowish red (5YR 4/6) iron redox soft masses; 10 percent gravel; clear boundary.

C 29 to 37+ inches; dark brown (10YR 3/3) moist; loamy coarse sand, single grain structure; loose, nonsticky, nonplastic; few fine and very fine roots, many very fine and fine interstitial pores; common, medium, prominent strong brown (7.5YR 4/6) iron redox soft masses; 10 percent gravel. Rock refusal at 37 inches.

[4] Soil taxonomy from NRCS official series description (https:// soilseries.sc.egov.usda.gov/osdnamequery.asp)

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TSI-4 Soil Profile Description: (Upland)

Location: CSLT lot, northeast of Emerald Bay Road (Calif. Hwy. 89), southwest of Melba Avenue, and southwest of B Street. Sample plot near west edge of lot – about 70 feet northeast of Emerald Bay Road. NOTE: Vicinity appears historically disturbed for vehicle access (not significantly graded), but recovering for past 20 years.

Landform: Lake terrace (no adjacent SEZ)
Slope: <1%, sloping to west
Surface Complexity: Smooth, no significant undulations

Plant Community: Pinus jeffreyi and saplings (UPL), Wyethia mollis (UPL), Poa bulbosa (FACU), Elymus glaucus (FACU), plus 15 percent twigs, thatch, pine needles, etc.

1974 Soil Series: Ev -- Elmira loamy coarse sand, wet variant, 0 to 5 percent slopes
2007 Soil Series: 7444 – Christopher-Gefo complex, 0 to 5 percent slopes
2007 Soil Classific.: Mixed, frigid Dystric Xeropsamments and sandy, mixed, frigid Humic Dystroxerepts [5]
Verified Soil Map Unit: Elmira-Gefo (1974); Christopher (2007)
Drainage: Somewhat Excessively Well Drained
Hydrologic Soil Group: A

Oi 0.5 to 0 inches; conifer needles, twigs, thatch and duff; abrupt boundary.

A1 0 to 3 inches; very dark brown (10YR 2/2) moist; sandy loam, weak medium granular structure; very friable, nonsticky, nonplastic; common fine roots, many very fine and fine interstitial pores; no redoximorphic features; <5 percent gravel; clear boundary.

A2 3 to 12 inches; very dark grayish brown (10YR 3/2) to dark brown (10YR 3/3) moist; sandy loam, weak fine granular structure; very friable, nonsticky, nonplastic; common fine and medium roots, many very fine and fine interstitial pores; no redoximorphic features; <5 percent gravel; gradual boundary.

Bw 12 to 22 inches; dark brown (7.5YR 3/3) moist; loamy sand, single grain structure; loose, nonsticky, nonplastic; few fine, medium and coarse roots, many very fine and fine interstitial pores; no redoximorphic features; <5 percent gravel; gradual boundary.

C 22 to 49+ inches; reddish brown (5YR 4/4) to dark yellowish brown (10YR 4/4) moist; loamy coarse sand, single grain structure; loose, nonsticky, nonplastic; few fine, medium and coarse roots, very fine and fine interstitial pores; no redoximorphic features; <5 percent gravel.

Rock refusal at 49 in.

[5] Soil taxonomy from NRCS official series description (https:// soilseries.sc.egov.usda.gov/osdnamequery.asp)

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TSI-5 Soil Profile Description: (Stream Environment Zone – Previously Filled)

Location: CTC lot, northeast of Tata Lane, one-half block southeast of Lake Tahoe Boulevard, and north of Kmart garden center. Sample plot in south corner of lot – about 45 feet northeast of Tata Lane and 40 feet northwest of small parking lot. NOTE: Vicinity was previously filled and graded (prior to 1969), some disturbance thereafter, but recovering since 1987.

Landform: Fill terrace over broad swale (lake terrace to south, about 12 inches higher)
Slope: <1%, sloping to northwest
Surface Complexity: Smooth with subtle undulations (post-filled and graded condition)

Plant Community: Pinus jeffreyi and saplings (UPL), Pinus contorta and saplings (FACU), Salix spp. (FACW, est.), Mahonia aquifolium (FACU), Elymus glaucus (FACU), Poa compressa (FACU), Taraxacum officinale (FACU), plus 15 percent twigs, thatch, pine needles, etc.

1974 Soil Series: Ev -- Elmira loamy coarse sand, wet variant, 0 to 5 percent slopes
2007 Soil Series: 7541 – Ubaj sandy loam, 0 to 9 percent slopes
2007 Soil Classific.: Fine-loamy, mixed, superactive, frigid Ultic Haploxeralfs [6]
Verified Soil Map Unit: Old fill material over Elmira, wet variant (1974); Marla (2007)
Drainage: Poorly Drained (historically) to Somewhat Poorly Drained (currently)
Hydrologic Soil Group: D (historically), C (currently)

Oi 0.5 to 0 inches; conifer needles, twigs, thatch and duff; abrupt boundary.

AC1 0 to 4 inches; very dark brown (10YR 2/2) moist; gravelly sandy loam, weak medium granular structure; very friable, nonsticky, nonplastic; common fine roots, many very fine and fine interstitial pores; no redoximorphic features; 15 percent gravel; clear boundary.

AC2 4 to 19 inches ; dark brown (7.5YR 3/2) to dark grayish brown (10YR 3/2) moist; gravelly sandy loam, weak fine subangular blocky structure; very friable, nonsticky, nonplastic; common fine plus few, medium roots, many very fine and fine interstitial pores; no redoximorphic features; 10 to 15 percent gravel; abrupt boundary.

Ab 19 to 29 inches; dark yellowish brown (10YR 4/4) moist; sandy loam, weak fine subangular blocky structure; very friable, nonsticky, nonplastic; few fine and medium roots, many very fine and fine interstitial pores; common, medium and coarse, prominent yellowish red (7.5YR 4/6) iron redox soft masses; <5 percent gravel; clear boundary.

C1 29 to 52 inches; dark yellowish brown (10YR 4/6) to yellowish brown (10YR 5/4) moist; loamy coarse sand, single grain structure; loose, nonsticky, nonplastic; few fine and medium roots, many very fine and fine interstitial pores; few to common, medium, prominent yellowish red (5YR 4/6 and 5/8) iron redox soft masses; <5 percent gravel; abrupt boundary.

C2 52 to 58+ inches; grayish brown to olive brown (2.5Y 5/2 and 5/3) moist; sandy loam to very fine sandy loam, massive structure; friable, nonsticky, nonplastic; no observed roots, many very fine and fine interstitial pores; many, medium, prominent to coarse yellowish red (5YR 4/6 and 5/8) iron redox soft masses; <5 percent gravel.

[6] Soil taxonomy from NRCS official series description (https:// soilseries.sc.egov.usda.gov/osdnamequery.asp)

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TSI-6 Soil Profile Description: (Upland)

Location: CSLT lot, northeast of Glorene Avenue, northwest of Tucker Avenue, and 2 blocks southwest of Emerald Bay Road (Hwy. 89). Sample plot in southeast corner of lot – about 50 feet northeast of Glorene Avenue. NOTE: Vicinity appears relatively disturbed for past 40 years.

Landform: Lake terrace (southeast of SEZ that is 1 to 2 feet lower)
Slope: 2%, sloping to northwest
Surface Complexity: Smooth, no significant undulations

Plant Community: Pinus jeffreyi and saplings (UPL), Abies concolor and saplings (UPL, est.), Rosa spp. (FAC, est.), Ribes sanguineum (FACU), Poa compressa (FACU), plus 85 percent twigs, thatch, pine needles, etc.

1974 Soil Series: EfB -- Elmira-Gefo loamy coarse sand, 0 to 5 percent slopes
2007 Soil Series: 7471 – Marla coarse loamy sand, 0 to 5 percent slopes
2007 Soil Classific.: Sandy, mixed, frigid Aquic Dystroxerepts [7]
Verified Soil Map Unit: Elmira-Gefo (1974); Christopher (2007)
Drainage: Somewhat Excessively Well Drained
Hydrologic Soil Group: A

Oi 1.5 to 0 inches; conifer needles, twigs, thatch and duff; abrupt boundary.

A1 0 to 3 inches; very dark grayish brown (10YR 3/2) moist; fine sandy loam, weak medium granular structure; very friable, nonsticky, nonplastic; many fine, plus few medium roots, many very fine and fine interstitial pores; no redoximorphic features; 10 percent gravel; abrupt boundary.

A2 3 to 13.5 inches; dark brown (10YR 3/3) to dark brown (10YR 3/3) moist; fine sandy loam, weak fine granular structure; very friable, nonsticky, nonplastic; common fine and few medium roots, many very fine and fine interstitial pores; no redoximorphic features; 10 percent gravel; clear boundary.

Bw 13.5 to 23 inches; dark brown (10YR 3/3) to dark yellowish brown (10YR 3/4) moist; loamy coarse sand, single grain structure; loose, nonsticky, nonplastic; common fine and few medium roots, many very fine and fine interstitial pores; no redoximorphic features; 10 to 15 percent gravel; clear boundary.

C1 23 to 53 inches; dark yellowish brown (10YR 4/4) moist; loamy coarse sand, single grain structure; loose, nonsticky, nonplastic; few fine and coarse roots, many very fine and fine interstitial pores; few to many, medium and coarse, prominent yellowish red (5YR 4/6) iron redox soft masses; 15 percent gravel; abrupt boundary.

C2 53 to 57+ inches; dark gray (5Y 4/1) moist; loamy coarse sand, single grain structure; loose, nonsticky, nonplastic; no roots observed, many very fine and fine interstitial pores; many, medium and coarse, prominent yellowish red (5YR 4/6) iron redox soft masses; 15 percent gravel.

[7] Soil taxonomy from NRCS official series description (https:// soilseries.sc.egov.usda.gov/osdnamequery.asp)

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TSI-7 Soil Profile Description: (Stream Environment Zone – Previously Filled)

Location: CTC lot, northwest of Tucker Avenue, southwest of Emerald Bay Road (Calif. Hwy. 89), and northeast of Glorene Avenue. Sample plot in southeast corner of lot (lowest point) – about 30 feet northwest of Tucker Avenue. NOTE: Lot was unvegetated in 1969, but recovering for past 40+ years. Vicinity of sample plot contains 14 inches fill material.

Landform: Fill terrace over broad swale (remnant SEZ 100 feet to southeast)
Slope: <1%, sloping to east
Surface Complexity: Smooth, no significant undulations (likely post-restored condition)

Plant Community: Pinus jeffreyi (UPL), Pinus contorta (FAC), Prunus virginiana (FACU), Wyethia mollis (UPL), Lupinus spp. (FACU, est.), Poa compressa (FACU), Dactylis glomerata (FACU), plus 55 percent mulch and twigs.

1974 Soil Series: Ev -- Elmira loamy coarse sand, wet variant, 0 to 5 percent slopes
2007 Soil Series: 7444 – Christopher-Gefo complex, 0 to 5 percent slopes
2007 Soil Classific.: Mixed, frigid Dystric Xeropsamments and sandy, mixed, frigid Humic Dystroxerepts [8]
Verified Soil Map Unit: Old fill material over Elmira, wet variant (1974); Marla (2007)
Drainage: Somewhat Poorly (historically) to Moderately Well Drained (currently)
Hydrologic Soil Group: C (historically), D (currently)

Oi 0.25 to 0 inches; mulch and twigs; abrupt boundary.

AC 0 to 14 inches; very dark grayish brown (10YR 3/2) to dark brown (10YR 3/3) moist; sandy loam, weak medium granular structure; very friable, nonsticky, nonplastic; common fine and medium roots, many very fine and fine interstitial pores; no redoximorphic features; 10 percent gravel; abrupt boundary.

Ab 14 to 28 inches; dark brown (10YR 3/3) moist; fine sandy loam, weak fine granular structure; very friable, nonsticky, nonplastic; common fine and few medium roots, many very fine and fine interstitial pores; no redoximorphic features; <5 percent gravel; clear boundary.

Bw 28 to 35 inches; very dark yellowish brown (10YR 4/4) moist; fine sandy loam, weak fine granular structure; very friable, nonsticky, nonplastic; few fine and medium roots, many very fine and fine interstitial pores; no redoximorphic features; <5 percent gravel; clear boundary.

C 35 to 54+ inches; olive brown (2.5Y 4/3 and 4/4) moist; loamy coarse sand, single grain structure; loose, nonsticky, nonplastic; no roots observed, many very fine and fine interstitial pores; few to common, medium and coarse, prominent strong brown (7.5YR 4/6) iron redox soft masses; <5 percent gravel.

[8] Soil taxonomy from NRCS official series description (https:// soilseries.sc.egov.usda.gov/osdnamequery.asp)

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TSI-8 Soil Profile Description: (Upland)

Location: CSLT lot, northeast of Eloise Avenue, west of Dunlap Drive, and at northeast terminus of Fifth Street (Right-of-Way). Sample plot near north end of Right-of-Way and roughly 10 feet southwest of chain-link fence. NOTE: Vicinity appears historically disturbed (and potential minor surface grading), but planted and undisturbed for past 20 years.

Landform: Lake terrace (northwest of SEZ that is 4 to 6 feet lower)
Slope: 1%, sloping to southeast
Surface Complexity: Smooth, with subtle undulations (may be post-graded condition)

Plant Community: Pinus jeffreyi and few saplings (UPL), Pinus contorta (FAC), Elymus glaucus (FACU), plus 20 percent twigs, thatch, pine needles, etc.

1974 Soil Series: Ev -- Elmira loamy coarse sand, wet variant, 0 to 5 percent slopes
2007 Soil Series: 7471 – Marla loamy coarse sand, 0 to 5 percent slopes
2007 Soil Classific.: Sandy, mixed, frigid Aquic Dystroxerepts [9]
Verified Soil Map Unit: Elmira-Gefo (1974); Christopher (2007)
Drainage: Somewhat Excessively Well Drained
Hydrologic Soil Group: A

Oi 1 to 0 inches; conifer needles, twigs, thatch and duff; abrupt boundary.

A1 0 to 10 inches; very dark brown (10YR 2/2) moist; sandy loam, moderate medium granular structure; very friable, nonsticky, nonplastic; common fine roots, many very fine and fine interstitial pores; no redoximorphic features; 10 percent gravel; clear boundary.

C1 10 to 26 inches; very dark grayish brown (10YR 3/2) to dark brown (10YR 3/3) moist; sandy loam, weak medium granular structure; very friable, nonsticky, nonplastic; common fine and medium roots, plus few coarse roots, many very fine and fine interstitial pores; no redoximorphic features; <5 percent gravel; abrupt boundary.

C2 26 to 46 inches; dark yellowish brown (10YR 3/4) moist; loamy coarse sand, single grain structure; loose, nonsticky, nonplastic; few medium roots, many very fine and fine interstitial pores; no redoximorphic features; <5 percent gravel; clear boundary.

C3 46 to 53+ inches; dark brown (7.5YR 3/4) moist; loamy coarse sand, single grain structure; loose, nonsticky, nonplastic; few medium roots, many very fine and fine interstitial pores; no redoximorphic features; <5 percent gravel.

[9] Soil taxonomy from NRCS official series description (https:// soilseries.sc.egov.usda.gov/osdnamequery.asp)

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TSI-9 Soil Profile Description: (Stream Environment Zone)

Location: CTC lot, northeast of Eloise Avenue, southwest of Patricia Lane, and north of Seventh Street terminus (at Eloise Ave.). Sample plot in northeast corner – about 175 feet northeast of Eloise Avenue and 30 feet southeast of fence line. NOTE: Vicinity previously cleared prior to 1969, but recovering for past 40+ years.

Landform: Outer edge of broad swale adjacent to lake terrace (12 to 24 inches higher)
Slope: 3%, sloping to north
Surface Complexity: Smooth with subtle significant undulations

Plant Community: Pinus contorta and saplings (FAC), Pinus jefferyi saplings (UPL), Salix lasiandra (FACW), Ribes sanguineum (FACU), Rosa spp. (FAC, est.), Dactylis glomerata (FACU), Poa compressa (FACU), Elymus glaucus (FACU), Solidago Canadensis (FACU), Taraxacum officinale (FACU), Achillea millefolium (FACU), plus 10 percent twigs, thatch, pine needles, etc.

1974 Soil Series: Ev -- Elmira loamy coarse sand, wet variant, 0 to 5 percent slopes
2007 Soil Series: 7471 – Marla coarse loamy sand, 0 to 5 percent slopes
2007 Soil Classific.: Sandy, mixed, frigid Aquic Dystroxerepts [10]
Verified Soil Map Unit: Elmira, wet variant (1974); Marla (2007)
Drainage: Somewhat Poorly Drained
Hydrologic Soil Group: C (season high water table at 17 inches below surface)

Oi 0.5 to 0 inches; conifer needles, twigs, thatch and duff; abrupt boundary.

A 0 to 8 inches; dark grayish brown (10YR 4/2) to brown (10YR 4/3) moist; loamy fine sand, moderate to weak medium granular structure; very friable, nonsticky, nonplastic; many fine, medium and coarse roots, many very fine and fine interstitial pores; no redoximorphic features; <5 percent gravel; clear boundary.

Bw 8 to 24 inches ; dark brown (10YR 3/3) to dark yellowish brown (10YR 3/4) moist; loamy fine sand to fine sandy loam; weak fine to medium subangular blocky structure (parting to massive structure at 30 inches); very friable, nonsticky and nonplastic; many fine and medium, plus common coarse roots; many very fine and fine interstitial pores; no redoximorphic features; <5 percent gravel; clear boundary.

C 24 to 38 inches; olive brown (2.5Y 4/3) moist; fine to very fine sandy loam; weak, medium subangular blocky structure; very friable, nonsticky and nonplastic; few fine and medium roots; many very fine and fine interstitial pores; common to many, fine to medium, prominent strong brown (7.5YR 4/6) iron redox soft masses; <5 percent gravel; abrupt boundary.

2C 38 to 54+ inches; olive gray (5Y 5/2) to olive (5Y 5/3) moist, sandy clay loam; massive structure; friable, slightly sticky and slightly plastic; no observed roots; common very fine and fine interstitial pores; few to many, fine and medium, prominent yellowish red (5 YR 4/6) iron redox soft masses; <5 percent gravel.

[10] Soil taxonomy from NRCS official series description (https:// soilseries.sc.egov.usda.gov/osdnamequery.asp)

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TSI-10 Soil Profile Description: (Upland)

Location: CSLT lot, southwest of Helen Avenue (Right-of-Way), northwest of South Avenue, and west of Fourth Street. Sample plot in west part of lot – about 35 feet northwest of SEZ boundary. NOTE: Land area to west extensively filled with 1 to 4 feet deep (greater than 40 years ago; prior to 1969); however, subject location has only superficial evidence of surface disturbance.

Landform: Lake terrace (northwest of SEZ that is 1.5 to 5 feet lower)
Slope: 4%, sloping to southeast
Surface Complexity: Smooth, slight undulations

Plant Community: Pinus jeffreyi and saplings (UPL), Purshia spp. (UPL, est.), Rosa spp. (FACU, est.), Carex spp. (FAC, est.), Poa compressa (FACU), Elymus glaucus (FACU), plus 35 percent twigs, thatch, pine needles, etc.

1974 Soil Series: Ev -- Elmira loamy coarse sand, wet variant, 0 to 5 percent slopes
2007 Soil Series: 7471 – Marla loamy coarse sand, 0 to 5 percent slopes
2007 Soil Classific.: Sandy, mixed, frigid Aquic Dystroxerepts [11]
Verified Soil Map Unit: Elmira-Gefo (1974); Christopher (2007)
Drainage: Somewhat Excessively Well Drained
Hydrologic Soil Group: A

Oi 0.5 to 0 inches; conifer needles, twigs, thatch and duff; abrupt boundary.

A1 0 to 2 inches; very dark grayish brown (10YR 3/2) moist; sandy loam, weak medium granular structure; very friable, nonsticky, nonplastic; many fine and medium roots, many very fine and fine interstitial pores; no redoximorphic features; 5 percent gravel; clear boundary.

A2 2 to 10 inches; very dark grayish brown (10YR 3/2) to very dark brown (7.5YR 2.5/2) moist; sandy loam, weak fine granular structure; very friable, nonsticky, nonplastic; many fine and medium roots, many very fine and fine interstitial pores; no redoximorphic features; 5 percent gravel; clear boundary.

C 10 to 39+ inches; dark brown (7.5R 3/4) moist; loamy coarse sand, single grain structure; loose, nonsticky, nonplastic; common to few to common fine and medium, plus few coarse roots, many very fine and fine interstitial pores; no redoximorphic features; 5 percent gravel.

Rock refusal at 39 inches (after several similar attempts).

[11] Soil taxonomy from NRCS official series description (https:// soilseries.sc.egov.usda.gov/osdnamequery.asp)

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TSI-11 Soil Profile Description: (Upland)

Location: CSLT lot, northeast of Emerald Bay Road (Calif. Hwy. 89), southeast of Tenth Street, and southwest of James Avenue. Sample plot in south-center of lot – about 50 feet northeast of Emerald Bay Road. NOTE: Vicinity appears historically disturbed (but not significantly graded), but recovering for past 10 years.

Landform: Lake terrace (southeast of SEZ that is 2 to 3 feet lower)
Slope: <1%, sloping to northeast
Surface Complexity: Smooth, no significant undulations (may be post-graded condition)

Plant Community: Pinus jeffreyi and saplings (UPL), Arcotostaphylos patula (UPL, est.), Chrysothamnus nauseosus (UPL), Artemisia spp. (FACU, est.), Ceanothus prostratus (UPL, est.), Wyethia mollis (UPL), Poa bulbosa (FACU), Poa compressa (FACU), plus 20 percent twigs, thatch, pine needles, etc.

1974 Soil Series: EfB -- Elmira-Gefo loamy coarse sand, 0 to 5 percent slopes
2007 Soil Series: 7444 – Christopher-Gefo complex, 0 to 5 percent slopes
2007 Soil Classific.: Mixed, frigid Dystric Xeropsamments and sandy, mixed, frigid Humic Dystroxerepts [12]
Verified Soil Map Unit: Elmira-Gefo (1974); Christopher (2007)
Drainage: Somewhat Excessively Well Drained
Hydrologic Soil Group: A

Oi 0.25 to 0 inches; conifer needles, twigs, thatch (minimal) and duff; abrupt boundary.

A1 0 to 3 inches; very dark brown (10YR 2/2) moist; sandy loam, weak medium granular structure; very friable, nonsticky, nonplastic; many fine and medium roots, many very fine and fine interstitial pores; no redoximorphic features; <5 percent gravel; abrupt boundary.

A2 3 to 11 inches; very dark grayish brown (10YR 3/2) to dark brown (10YR 3/3) moist; sandy loam, weak fine granular structure; very friable, nonsticky, nonplastic; many fine and medium roots, many very fine and fine interstitial pores; no redoximorphic features; <5 percent gravel; clear boundary.

Bw 11 to 29 inches; dark yellowish brown (10YR 3/4) moist; loamy coarse sand, single grain structure; loose, nonsticky, nonplastic; common to few fine, medium and coarse roots, many very fine and fine interstitial pores; no redoximorphic features; <5 percent gravel; gradual boundary.

C1 29 to 40 inches; dark yellowish brown (10YR 4/6) moist; loamy coarse sand, single grain structure; loose, nonsticky, nonplastic; common fine, plus few coarse roots, many very fine and fine interstitial pores; no redoximorphic features; <5 percent gravel; gradual boundary.

C2 40 to 55+ inches; dark yellowish brown (10YR 4/6) moist; loamy coarse sand, single grain structure; loose, nonsticky, nonplastic; no roots observed, many very fine and fine interstitial pores; few to common, medium and coarse, prominent dark red (2.5YR 3/6) iron redox soft masses; <5 percent gravel.

[12] Soil taxonomy from NRCS official series description (https:// soilseries.sc.egov.usda.gov/osdnamequery.asp)

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Appendix C

Cardno ENTRIX Soil Profile Descriptions

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Appendix A: Narrative Soil Profile Descriptions

In the following Appendix, one may notice that no APN location is listed for each soil description. The soil descriptions were spatially distributed to capture and characterize specific areas within the project area. In all cases, soil descriptions were generated on publically owned parcels in the same map unit vicinity in order to corroborate a soil map unit boundary. Please refer to the marked soil sample locations identified on the adjoining study area maps for further clarification.

Soil Profile Description # 1:

Soil Map Units: Christopher-Gefo Complex, 0 to 5 percent slopes
Soil Classification: Mixed, frigid Dystric Xeropsamments
Verified Soil Series: Christopher
Drainage: Somewhat Excessively Well Drained
Hydrologic Soil Group: A

Oi 1 to 0 inches; conifer needles and duff.

A1 0 to 7 inches; brown (10YR 4/3) loamy coarse sand, dark brown (10YR 3/3) moist; moderate fine granular structure; soft, loose, nonsticky and nonplastic; many very fine and fine roots, few coarse roots; many very fine and fine interstitial pores; 10 percent gravel; clear smooth boundary.

A2 7 to 14 inches; yellowish brown (10YR 5/4) loamy coarse sand, very dark grayish brown (10YR 3/2) moist; moderate, medium subangular structure; soft, friable, nonsticky and nonplastic; common fine, medium and coarse roots; many very fine and fine tubular pores; 10 percent gravel; clear wavy boundary.

Bw1 14 to 28 inches; grey brown (10YR 5/2) loamy coarse sand, very dark grayish brown (10YR 3/2) moist; moderate, medium subangular structure; soft, friable, nonsticky and nonplastic; common fine, medium and coarse roots; many very fine and fine tubular pores; 10 percent gravel; clear wavy boundary.

Bw2 28 to 48 inches; very pale brown (10YR 6/3) loamy coarse sand, yellowish brown (10YR 5/3) moist; moderate, medium subangular structure; soft, friable, nonsticky and nonplastic; common fine, medium and coarse roots; many very fine and fine tubular pores; 10 percent gravel.

Soil Profile Description # 2: (Stream Environment Zone)

Soil Map Unit: Marla loamy coarse sand
Soil Classification: Sandy, mixed, frigid Aquic Dystroxerepts
Soil Series: Marla
Drainage: Poorly Drained
Hydrologic Soil Group: D

Oi 1 to 0 inches; conifer needles and duff.

A1 0 to 4 inches; brown (10YR 4/3) loamy coarse sand; dark brown (10YR 3/3) moist; moderate fine granular structure; soft, loose, nonsticky, nonplastic; many fine and medium roots, few coarse roots; many very fine and fine interstitial pores; 10 percent gravel; clear wavy boundary.

A2 4 to 12 inches ; brown (10YR 5/3) loamy coarse sand; dark brown (10YR 3/3) moist; moderate fine granular structure; soft, loose, nonsticky and nonplastic; many fine and medium and few coarse roots; many very fine and fine interstitial pores; 10 percent gravel; clear wavy boundary.

C1 12 to 20 inches; pale brown (10YR 6/3) loamy coarse sand; dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; common fine, medium and few coarse roots; many very fine and fine interstitial pores; common, fine and medium, moderate, distinct red-brown (7.5 YR 5/6) masses of oxidized iron; 10 percent gravel, gradual wavy boundary.

C2 20 to 35 inches; light brown (10YR 6/3) loamy coarse sand; dark brown (10 YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; few fine and common medium roots; common very fine and fine interstitial pores; common, fine and medium, moderate, distinct red-brown (7.5 YR 5/6) masses of oxidized iron; 10 percent gravel.

Cg 35 to 48 inches; light grey to greenish gray (10YR 7/1, 5G 5/1) loamy coarse sand; moderate, medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; few fine and common medium roots; common very fine and fine interstitial pores; common, fine and medium, moderate, distinct red-brown (7.5 YR 5/6) masses of oxidized iron; 10 percent gravel.

Soil Profile Description # 3: (Stream Environment Zone)

Soil Map Unit: Marla loamy coarse sand
Soil Classification: Sandy, mixed, frigid Aquic Dystroxerepts
Soil Series: Marla
Drainage: Poorly Drained
Hydrologic Soil Group: D

Oi 1 to 0 inches; conifer needles and duff.

A1 0 to 7 inches; brown (10YR 4/3) loamy coarse sand; dark brown (10YR 3/3) moist; moderate fine granular structure; soft, loose, nonsticky, nonplastic; many fine and medium roots, few coarse roots; many very fine and fine interstitial pores; 10 percent gravel; clear wavy boundary.

A2 7 to 16 inches ; brown (10YR 5/3) loamy coarse sand; dark brown (10YR 3/3) moist; moderate fine granular structure; soft, loose, nonsticky and nonplastic; many fine and medium and few coarse roots; many very fine and fine interstitial pores; 10 percent gravel; clear wavy boundary.

C1 16 to 25 inches; pale brown (10YR 6/3) loamy coarse sand; dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; common fine, medium and few coarse roots; many very fine and fine interstitial pores; common, fine and medium, moderate, distinct red-brown (7.5 YR 5/6) masses of oxidized iron; 10 percent gravel, gradual wavy boundary.

C2 25 to 36 inches; light brown (10YR 6/3) loamy coarse sand; dark brown (10 YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; few fine and common medium roots; common very fine and fine interstitial pores; common, fine and medium, moderate, distinct red-brown (7.5 YR 5/6) masses of oxidized iron; 10 percent gravel.

Cg 36 to 48 inches; light grey to greenish gray (10YR 7/1, 5G 5/1) loamy coarse sand; moderate, medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; few fine and common

medium roots; common very fine and fine interstitial pores; common, fine and medium, moderate, distinct red-brown (7.5 YR 5/6) masses of oxidized iron; 10 percent gravel.

Soil Profile Description # 4:

Soil Map Units: Gefo gravelly loamy coarse sand 2 to 9 percent slopes
Soil Classification: Sandy, mixed, frigid Humic Dystroxerept
Verified Soil Series: Gefo
Drainage: Somewhat Excessively Well Drained
Hydrologic Soil Group: A

Oi 1 to 0; leaf litter and organic detritus

A1 0 to 4 inches; brown (10YR 5/3) gravelly coarse sandy loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, friable, nonsticky and nonplastic; common very fine and fine roots; many very fine and fine interstitial pores; 15 percent gravel; clear smooth boundary.

A2 4 to 10 inches; brown (10YR 5/3) gravelly coarse sand, very dark grayish brown (10YR 3/2) moist; weak fine and medium granular structure; soft, friable, nonsticky and nonplastic; few coarse roots; few medium and common very fine and fine roots, many very fine and fine interstitial pores; 15 percent gravel; gradual smooth boundary.

C1 10 to 30 inches; pale brown (10 YR 6/3) gravelly coarse sand, brown (10YR 4/3) moist; moderate medium subangular structure; soft, friable, nonsticky and nonplastic; common fine, medium and coarse roots; many very fine and fine interstitial and tubular pores; 15 percent gravel; gradual wavy boundary.

C2 30 to 40+ inches; reddish brown (7.5 YR 4/4) gravelly coarse sand, dark yellowish brown (7.5 YR 4/3) moist; moderate medium subangular structure; soft, friable, nonsticky and nonplastic; few very fine, fine and medium roots; many very fine and fine interstitial and tubular pores; 15 percent gravel.

Soil Profile Description # 5:

Soil Map Units: Ubaj sandy loam, 0 to 9 percent slopes
Soil Classification: Fine-loamy, mixed, frigid Ultic Haploxeralfs
Verified Soil Series: Ubaj
Drainage: Well Drained
Hydrologic Soil Group: B

Oi 1 to 0 inches; needles and duff.

A1 0 to 5 inches; brown (10YR 4/3) sandy loam, dark brown (10YR 3/3) moist; moderate fine granular structure; soft, loose, nonsticky and nonplastic; many very fine and fine roots, few coarse roots; many very fine and fine interstitial pores; 15 percent gravel; clear smooth boundary.

A2 5 to 11 inches; yellowish brown (10YR 5/4) sandy loam, very dark grayish brown (10YR 3/2) moist; moderate, medium subangular structure; soft, friable, nonsticky and nonplastic; common fine, medium and coarse roots; many very fine and fine tubular pores; 10 percent gravel; clear wavy boundary.

Bt1 11 to 18 inches; grey brown (10YR 5/2) sandy loam, very dark grayish brown (10YR 3/2) moist; moderate, medium subangular structure; soft, friable, nonsticky and nonplastic; common fine, medium and coarse roots; many very fine and fine tubular pores; 10 percent gravel; clear wavy boundary.

Bt2 18 to 29 inches; very pale brown (10YR 6/3) sandy loam, yellowish brown (10YR 5/3) moist; moderate, medium subangular structure; soft, friable, nonsticky and nonplastic; common fine, medium and coarse roots; many very fine and fine tubular pores; 10 percent gravel; clear wavy boundary.

Bt3 29 to 40 inches; very pale brown (10 YR 6/3) sandy loam, dark yellowish brown (10 YR 4/6) moist; moderate, massive; common, fine and medium, moderate, distinct red-brown (7.5 YR 5/6) masses of oxidized iron; 10 percent gravel.

Soil Profile Description # 6: (Stream Environment Zone)

Soil Map Unit: Marla loamy coarse sand
Soil Classification: Sandy, mixed, frigid Aquic Dystroxerepts
Soil Series: Marla
Drainage: Poorly Drained
Hydrologic Soil Group: D

Oi 1 to 0 inches; conifer needles and duff.

A1 0 to 5 inches; brown (10YR 4/3) loamy coarse sand; dark brown (10YR 3/3) moist; moderate fine granular structure; soft, loose, nonsticky, nonplastic; many fine and medium roots, few coarse roots; many very fine and fine interstitial pores; 10 percent gravel; clear wavy boundary.

A2 5 to 11 inches ; brown (10YR 5/3) loamy coarse sand; dark brown (10YR 3/3) moist; moderate fine granular structure; soft, loose, nonsticky and nonplastic; many fine and medium and few coarse roots; many very fine and fine interstitial pores; 10 percent gravel; clear wavy boundary.

C1 11 to 21 inches; pale brown (10YR 6/3) loamy coarse sand; dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; common fine, medium and few coarse roots; many very fine and fine interstitial pores; common, fine and medium, moderate, distinct red-brown (7.5 YR 5/6) masses of oxidized iron; 10 percent gravel, gradual wavy boundary.

C2 21 to 32 inches; light brown (10YR 6/3) loamy coarse sand; dark brown (10 YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; few fine and common medium roots; common very fine and fine interstitial pores; common, fine and medium, moderate, distinct red-brown (7.5 YR 5/6) masses of oxidized iron; 10 percent gravel.

Cg 32 to 42 inches; light grey to greenish gray (10YR 7/1, 5G 5/1) loamy coarse sand; moderate, medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; few fine and common medium roots; common very fine and fine interstitial pores; common, fine and medium, moderate, distinct red-brown (7.5 YR 5/6) masses of oxidized iron; 10 percent gravel.

Soil Profile Description # 7: (Stream Environment Zone)

Soil Map Unit: Marla loamy coarse sand
Soil Classification: Sandy, mixed, frigid Aquic Dystroxerepts
Soil Series: Marla
Drainage: Poorly Drained
Hydrologic Soil Group: D

Oi 1 to 0 inches; conifer needles and duff.

A1 0 to 5 inches; brown (10YR 4/3) loamy coarse sand; dark brown (10YR 3/3) moist; moderate fine granular structure; soft, loose, nonsticky, nonplastic; many fine and medium roots, few coarse roots; many very fine and fine interstitial pores; 10 percent gravel; clear wavy boundary.

A2 5 to 13 inches ; brown (10YR 5/3) loamy coarse sand; dark brown (10YR 3/3) moist; moderate fine granular structure; soft, loose, nonsticky and nonplastic; many fine and medium and few coarse roots; many very fine and fine interstitial pores; 10 percent gravel; clear wavy boundary.

C1 13 to 19 inches; pale brown (10YR 6/3) loamy coarse sand; dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; common fine, medium and few coarse roots; many very fine and fine interstitial pores; common, fine and medium, moderate, distinct red-brown (7.5 YR 5/6) masses of oxidized iron; 10 percent gravel, gradual wavy boundary.

C2 19 to 34 inches; light brown (10YR 6/3) loamy coarse sand; dark brown (10 YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; few fine and common medium roots; common very fine and fine interstitial pores; common, fine and medium, moderate, distinct red-brown (7.5 YR 5/6) masses of oxidized iron; 10 percent gravel.

Cg 34 to 43 inches; light grey to greenish gray (10YR 7/1, 5G 5/1) loamy coarse sand; moderate, medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; few fine and common medium roots; common very fine and fine interstitial pores; common, fine and medium, moderate, distinct red-brown (7.5 YR 5/6) masses of oxidized iron; 10 percent gravel.

Soil Profile Description # 8:

Soil Map Units: Christopher-Gefo Complex, 0 to 5 percent slopes
Soil Classification: Mixed, frigid Dystric Xeropsamments
Verified Soil Series: Gefo
Drainage: Somewhat Excessively Well Drained
Hydrologic Soil Group: A

Oi 1 to 0 inches; conifer needles and duff.

A1 0 to 5 inches; brown (10YR 4/3) gravelly loamy coarse sand, dark brown (10YR 3/3) moist; moderate fine granular structure; soft, loose, nonsticky and nonplastic; many very fine and fine roots, few coarse roots; many very fine and fine interstitial pores; 15 percent gravel; clear smooth boundary.

A2 5 to 11 inches; yellowish brown (10YR 5/4) gravelly loamy coarse sand, very dark grayish brown (10YR 3/2) moist; moderate, medium subangular structure; soft, friable, nonsticky and nonplastic; common fine, medium and coarse roots; many very fine and fine tubular pores; 15 percent gravel; clear wavy boundary.

Bw1 11 to 25 inches; grey brown (10YR 5/2) gravelly loamy coarse sand, very dark grayish brown (10YR 3/2) moist; moderate, medium subangular structure; soft, friable, nonsticky and nonplastic; common fine, medium and coarse roots; many very fine and fine tubular pores; 15 percent gravel; clear wavy boundary.

Bw2 25 to 38 inches; very pale brown (10YR 6/3) very gravelly loamy coarse sand, yellowish brown (10YR 5/3) moist; moderate, medium subangular structure; soft, friable, nonsticky and nonplastic; common fine, medium and coarse roots; many very fine and fine tubular pores; 15 percent gravel.

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Appendix D

Selected TSI and Cardno ENTRIX Photographs

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Photo D-1A – View to east at sample location TSI-1 (SEZ). Sample location situate to left of fill slope (transitions up to fill pad to south on neighboring lot).

Photo D-1B – Soil profile at TSI-1 (SEZ). Soil is extensively mottled in upper part and becomes grayer at 19- to 35-inch depth.

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Photo D-2A – View to southeast at sample location TSI-2 (SEZ). Sample location situated in center of subtle swale (higher topography to north and south).

Photo D-2B – Soil profile at TSI-2 (SEZ). Soil profile indicates soil location was historically wetter, but plant community indicates drier current conditions.

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Photo D-3A – View to northeast at sample location TSI-3 (SEZ). Sample location situated in area previously filled and graded.

Photo D-3B – Soil profile at TSI-3 (SEZ). Soil profile indicates the upper 20 inches is fill material. The underlying soil appears to be truncated profile (topsoil removed before filled).

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Photo D-4A – View to east at sample location TSI-4 (Upland). Sample location situated in area that has minor surface disturbance, but subsoil appears undisturbed.

Photo D-4B – Soil profile at TSI-4 (Upland). Soil profile indicates no extended wetness in upper 49 inches.

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Photo D-5A – View to northeast at sample location TSI-5 (SEZ). Sample location situated subtle low spot between Tata Lane, parking lot (to south) and commercial building.

Photo D-5B – Soil profile at TSI-5 (SEZ). Soil profile indicates presence of old fill atop native soil (beginning at approximately 19 inches).

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Photo D-6A – View to west at sample location TSI-6. Sample location situated northeast of Glorene Lane and northwest of Tucker Avenue, about 30 feet from SEZ edge.

Photo D-6B – Soil profile at TSI-6 (Upland). Soil profile indicates lack of significant disturbance and lack of extended wetness in the upper 25 inches.

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Photo D-7A – View to northeast at sample location TSI-7 (Upland). Sample location situated about 35 feet northwest of Tucker Avenue and 1 block west of Hwy. 89.

Photo D-7B – Soil profile at TSI-7 (Upland). While sample location was historically cleared (minor disturbance), profile indicates lack of extended wetness in upper 35 inches.

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Photo D-8A – View to south at sample location TSI-8 (Upland). Sample location situated about 400 feet north of Eloise and Fifth Street intersection.

Photo D-8B – Soil profile at TSI-8 (Upland). While sample location has trees planted, profile appears undisturbed and lacks indication of extended wetness in upper 53 inches.

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Photo D-9A – View to northwest at sample location TSI-9 (SEZ). Sample location situated about halfway between Eloise Ave. and Patricia Ln., and north of Seventh St.

Photo D-9B – Soil profile at TSI-9 (SEZ). Soil profile indicates extended wetness rises to 24 inches, while plant community qualifies as SEZ. Hydrology monitoring recommended.

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Photo D-10A – View to north at sample location TSI-10 (Upland). Sample location situated about 25 feet from SEZ (beyond right edge of photo).

Photo D-10B – Soil profile at TSI-10 (Upland). Soil profile indicates lack of extended wetness within 39 inches of surface (rock refusal at 39 in.).

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Photo D-11A – View to northeast at sample location TSI-11 (Upland). Sample location situated about 40 feet from SEZ (extreme left edge of photo).

Photo D-11B – Soil profile at TSI-10 (Upland). Soil profile indicates lack of extended wetness within 40 inches of surface (2 to 20% iron RMFs from 40 to 53 in. depth)

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