TAHOE REGIONAL PLANNING AGENCY

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Stateline, NV 89449-5310

Location
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Stateline, NV 89449

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STAFF REPORT

Date: October 20, 2022

To: TRPA Hearings Officer

From: TRPA Staff

Subject: Richter Land Capability Challenge, 11 Lakeside Cove Road, Douglas County, Nevada, APN 1418-34-310-005, TRPA File Number LCAP2022-0614

Proposed Action:
Hearings Officer review and approve the proposed Land Capability Challenge.

Staff Recommendation:
Staff recommends the TRPA Hearings Officer approve the land capability challenge on the subject parcel. This challenge changes the land capability from Class 1A (CaF, 30 to 50% slopes), Class 2 (CaE, 15 to 30% slopes) and Class 4 (CaD, 5 to 15% slopes) to Class 1C (Rx), Class 2 (XXX, 30 to 50% slopes), Class 4 (XXX, 16 to 30% slopes), and Class 4 (CaD, 5 to 15% slopes). These changes are itemized on the table on Page 3 and depicted on a map included in Attachment C.

Background:
The subject parcel is currently mapped as land capability Class 1A. The Soil Conservation Service Soil Survey of Tahoe Basin Area, California-Nevada (Rogers, 1974) identifies the site having Cagwin-Rock outcrop complex, 15 to 30% slopes (CaE). The Cagwin soil type is derived from granodiorite. Several distinctive components of the Cagwin series include shallow depth to grus (highly weathered bedrock), colluvial deposits in the upper part, and residuum soil in the lower part (forming directly from weathering bedrock). The vicinity of the parcel has a geomorphic mapping of C-1 for Granitic foothills (moderate hazard lands). The subject parcel has a surveyed size of 3,925 sf. (from Arnett & Associates, Land Surveying, Sept. 2020).

A June 27, 2022 Land Capability Verification (LCV) completed by TRPA Staff (Attachment C) determined the east (upper) part of site qualified as Class 4 due to slopes 0 to 15%. The center and lower (west) part qualified as Class 1A and Class 2 due to slopes 15 to greater than 30%. A TRPA land capability challenge (LCAP2022-0614) was filed by the property owners and their architect on July 19, 2022. On August 26, 2022, the TRPA contractor (Phil Scoles, Terra Science, Inc.) conducted a site visit with the applicant's representative, David Herzog (DH Geologists). The TRPA contractor then completed a detailed soil description using two backhoe-dug pits located along the north edge of the parcel. These locations were undisturbed and situated near transitions from the less steep to steeper slopes. At the request of the owner's representative, three more test pits were dug on September 2 and October 6 for land northeast, southeast and southwest of the now-demolished residence.

Such locations provided additional field observations of soil depth in the center, south and east parts of the parcel. The TRPA contractor described the soil profile matrix colors and ped structures; measured soil horizon depths; determined soil textures; estimated gravel volume and root distribution; depth to bedrock, and conducted a walking tour of the remaining portion of the property. The TRPA contractor compiled five soil descriptions (Attachment D) and integrated the technical findings into this Staff Report. Due to the bouldery surface conditions, the land capability delineations were primarily determined using the surveyor's ground elevation points (rather than computer-generated topographic contours).

Findings:
The subject parcel consists of a west sloping hillside formed from uplifted, then later wave-washed granodiorite. The land surface has 9 to 47% slopes (dips to west). The parent material is plutonic (underground volcanic), and naturally decays to sandy to loamy sand soils. Until recently, the parcel contained a one-story house positioned in the east part, while the west part has steeper, vacant land containing a rock outcrop (southwest part) and many surface boulders elsewhere. Such boulders (when excavated) were found to be "floaters" – not tethered to bedrock – and wave eroded (somewhat rounded, rather than tilted planes of rock). Close examination of the soils found the upper part of the soil was ancient beach sands deposited when lake levels were higher. The vegetated portions of the property consist of thinned upland forest (Jeffrey pine, bitterbrush, chinquapin, greenleaf manzanita and grasses/forbs).

This land capability challenge utilized five backhoe test pits, one located about 20 feet northwest of the now-demolished residence, and another about 6 feet south of northwest property corner. Another test pit was situated 8 feet north of the former residence northwest corner, and another test pit was 10 feet east of the southeast former residence corner. The last test pit was 12 feet north of the south property line and 30 feet east of the west property line. Due to the small size of the subject parcel (<4,000 sq. ft.), the Test pits no. 3 and 4 were dug on common area ground. The first three test pits were undisturbed (large rocks had to be lifted away to expose the underlying soil), while the fourth test pit was excavated through the asphalt driveway. The last test pit was dug after a portion of the residence and all of the deck had been removed. The TRPA contractor found the soil in the steepest part, south part and eastern one-third have grus at less than 40 inches deep. Root penetration into the underlying grus is evident, but substantially fewer roots explore this material since it is dense and decayed granodiorite. The contractor found deeper soils (albeit squeezed between many naturally stacked boulders) in the extreme northwest corner and center part. These deeper soils are also somewhat excessively drained. No indication of seasonal ground water perching atop the weathered bedrock at any of the test pits.

The southwest part of the parcel is a rock outcrop, which correlates to the Rock outcrop-Rubble land (Rx) map unity in the 1974 soil survey. The Rx map unit is considered Class 1C. The south and eastern one-third of the parcel correlates to the Cagwin-Rock outcrop, 5 to 15% slopes (CaD) map unit in the 1974 soil survey. This area is less steep than mapped by the soil survey, so it qualifies for Class 4. The remainder of the parcel differs from the Cagwin soils by having a fundamental different soil formation with ancient beach deposited sand in the upper part and having residuum soil in the lower part.

That is, the Cagwin soils formed entirely from granodiorite have coarse sand textures and often show soil development features (cambic horizon, for example). The Cagwin soils have gravels and cobbles, but generally do not have naturally stacked boulders. The unnamed soil is also dissimilar to the Gefo and Elmira soil series, which are glacial outwash and lake terrace soils (non-rocky, flatter slopes, too). As such, the unnamed soils do not match known soil series described in the 1974 Soil Survey of the Lake Tahoe Basin (hence they are considered unnamed, XXX soils). The land capability classes for the XXX soils were determined from Page 20, Table 4 of Land-Capability Classification of the Lake Tahoe Basin, California-Nevada (Bailey, 1974). Specifically, Class 4 for slopes 16 to 30% and Class 2 for deep soils on slopes greater than 30%. The table below summarizes the soil types, slope classes, as well as changes in land capability concluded by this land capability challenge.

Land Capability District	**Slope Class (Range)**	**2022 TRPA Land Cap. Verif. Area (sq. ft.)**	**2022 Land Cap. Challenge Area (sq. ft.)**	**Net Change Total Area (sq. ft.)**
Class 1A (CaF)	30 to 50%	252	0	-252
Class 1A (CaE)	15 to 30%	834	0	-834
Class 1C (Rx)	Any slopes	0	639	+639
Class 2 (XXX)	30 to 50%	0	401	+401
Class 4 (CaD)	5 to 15%	2,839	2,062	-777
Class 4 (XXX)	16 to 30%	0	823	+823
Total Parcel Area		**3,925***	**3,925***	

* From June 27, 2022 LCV Site Map and Sept. 09, 2020 Arnett & Associates, Inc. topographic survey (incorporated into July 08, 2022 GilanFarr Architecture site plan, Sheet C1.E)

Contact Information:

This memorandum was jointly prepared by TRPA contractor Phil Scoles (Terra Science, Inc.) and TRPA Senior Planner, Julie Roll. If you have questions on this Hearings Officer item, please contact Julie Roll at 775-589-5247 or jroll@trpa.gov.

Attachments:

A. Vicinity map and TRPA land capability map
B. Site photographs (August 26, September 2, and October 6, 2022)
C. June 27, 2022 TRPA Land Capability Verification and October 2022 Land Capability Challenge recommendation map
D. TRPA land capability contractor soil profile description (5 test pits)

BAILEY LAND CAPABILITY CHALLENGE FINDINGS

Site Information	
Assessor's Parcel No. (APN):	1418-34-310-005
TRPA File No. / Submittal Date:	LCAP2022-0614 / July 27, 2022
Owner or Applicant:	MB Richter & K TTEE, et al; 46065 River Oaks Court; Reno, Nev. 89511; kristine@richterfinancial.com
Site Address:	11 Lakeside Cove Road, Lakeridge, Douglas County, Nev.; T. 14N, R. 19E, NE1/ 4 of SW1/4 of Sec. 34.

Environmental Setting	
Bailey Soil Mapping Unit / Hydrologic Soil Group (HSG) / Land Class / Geomorphic Hazard Unit	Cagwin-Rock outcrop complex, 15 to 30% slopes (CaE, HSG-C) / C-1 Granitic foothills (moderate hazard lands as per 1974 Bailey Land Capability Report)
Landform and Soil Parent Material	Ancient beach deposits and colluvium over weathered granodiorite bedrock (grus).
Slopes and Aspect	9 to 47% slopes / slopes to west by northwest.
Elevation and Datum	6,279 to 6,298 feet (datum not specified); Arnett & Associates Land Surveying (Sept. 08, 2020)
Rock Outcrops and Surface Configuration	Rock outcrops in southwest corner, remainder of parcel has numerous boulders ("floaters", not bedrock).
SEZ and Hydrology Source	None.
Vegetation	Jeffrey pine and Incense cedar, plus white fir saplings. Understory includes serviceberry, snowbush, chinquapin, bitterbrush, greenleaf manzanita, currant, thimbleberry and forbs/grass.
Ground Cover Condition	Good (vegetation 35 to 45%, boulders 25-35%, duff 20 to 40%)
Site Features	Residence (now demolished), asphalt driveway, stairs, deck, surface boulders, and rock outcrop.

Field Investigation and Procedures	
TRPA Contractor and Address	Phil Scoles (TRPA subcontractor) Post Office Box 2100; Portland, OR 97208-2100
TRPA Contractor Field Dates	August 26, Sept. 02, and Oct. 06, 2022.
SEZ Mapping / NRCS Hydric Soil	None
Number of Soil Pits or Auger Holes and Description Depth	Five backhoe pits excavated 36 to 60 inches (grus encountered at 33 to 51 inches).
Additional or Repetitive TRPA Sample Locations	Not applicable.
Areas Not Examined	Residence footprint, driveway, stairs, and deck.

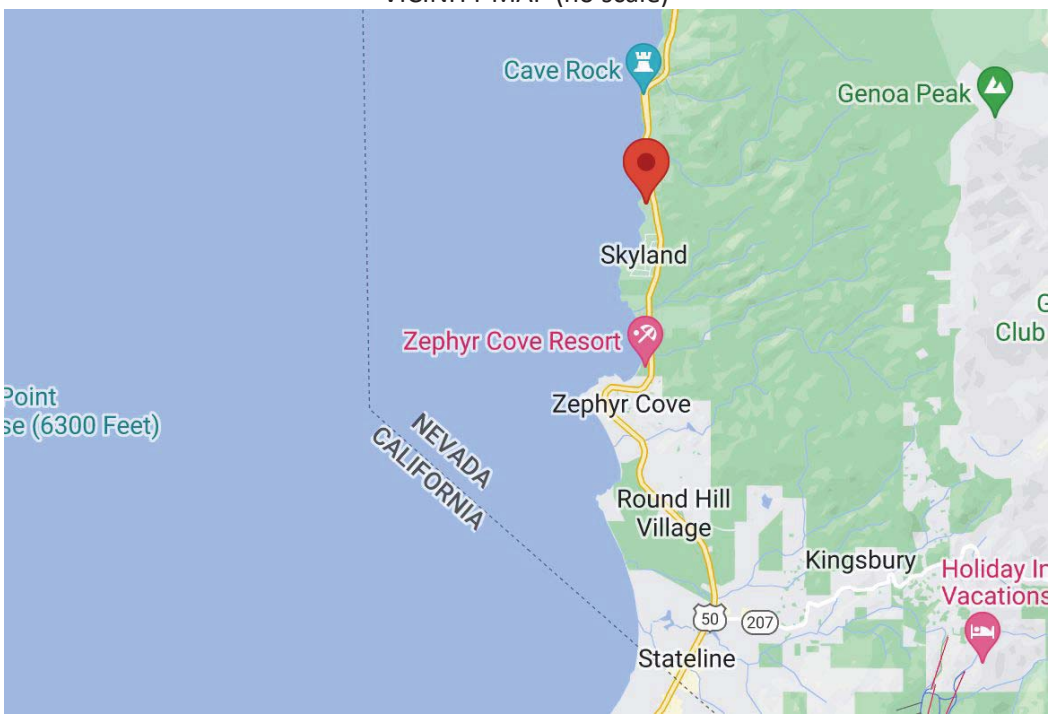
TRPA Findings	
2006 Soil Survey Map Unit[1]	Cassenai gravelly loamy coarse sand (Mixed, frigid Dystric Xeropsamments), 5 to 15% slopes (map unit 7421, Class 6, HSG-A).
Contractor Soil Mapping Determination and Rationale	The south part and eastern third of the parcel correlates to Cagwin-Rock outcrop, 5 to 15% slopes (CaD), which is a colluvial-residuum soil formed from granodiorite. Such granodiorite is also exposed as a rock outcrop in the southwest corner, which has a mapping unit of Rx (all slopes). The remainder of the property has weathered granodiorite parent material in the lower part, but ancient beach sand deposits in the upper part. The Cagwin soil, as well as Gefo and Elmira soils, do not have ancient beach sands in the upper part and weathered bedrock in the lower part. Situated in the center and north part of the parcel, these unnamed soils exhibit little soil development (lacks Bw horizons). They also have greater than 40-inch depths to grus, which results in somewhat excessive drained soil (HSG-A). Since the unnamed soils do not match the Cagwin series described in the 1974 soil survey for this location, the land capability classes for the XXX soils were determined from Page 20, Table 4 of Land-Capability Classification of the Lake Tahoe Basin, California-Nevada (Bailey, 1974). See staff report and TRPA contractor profile description for additional discussion.
Slope Determination	For Cagwin soil in the south and east parts, the slopes range from 9 to 15%. For the deeper unnamed soils, the slopes range from 15 to 30% in the center part, and 30 to 47% in the lower (northwest) part. The mapping unit for Rock outcrop and Rubble land is inclusive of all slopes. See land capability map based upon Sept. 2020 Arnett & Associates topographic survey.
TRPA Conclusion(s)	Class 1C (Rx, HSG-D); Class 2 (unnamed soil XXX, HSG-A for 30 to 50% slopes); Class 4 (CaD for 5 to 15% slopes, HSG-C); and Class 4 (XXX, HSG-A for 16 to 30% slopes).
Applicable Area	Entire site (see map, Attachment C, Oct., 2022).

[1] TRPA currently relies upon the Soil Survey of Tahoe Basin, California-Nevada (Rogers and Soil Conservation Service, 1974), which the Bailey Land Capability system is predicated upon. The 2006 soil survey update has not yet been formally adopted by TRPA for use with land capability matters.

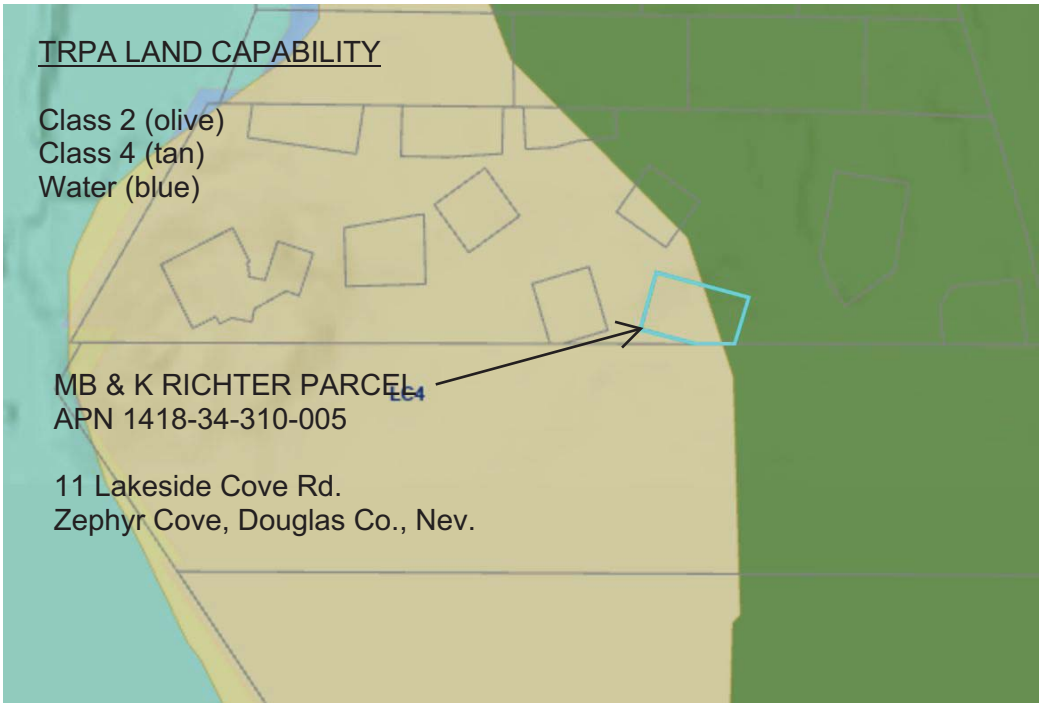
Attachment A

Vicinity map and TRPA land capability map

VICINITY MAP (no scale)



TRPA LAND CAPABILITY MAP



Attachment B

Site photographs (August 26, September 2, and October 6, 2022)

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11 LAKESIDE COVE ROAD, LAKERIDGE, DOUGLAS COUNTY, NEV. SITE PHOTOS (1418-34-310-005)

Photo 1 – View west toward north side of APN 1418-34-310-005. This 3,925 sq. ft. parcel is vegetated with Jeffrey pine, incense cedar and scattered saplings. The understory is mostly bitterbrush, greenleaf manzanita and grasses/forbs and herbaceous forbs/grasses. This vicinity is Class 4 land (CaD and XXX).

Photo 2 – View southeast toward soil test pit TP-1. This vicinity has naturally stacked boulders with interstitial spaces filled with ancient beach deposits. The underlying grus (highly weathered granodiorite) is 36 inches deep at this location. The slope is 30 to 40% for this unnamed soil (XXX, Class 2).

Photo 4 – View west toward test pit TP-2 located in extreme northwest corner. This location has deep soils with grus encountered at 51 inches. The slope in this vicinity is 25% (foreground) and 30 to 47% immediate above (left and upper edge of photograph). This corner qualifies as Class 4 (unnamed soil, XXX).

Photo 4 – View southeast from below northwest parcel corner. TP-2 is located in lower left corner of photo (just right of narrow wood stake). A rock outcrop (Rx) occupies the southwest corner of the property. The rock outcrop is Class 1C, while the steep hillside above TP-2 is Class 2.

Photo 5 – View northeast toward naturally stacked boulders (when ancient lake levels were higher) north of residence (now demolished). The lower left corner of photo has slopes 30 to 40%, while center of photo has 16 to 30% slopes. As documented by TP-3 (near excavator), this vicinity has sufficiently deep soils to qualify as Class 4. The boulders in photo are not attached to bedrock as observed at TP-1, TP-2 and TP-3.

Photo 6 – View west by southwest of south edge of property and rock outcrop in southwest corner. This vicinity is vegetated with Jeffrey pine, incense cedar, white fir saplings, plus scattered grasses and forbs. The deck at far right was removed on October 06 to examine soil in this vicinity.

Photo 7 – View north at rock outcrop in southwest property corner. Unlike wave-washed boulders, rock outcrops in this vicinity typically have more vertical or tilted alignment and narrow seams separating slabs or blocks of rock. TP-5 was later excavated just right of the small incense cedar saplings.

Photo 8 – View south toward TP-5 after partial demolition of residence and removal of deck. The south portion of the property has 9% slopes that become steeper than 30% in the northwest portion of the parcel. This location has 21 inches of topsoil atop 7 inches of subsoil. It is underlain by grus at 28 inches. A hand auger was able to drill into the grus layer, stopping at 52 inches. This soil is consistent with the Cagwin series (CaD) described in the 1974 soil survey, which qualifies as Class 4 for slopes 5 to 15%.

Attachment C

June 27, 2022 TRPA Land Capability Verification and October 2022 Land Capability

Challenge recommendation map

SLOPE KEY

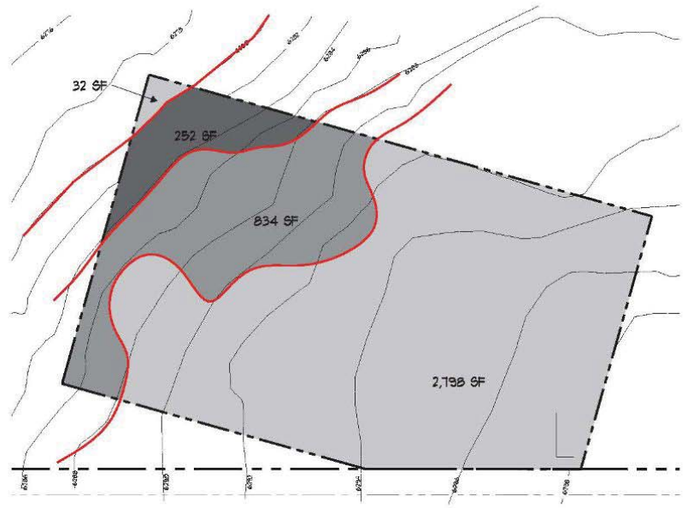
- slope > 30° — CLASS 1A
- 25° < slope <= 30° — CLASS 1A
- 15° < slope <= 25° — CLASS 2
- 10° < slope <= 15° — CLASS 4
- slope <= 10° — CLASS 4

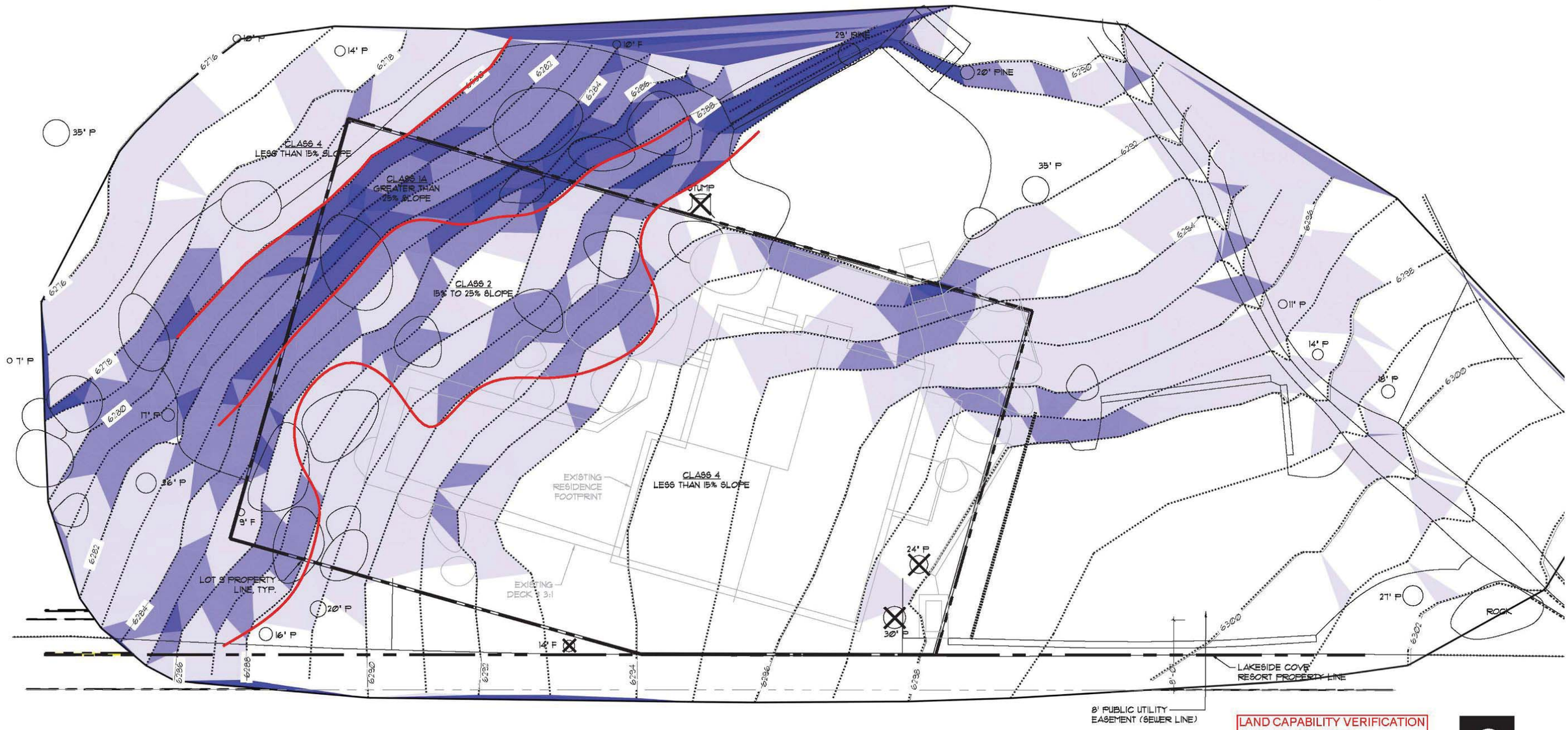
COVERAGE CALCULATIONS

AREA OF LOT: 3,925 SF. / 0.09 ACRES
LAND CAPABILITY: CLASS 1A/2/4

	CLASS 1A	CLASS 2	CLASS 4
AREA OF LOT	252 SF	834 SF	2,830 SF
ALLOWABLE COVERAGE	3 SF / 1%	8 SF / 1%	2,830* SF

* 100% ALLOWABLE COVERAGE IN NON-SENSITIVE LAND PER THE APPROVED TRPA FILE #820593 FINAL MAP DATED DEC. 18TH, 1992 OF LAKESIDE COVE RESORT - A, LOT #3





APN: 1418-34-310-005

11 LAKESIDE COVE REVISED LAND CLASSIFICATION

SCALE: 1/8" = 1'-0"

TAHOE REGIONAL PLANNING AGENCY **DETERMINATION**

BY Julie Roll DATE 06/27/2022

Executive Director/Designee
Tahoe Regional Planning Agency

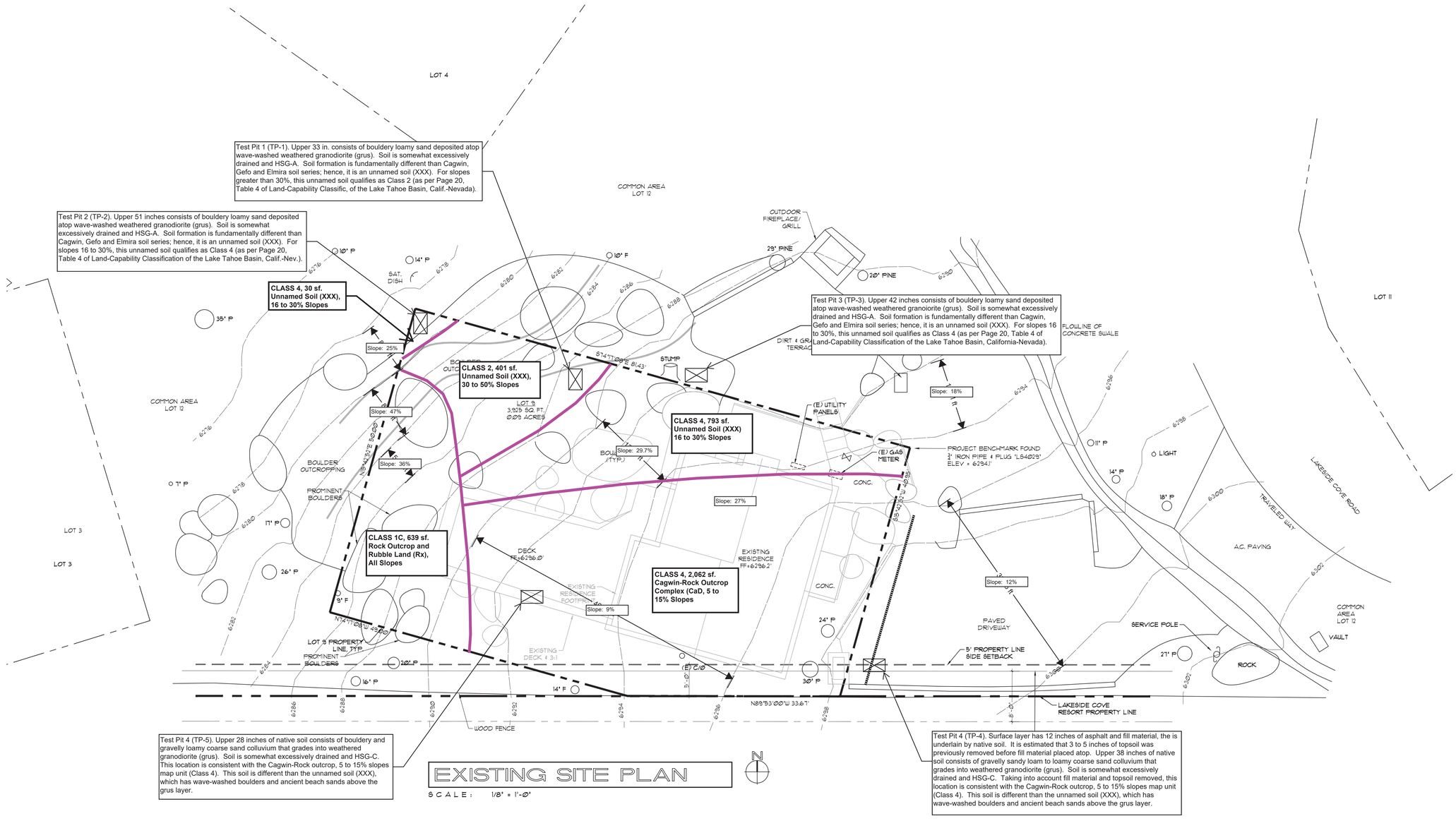
LAND CAPABILITY VERIFICATION
FILE LCAP2022-0513

Julie Roll

Digitally signed by Julie Roll
DN: cn=Julie Roll, o=TRPA, ou, email=jroll@trpa.org, c=US
Date: 2022.06.27 09:45:20 -07'00'

GILANFARR architecture

AGENDA ITEM NO. V.D



Test Pit 1 (TP-1). Upper 33 in. consists of bouldery loamy sand deposited atop wave-washed weathered granodiorite (grus). Soil is somewhat excessively drained and HSG-A. Soil formation is fundamentally different than Cagwin, Gefo and Elmira soil series; hence, it is an unnamed soil (XXX). For slopes greater than 30%, this unnamed soil qualifies as Class 2 (as per Page 20, Table 4 of Land-Capability Classific, of the Lake Tahoe Basin, Calif.-Nevada).

Test Pit 2 (TP-2). Upper 51 inches consists of bouldery loamy sand deposited atop wave-washed weathered granodiorite (grus). Soil is somewhat excessively drained and HSG-A. Soil formation is fundamentally different than Cagwin, Gefo and Elmira soil series; hence, it is an unnamed soil (XXX). For slopes 16 to 30%, this unnamed soil qualifies as Class 4 (as per Page 20, Table 4 of Land-Capability Classification of the Lake Tahoe Basin, Calif.-Nev.).

Test Pit 3 (TP-3). Upper 42 inches consists of bouldery loamy sand deposited atop wave-washed weathered granoiorite (grus). Soil is somewhat excessively drained and HSG-A. Soil formation is fundamentally different than Cagwin, Gefo and Elmira soil series; hence, it is an unnamed soil (XXX). For slopes 16 to 30%, this unnamed soil qualifies as Class 4 (as per Page 20, Table 4 of Land-Capability Classification of the Lake Tahoe Basin, California-Nevada).

Test Pit 4 (TP-5). Upper 28 inches of native soil consists of bouldery and gravelly loamy coarse sand colluvium that grades into weathered granodiorite (grus). Soil is somewhat excessively drained and HSG-C. This location is consistent with the Cagwin-Rock outcrop, 5 to 15% slopes map unit (Class 4). This soil is different than the unnamed soil (XXX), which has wave-washed boulders and ancient beach sands above the grus layer.

Test Pit 4 (TP-4). Surface layer has 12 inches of asphalt and fill material, the is underlain by native soil. It is estimated that 3 to 5 inches of topsoil was previously removed before fill material placed atop. Upper 38 inches of native soil consists of gravelly sandy loam to loamy coarse sand colluvium that grades into weathered granodiorite (grus). Soil is somewhat excessively drained and HSG-C. Taking into account fill material and topsoil removed, this location is consistent with the Cagwin-Rock outcrop, 5 to 15% slopes map unit (Class 4). This soil is different than the unnamed soil (XXX), which has wave-washed boulders and ancient beach sands above the grus layer.

EXISTING SITE PLAN

SCALE: 1/8" = 1'-Ø"

TRPA Land Capability Challenge for
LCAP2022-0614; APN 1418-34-310-005
11 Lakeside Cove Road, Zephyr Cove
(Lakeridge Area), Douglas County, Nev.

Field Investigation: Aug. 26, Sept. 02 & Oct. 05, 2022
Data Analysis: October 12 2022 (revised)
Conducted By: P.Scoles (Soil Scientist)

NOTE: Land capability delineations revised on Sept. 14 and Oct. 06, 2022 using surveyor's map of ground elevation points and field observations, respectively.

COVERAGE CALCULATIONS

AREA OF LOT	3,925 SF. / Ø.Ø9 ACRES
LAND CAPABILITY	CLASS 4 (XXX)
SOIL TYPE	C-1 GRANITIC FOOTHILLS
ALLOWABLE COVERAGE	3,925 SF.*

* 1ØØ% ALLOWABLE COVERAGE IN NON-SENSITIVE LAND PER THE APPROVED TRPA FILE #ØØ9Ø3 FINAL MAP DATED DEC. 18TH, 1992 OF LAKESIDE COVE RESORT - A, LOT #3

EXISTING COVERAGE

RESIDENCE*	789* SF
PAVED DRIVEWAY	16 SF
DECK*	386* SF
CONCRETE PATIOS & STEPS	227 SF
DIRT & GRAVEL TERRACE	14 SF
TOTAL	1,432 SF

SITE, COVERAGE, AND TOPOGRAPHICAL DATA BASED ON PARTIAL SITE ASSESSMENT BY KEN ARNETT PLS ON 2Ø2Ø-Ø9-Ø8 JOB # ØØ-Ø8-11 FILE LCAP2Ø2Ø-Ø386.

*CALCULATED WITH 3:1 REDUCTION PER TRPA

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TITLE: EXISTING SITE PLAN

CUSTOM RESIDENCE FOR:
M B RICHTER
11 LAKESIDE COVE RD, GLENBROOK, NV 89413
LOT 3, LAKESIDE COVE DOUGLAS, NEVADA
APN: 1418-34-310-005

REVISIONS

FILE: 11 LAKESIDE COVE

DATE: Ø7-Ø8-22

SCALE: 1/8" = 1'-Ø"

DRAWN: QW

SHEET: C1.E

OF 8 SHEETS

AGENDA ITEM NO. V.D

Attachment D

TRPA land capability contractor soil profile description (5 test pits)

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11 Lakeside Cove Road (MB & K Richter Trustee Parcel; APN: 1418-34-310-005); Lakeridge, Douglas County, Nev. – Test Pit 1 (TP-1)

Photo A – View of soil profile showing bottom depth of 36 inches. Fine root penetration into grus layer at 33 in.

Photo B – View southeast at Test Pit 1 (undisturbed), located 20 feet northwest of former residence. This area has many surface boulders (floaters not attached to bedrock). This vicinity has 30 to 40% slopes. No indication of seasonal water table.

Layer	Depth (In.)	Color (moist)	Soil Properties / Features
A1	0 to 3.5	Black (10YR 2/1)	Bouldery LOAMY SAND, weak, fine granular structure, <5% gravels; loose, non-plastic, non-sticky, many fine roots; many fine interstitial pores, abrupt bndy..
A2	3.5 to 16	Very dark brown (7.5YR 2.5/2)	Very cobbly-stony LOAMY SAND, moderate medium granular structure, <5% gravels, 40% cobbles and stones; loose, non-plastic, non-sticky, no redox features, many fine and med. roots, few coarse roots; many fine interstitial pores, abrupt boundary.
C1	16 to 25	Very dark brown (7.5YR 2.5/2	Very cobbly-stony LOAMY SAND, weak moderate subangular blocky structure, 10% gravels, 65% cobbles and stones; friable, non-plastic, non-sticky, no redox features, common fine roots, many medium roots, few coarse roots; many fine and medium interstitial pores, no clay films, clear boundary.
C2	25 to 33	Very dark brown (7.5YR 2.5/2)	gravelly LOAMY SAND, single grain structure, 30% gravels, 10% cobbles and stones; friable, non-plastic, non-sticky, no redox features, few fine and medium roots, few coarse roots; many medium interstitial pores, clear boundary,
2Cr	33 to 36	2.5Y 7/1 and 2.5Y 2.5/1	COARSE SAND, grus (high decomposed bedrock), >80% parent material that slakes to coarse sand, hard, non-plastic, non-sticky, no redox features; few fine roots; many coarse interstitial pores.

Soil does not match 1974 soil survey (Cagwin-Rock outcrop complex, 15 to 30% slopes, CaE). Soil formation is also unlike Gefo (GeD) and Elmira (EbE) soil series. This unnamed soil was formed in ancient times when lake levels were higher and washed away the fines between boulders, giving an appearance of stacked boulders. As lake levels receded, sand was deposited atop exposed bedrock and between cobbles, stones and boulders. In accordance with the Land-Capability Classification of the Lake Tahoe Basin (Bailey, 1974), this unnamed soil (designated XXX) with slopes 30 to 50% qualifies as Class 2.

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11 Lakeside Cove Road (MB & K Richter Trustee Parcel; APN: 1418-34-310-005); Lakeridge, Douglas County, Nev. – Test Pit 2 (TP-2)

Photo C – View of soil profile showing bottom depth of 60 inches. Fine root penetration into grus at 51 in. No indication of seasonal water table.

Photo D – View southeast at Test Pit 2, located 6 feet southeast of the northwest corner (undisturbed). This area has many surface boulders (floaters not attached to bedrock). This vicinity has a 25% slope, while immediately upslope areas have 30 to 47% slopes. Soil is ancient beach deposit over residuum. Profile is HSG-A.

Layer	Depth (In.)	Color (moist)	Soil Properties / Features
A1	0 to 5.5	Black (7.5YR 2/1)	Bouldery LOAMY SAND, moderate, medium granular structure, <5% gravels; loose, non-plastic, non-sticky, no redox features, many fine roots; many fine interstitial pores, abrupt boundary.
A2	5.5 to 14	Dark brown (10YR 3/3)	Extremely bouldery LOAMY SAND, weak, medium granular structure, 5% gravels, 80% boulders; loose, non-plastic, non-sticky, no redox features, many fine roots and common medium roots; many fine interstitial pores, clear boundary.
C1	14 to 30	Dark brown (10YR 3/3)	Very bouldery LOAMY SAND, weak small granular structure, 10% gravels, 5% cobbles and stones, 65% boulders; friable, non-plastic, non-sticky, many fine roots, common med. roots, few coarse roots; many fine & med. interstitial pores, no clay films, clear bndy.
C2	30 to 51	Dark olive brown (2.5Y 3/3)	Very gravelly-bouldery LOAMY SAND, single grain structure, 30% gravels, 50% cobbles, stones and boulders; friable, non-plastic, non-sticky, no redox features, many fine roots, common medium roots, few coarse roots; many medium interstitial pores, clear bndy,
2Cr	51 to 60	2.5Y 7/1 and 2.5Y 2.5/1	COARSE SAND, grus (high decomposed bedrock), >80% parent material that slakes to coarse sand, 10% cobbles; hard, non-plastic, non-sticky, no redox features; few fine and medium roots; many coarse interstitial pores.

Soil does not match 1974 soil survey (Cagwin-Rock outcrop complex, 15 to 30% slopes, CaE). Soil formation is also unlike Gefo (GeD) and Elmira (EbE) soil series. This unnamed soil was formed in ancient times when lake levels were higher and washed away the fines between boulders, giving an appearance of stacked boulders. As lake levels receded, sand was deposited atop exposed bedrock and between cobbles, stones and boulders. In accordance with the Land-Capability Classification of the Lake Tahoe Basin (Bailey, 1974), this unnamed soil (designated XXX) with slopes 16 to 30% qualifies as Class 4.

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11 Lakeside Cove Road (MB & K Richter Trustee Parcel; APN: 1418-34-310-005); Lakeridge, Douglas County, Nev. – Test Pit 3 (TP-3)

Photo E – View of soil profile showing bottom depth of 42 inches. Fine root penetration into grus at 42 in.

Photo F – View southwest at Test Pit 3, located 8 feet north of former residence northwest corner (undisturbed). Photo shows soil between and under large boulders (hence not bedrock). This vicinity has a 20% slope and it is the upper limit of the ancient beach deposit atop the weathered granodiorite. No indication of seasonal water table. Profile is HSG-A.

Layer	Depth (In.)	Color (moist)	Soil Properties / Features
Oi	0 to 4	N/A	Partially decomposed pine needles, leaves and twigs. Common, fine and few medium roots.
A1	4 to 13.5	Black (10YR 2/1)	Extremely bouldery LOAMY SAND, moderate, medium granular structure, <5% gravels, 70% boulders; loose, non-plastic, non-sticky, no redox features, many fine and medium roots, few coarse roots; many fine interstitial pores, abrupt boundary.
A2	13.5 to 21	Very dark brown (7.5YR 2.5/2)	Extremely bouldery LOAMY SAND, weak, small granular structure, 5% gravels, 70% boulders; loose, non-plastic, non-sticky, no redox features, common fine and medium roots; many fine interstitial pores, clear boundary.
C	21 to 30	Very dark brown (7.5Y 2.5/3)	Gravelly-cobbly LOAMY SAND, weak small subangular blocky structure, 5% gravels, 20% cobbles and stones, 65% boulders; friable, non-plastic, non-sticky, no redox features, common fine and med. roots, common coarse roots; many med. interstitial pores, no clay films, clear boundary.
2C	30 to 42	Dark brown 10YR 3/3	Gravelly-cobbly LOAMY SAND, single grain structure, 10% gravels, 10% cobbles and stones; friable, non-plastic, non-sticky, no redox features, many fine roots, common medium roots, few coarse roots; many medium and coarse interstitial pores, abrupt boundary,
2Cr	>42	Wh. & black 10YR 6/2 and 2/1	COARSE SAND, grus (high decomposed bedrock), >80% parent material that slakes to coarse sand, 5% gravels; hard, non-plastic, non-sticky, no redox features; few fine roots; many coarse interstitial pores.

Soil does not match 1974 soil survey (Cagwin-Rock outcrop complex, 15 to 30% slopes, CaE). Soil formation is also unlike Gefo (GeD) and Elmira (EbE) soil series -- soil conditions are ancient beach deposit atop decomposed granodiorite. In accordance with Land-Capability Classification of the Lake Tahoe Basin,, this unnamed soil (XXX) with slopes 16 to 30% qualifies as Class 4.

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11 Lakeside Cove Road (MB & K Richter Trustee Parcel; APN: 1418-34-310-005); Lakeridge, Douglas County, Nev. – Test Pit 4 (TP-4)

Photo G – View of soil profile showing bottom depth of 56 in. Upper 12 in. is fill material. Grus at 38 in. (below fill layer).

Photo H – View southwest at Test Pit 4, located 10 feet east of former residence southeast corner (partially disturbed). Asphalt removed for test pit. At 12 in. depth, soil is native condition; however, 3 to 5 inches of topsoil might have been formerly removed. This vicinity has a 10% slope. No indication of seasonal water table. Profile is HSG-C.

Layer	Depth (In.)	Color (moist)	Soil Properties / Features
^AC	0 to 12	Dark grayish brown (10YR 3/2)	Gravelly SANDY LOAM FILL, massive structure (artificially compacted), 20% gravels; firm, non-plastic, non-sticky, no redox features, few fine and medium roots; common fine interstitial pores, abrupt boundary.
Ab	12 to 19	Very dark brown (10YR 2/2)	SANDY LOAM, weak, small granular structure, <5% gravels, 5% cobbles and stones; friable, non-plastic, non-sticky, no redox features, common fine roots, few medium and coarse roots; many fine interstitial pores, abrupt boundary.
AC	19 to 32	Dark grayish brown (10YR 3/2)	Gravelly-Cobbly LOAMY COARSE SAND, weak, small granular structure, 10% gravels, 10% cobbles and stones; friable, non-plastic, non-sticky, no redox features, common fine, medium and coarse roots; many medium interstitial pores, no clay films, abrupt boundary.
C	32 to 50	Very dark gray. brown (2.5Y 3/2)	Gravelly LOAMY COARSE SAND, single grain structure, 20% gravels; slightly hard, non-plastic, non-sticky, no redox features, few fine and medium roots; many medium interstitial pores, clear boundary,
Cr	50 to >56	Wh. & black 10YR 5/2 and 2/2	COARSE SAND, grus (high decomposed bedrock), >80% parent material that slakes to coarse sand, 5% gravels; hard, non-plastic, non-sticky, no redox features; few fine roots; many coarse interstitial pores.

The surface layer is fill material composed of asphalt, sand and gravels. Upper part of buried native soil is colluvium and lower part is decomposed granodiorite. This soil correlates to Cagwin-Rock outcrop complex, 5 to 15% slopes (CaD) described in 1974 soil survey. Soil is somewhat excessively drained (HSG-C). As per Land-Capability Classification of the Lake Tahoe Basin, CaD is Class 4.

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11 Lakeside Cove Road (MB & K Richter Trustee Parcel; APN: 1418-34-310-005); Lakeridge, Douglas County, Nev. – Test Pit 5 (TP-5)

Photo I – View of soil profile showing bottom depth of 43 in. The grus layer begins at 28 in. and extends to 52 in.

Photo J – View east at Test Pit 5, located 12 feet north of south property line and about 30 feet east of west property line. The topsoil is 21 inches deep, then parent material further below. This vicinity has a 9% slope. No indication of seasonal water table. Profile is HSG-C.

Layer	Depth (In.)	Color (moist)	Soil Properties / Features
A1	0 to 9	Dark grayish brown (10YR 3/2)	Bouldery LOAMY COARSE SAND, weak, small granular structure, 5% gravels and few surface boulders; soft, very friable, non-plastic, non-sticky, no redox features, many fine and medium roots, and few coarse roots; many fine interstitial pores, clear, smooth boundary.
A2	9 to 21	Dark grayish brown (10YR 3/2)	Gravelly LOAMY COARSE SAND, weak, small granular structure, 15% gravels and few stones and boulders; soft, very friable, non-plastic, non-sticky, no redox features, many fine, medium and coarse roots; many fine and medium interstitial pores, clear, smooth boundary.
C	21 to 28	Olive br., pale brown, black (2.5Y 4/3, 40%; 2.5Y 7/3, 20%; 2.5Y 2.5/1, 20%)	Very gravelly LOAMY COARSE SAND, single grain structure, 40% gravels and few stones and boulders; soft, friable, non-plastic, non-sticky, no redox features, common fine and medium roots, and few coarse roots; many medium interstitial pores, clear, wavy boundary.
Cr	28 to >43	Wh. & black 2.5Y 5/3 and 7/3	Very gravelly COARSE SAND, grus (high decomposed bedrock), >80% parent material that slakes to coarse sand, 40% gravels; hard, non-plastic, non-sticky, no redox features; few fine roots; many coarse interstitial pores.

Soil is consistent with 1974 soil survey for Cagwin-Rock outcrop complex, 5 to 15% slopes, CaD. Specifically, the lower part has a grus layer (highly decomposed granodiorite) occurring between 20 and 40 inches. Soil is somewhat excessively drained, but the grus layer has minimal root penetration when compared to overlying layer; hence soil is consistent with HSG-C (as applied in1974 soil survey). As per Land-Capability Classification of the Lake Tahoe Basin, CaD is Class 4.