

LINDBERG GEOLOGIC CONSULTING

David N. Lindberg, CEG
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December 29, 2022

Project No: 0496.00

Ms. Marion Collamer
Lost Creek Farms, LLC
600 F Street, Ste #3, Box 208
Arcata, California 95521

Subject: Hydrologic Isolation from Surface Waters, Well WCR2018-009210
1050 Perimeter (Rim) Road, Honeydew, APN: 211-183-008

Apps 10821



To Whom It May Concern:

As requested, Lindberg Geologic Consulting has assessed an existing permitted well on the above-referenced parcel to estimate its potential for hydrologic connectivity with any nearby surface waters, wetlands, or other wells, and if pumping well WCR2018-009210 might significantly affect such waters. The nearest watercourses in the vicinity of this well are Westlund Creek, a perennial stream, and an ephemeral tributary of Bull Creek (Figure 1).

A California-Certified Engineering Geologist visited this well site on December 23, 2022, to observe the subject well and local site conditions. Based on our observations, research, and our professional experience, it is our professional opinion the subject well has a low likelihood of being hydrologically connected to nearby surface waters in any manner that could significantly affect adjacent surface waters, springs, wetlands, or other wells in the vicinity. We define the "vicinity" as the area within a 1,000-foot radius of the subject well (Figure 1), an area that encompasses approximately 72 acres. The proposed use of this well is to irrigate cannabis. We are not aware of the volume of water to be extracted or what the pumping schedule might be but expect that that information is provided elsewhere in the application.

Based on Humboldt County's WebGIS and the Assessor's Parcel Map (Figure 2), parcel 211-183-008 (Figure 2) encompasses at least 56 acres. Our GPS located the subject well at latitude 40.25594° north, and longitude 123.99751° west ($\pm 9'$). This well is in Section 30, T2S, R2E, and is 240 feet deep. The wellhead is at an elevation of approximately 2,225 feet (Figure 1) and the elevation of the bottom of the well is therefore 1,985 feet.

The Humboldt County WebGIS shows three watercourses within one mile of the well site. To the northwest more than 630 feet is a north-flowing ephemeral tributary of Bull Creek. More than 1,550 feet to the southwest is Westlund Creek, a perennial watercourse flowing southwest. To the west more than 2,900 feet is a south-flowing perennial tributary of Westlund Creek. Based on interpolation from the Weott topographic quadrangle map (1969), (Figure 1), and the Humboldt County WebGIS, the elevation of the subject well is 2,225 feet. Elevation of the ephemeral tributary of Bull Creek, the nearest watercourse, is 2,200 feet. The bottom elevation of well

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WCR2018-009210 is 1,985 feet, making the ephemeral tributary of Bull Creek 215 feet higher than the total depth of the well.

The location of well WCR2018-009210 is shown approximately on the attached figures, and was drilled by Fisch Drilling, of Hydesville, in May of 2012, under Humboldt County well permit #18/19-0293. Fisch Drilling is a licensed well-drilling contractor (C-57 #683865) in California. Fisch Drilling submitted their attached well completion report (DWR 188) on October 17, 2018. The driller estimated a yield of 15 gpm on May 7, 2012, based on a 4-hour air lift pump test. Total drawdown during the pump test was reported to be 160 feet.

Total depth of this well is 240 feet. The borehole diameter is 10-inches from the surface to the total depth at 240-feet. From the surface to 100 feet, a 5.563-inch diameter blank (unslotted) PVC casing was installed. From 100- to 240-feet, 5.563-inch diameter PVC well screen with 0.032 milled slots was installed. Per County requirements, a bentonite sanitary surface seal was installed from the surface to 20 feet. Below the bentonite seal, the driller reported filling the annulus with 3/8-inch pea gravel. The well is cased and sealed through any potential shallow subsurface aquifers in the uppermost 20 feet as required by county regulation. Depth to first water was reported at 80-feet. Depth to static water in the completed developed well was also 80 feet bgs when the driller conducted the pump test on May 7, 2012.

There is only one spring mapped on the USGS topographic maps within one mile of the subject well. That spring is more than 4,100 feet to the west-southwest, in the northeast quarter of Section 36, at an elevation of approximately 1,920 feet. The next closest spring is more than one mile (>6,000 feet) to the west in the southeast quarter of Section 25, at an elevation of approximately 2,360 feet. Based on the USGS topographic maps, there are no other springs mapped within a mile of the subject well. The next nearest springs appear to be more than 9,000 feet east, in the northwest quarter of Section 33.

This parcel is located within California's Coast Range Geomorphic Province, in the Coastal Belt of the Franciscan Complex (McLaughlin et al., 2000), a seismically active region in which large earthquakes are expected to occur during the economic life span (70 years) of any developments on the subject property. Geologic mapping by McLaughlin shows that the site is underlain by the Yager Terrane (y1) of the Coastal Belt of the Franciscan Complex, as shown in Figure 4.

According to the NRCS Web Soil Survey, the near-surface soils consist of gravelly loam to a depth of 25-inches, very paragravelly loam to 52-inches, and paragravelly sandy loam to 79-inches. Soils are interpreted to be uniformly distributed across that portion of the subject parcel underlain by the Yager Terrane of the Coastal Belt of the Franciscan Complex.

Materials described on the geologic log of the driller's well completion report (attached) include 2-feet of "top soil" followed by "weathered sand stone" from 2-feet to 68-feet. From 68-feet to 218-feet the driller logged "sandstone fractured grey". First water was encountered at 80 feet and

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stabilized at 80 feet. In the final 22-feet of the well bore, "shale dark grey" was logged (218- to 240-feet). In the subject well, the elevation of the first water-bearing aquifer unit is thus at an elevation of approximately 2,145 feet, based on our interpretation of the driller's report.

As mapped by McLaughlin et al., (2000), earth materials encountered in the borehole are likely Yager Terrane sandstone and argillite of the Coastal Belt Franciscan Complex; sheared, fractured, and folded metasedimentary rock materials have variable hydraulic conductivity, and can constitute significant aquifers. We interpret the "sandstone fractured grey" as described by the driller, to be sandstone of the Yager Terrane unit of the Coastal Belt Franciscan Complex. That section of lithologic profile apparently has favorable hydraulic conductivity, making it in our interpretation, the primary water bearing lithologic unit in the subject well.

A geologic cross section of the area after McLaughlin et al., (2000) shows the structural and stratigraphic relationships between the regional geologic units (Figure 5). The deformed Coastal Belt Yager Terrane is shown dipping east and bounded by thrust fault plane contacts. On-site, no attitude of the rock units could be observed because they are mantled with soil and colluvium and obscured by vegetation. We interpret the faults in the subsurface to be significant hydrogeologic boundaries of low permeability (due to grinding and shearing along the fault planes), effectively separating units of the Coastal Belt Franciscan Complex from each other hydrologically, and thereby limiting groundwater flow between the fault-bound units.

Based on observations, review of pertinent and available information, and our experience, it is our professional opinion that this well has a low potential of having any direct or significant connection to proximal surface waters. First water was reportedly encountered at 80 feet and stabilized to a static water level at 80 feet bgs. This well is sealed with bentonite through the upper 20 feet of any potential unconfined, near-surface aquifers with which it might communicate hydraulically through the borehole.

When considered with the stratigraphy, and the underlying geologic structure, plus the distances (horizontal and vertically) from the nearest surface waters, and the depth of the producing zone of this well (80 to 240 feet), as well as the position of the well relative to the nearest surface waters in the vicinity, we conclude that the depth of the surface seal, is sufficient to preclude the potential for hydraulic connectivity with perennial surface waters, of which there are none closer than 630 feet in the ephemeral tributary of Bull Creek at an elevation of 2,200 feet, located north of the subject well, on 211-183-009. Thus, the water source from which this well draws appears to be a confined subsurface aquifer not demonstrably or significantly connected to any surface waters or unconfined, near-surface aquifers. This well appears, in our professional opinion, likely to be hydraulically isolated from nearby surface waters, springs, wetlands and wells.

According to the driller, the estimated yield of this well was 15 gallons per minute (gpm) on May 7, 2012. A drawdown of 160-feet was reported after Fisch Drilling's four-hour air-lift pump test. At 15 gpm, this well would potentially produce 21,600 gallons per day. As noted in the well

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completion report, this capacity may not be representative of this well's long-term yield. Additional drawdown and recovery testing would be necessary to estimate a sustainable long-term yield of the site well.

This subject well does not appear to be hydrologically connected to, or capable of influencing surface water flows in the nearest watercourse, the ephemeral tributary of Bull Creek. Nor does this well appear likely to be hydrologically connected to any other local watercourses, springs, or wetlands. Given the distances involved, and the elevation differences between the subject well, and the nearest surface waters and springs, the potential for significant hydrologic connectivity between surface waters and groundwater in the Yager Terrane aquifer appears unlikely. As discussed, on the USGS topographic quadrangle maps, there are no springs mapped within 1,000 feet of the subject well.

We have researched the California Department of Water Resources' database to find permitted wells within 1,000 feet of the subject well. Based on the information available at the present time, there are no wells that meet that criterion. The closest well, WCR2009-007349, is on parcel 211-184-006, more than 1,000 feet to the southwest. Well WCR2090-7349 is in Section 31, it is 200 deep, at an elevation of approximately 2,100 feet. Well WCR2009-007349 is on a separate parcel, but one that is under the same ownership and control as the subject well.

As shallow groundwater mimics topography and moves in response to the force of gravity, in general any near surface unconfined aquifer will flow down slope in a direction subparallel to topography. The ground surface slopes primarily to the southwest; thus, the near surface unconfined aquifer flows toward Westlund Creek. At the time of our site visit, there was a pump installed in the subject well.

In our professional opinion, it appears that the aquifer tapped by the subject well is recharged by water infiltrating through the soil, and the argillite and sandstone bedrock from upslope source areas both proximal and distal to the well site. Ephemeral watercourses and flow channels in the vicinity also contribute recharge when they flow during runoff generating storm events.

The United States Department of Agriculture's (USDA), Natural Resources Conservation Service's (NRCS), online Web Soil Survey, shows the subject well within soils of the Crazycoyote-Sproulish-Canoecreek complex, on slopes of 30 to 50 percent, (#5505, Figure 7), which the NRCS describes as a well-drained soil. The Web Soil Survey's unit description is attached to this report. Mean annual precipitation is listed by the NRCS as 60 to 100 inches per year. Capacity of the most limiting soil layer to transmit water (Ksat) is described as moderately high to high (0.20 to 2.00 in/hr) with a depth to the water table of greater than 80 inches.

If during the wet season, only ten percent of the "low end" precipitation estimation of 60 inches is absorbed by the soils/bedrock and does not flow across the ground surface and into local watercourses (or be lost to evapotranspiration), then approximately 28 acre-feet, or more than 9.1

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million gallons of water per year (MGPY), may be expected to recharge the local aquifer below this 56-acre subject property. Given the same amount of precipitation (60") and the same 10 percent partitioned to recharge, then within the 1,000-foot radius vicinity of the subject well, recharge can be estimated. Recharge within the 72 acres enclosed by a circle having a 1,000-foot radius, would be 36 acre-feet, and more than 11.7 MGPY. Our estimates are conservative; United States Geological Survey (USGS) researchers estimate that in northwest California, approximately 33 percent of precipitation goes to recharge (Flint, et al., 2103).


On March 28, 2022, Governor Newsom issued an executive order (N-7-22) relating to the ongoing drought in California. In executive order N-7-22, the governor outlined measures the state will undertake to avoid and ameliorate the negative impacts of the current drought. Among these measures, it was ordered that counties, cities, and other public agencies have been prohibited from approving permits for new groundwater wells (or alteration of existing wells) in basins *"subject to the Sustainable Groundwater Management Act and classified as medium- or high-priority without first obtaining written verification from a Groundwater Sustainability Agency managing the basin or area of the basin where the well is proposed"*. This well at 1050 Perimeter (Rim) Road, is not within a basin subject to the Act, and there has been no Groundwater Sustainability Agency yet established with authority over the area where this permitted well is sited.

The Governor's order also states that counties, cities, and other public agencies are prohibited from issuing permits for new groundwater wells (or altering existing wells) *"without first determining that extraction of groundwater from the proposed well is (1) not likely to interfere with the production and functioning of existing nearby wells, and (2) not likely to cause subsidence that would adversely impact or damage nearby infrastructure"*. The conditions in the Order are not applicable to *"wells that provide less than two acre-feet per year of groundwater for individual domestic users, or that will exclusively provide groundwater to public water supply systems."*

Based on our observations, research, and experience, it is our professional opinion that the well WCR2018-009210, located at 1050 Perimeter (Rim) Road, Honeydew, on APN 211-183-008, has a low likelihood of being hydrologically connected to nearby surface waters, springs, wetlands, or wells in any manner that might have a significant negative impact or effect on such proximal surface waters, springs, or wells.

Please contact us if you have questions or concerns regarding our findings and conclusions.

Sincerely,


David N. Lindberg, CEG
Lindberg Geologic Consulting



DNL:sl1

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Attachments:

- Figure 1: Topographic Well Location Map
- Figure 2: Humboldt County Assessor's Parcel Map
- Figure 3: Satellite Image of Well location
- Figure 4: Geologic Map
- Figure 4a: Geologic Map Explanation
- Figure 5: Geologic Cross Section
- Figure 6: Hydrogeologic Cross Section
- Figure 7: USDA-NRCS Soils Map

State of California Well Completion Report:

WCR2018-009210, APN: 211-183-008 (Subject Well)

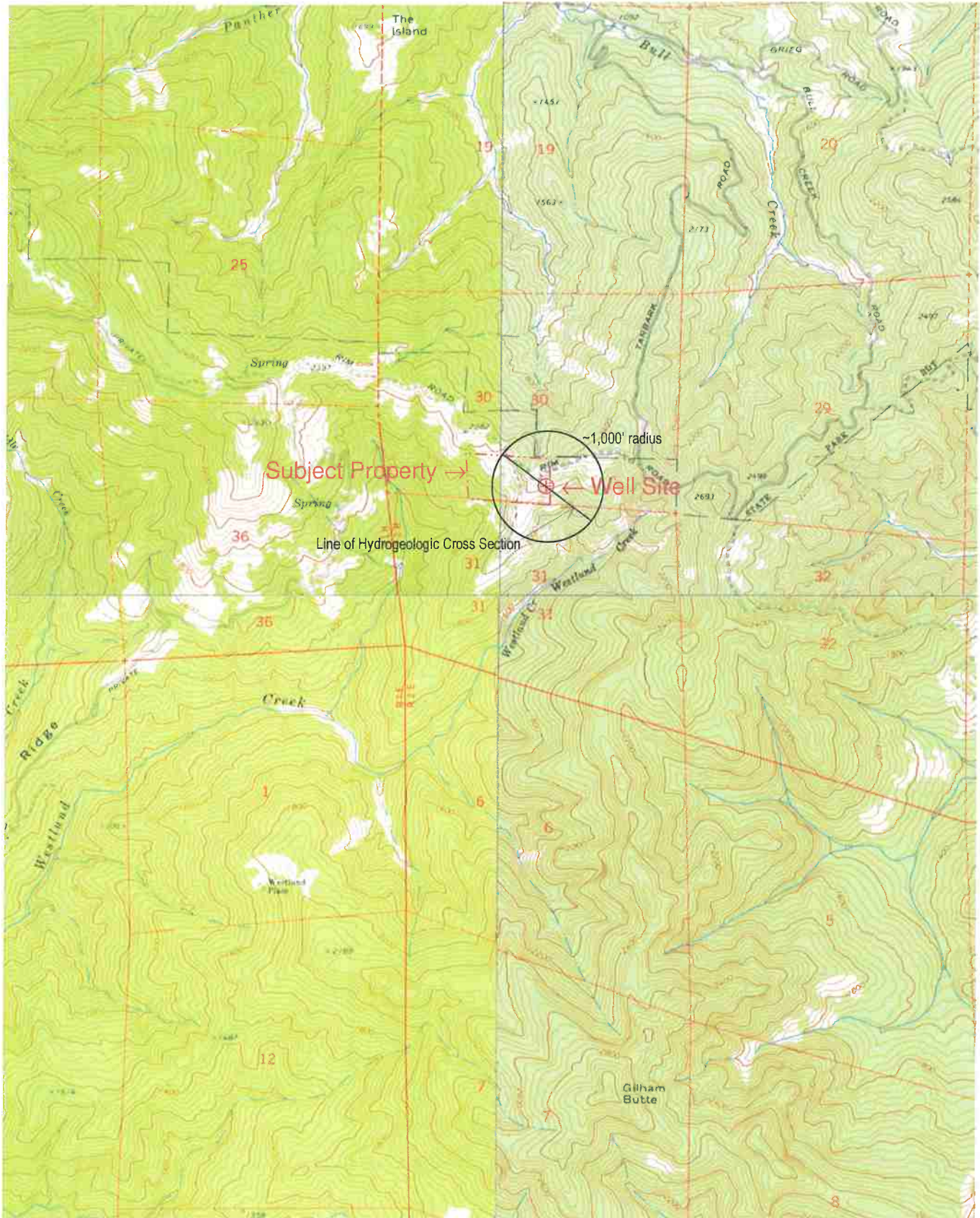
Web Soil Survey, NRCS Map Unit Description:

Crazycoyote-Sproulish-Canaoecreek complex, #5505, 30 to 50 percent slopes.

Reference:

Flint, et al.: Fine-scale hydrologic modeling for regional landscape applications: the California Basin Characterization Model development and performance. Ecological Process, 2013, 2:25. (doi:10.1186/2192-1709-2-25)

Lindberg Geologic Consulting	Engineering-Geologic Well Connectivity Assessment Report	Figure 1
Post Office Box 306	1050 Perimeter (Rim) Road, Panther Gap, Honeydew, APN: 211-183-008	December 29, 2022
Cutten, CA 95534	Well WCR2018-009210, Ms. Marion Collamer, Client	Project 0496.00
(707) 442-6000	Topographic Well Location Map (all locations approximate)	1" ≈ 2,500'



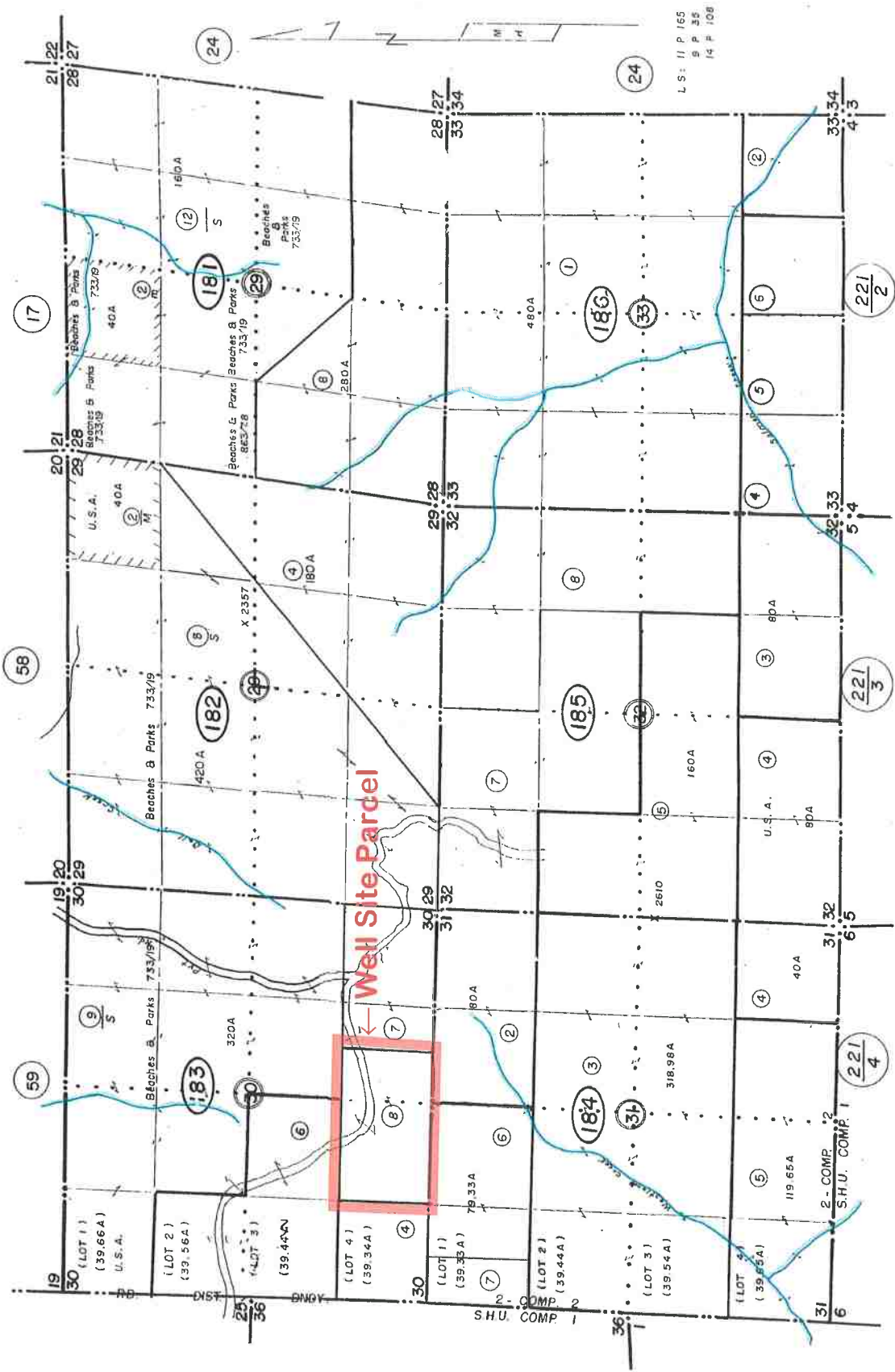
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Engineering-Geologic Well Connectivity Assessment Report
 1050 Perimeter (Rim) Road, Panther Gap, Honeydew, APN: 211-183-008
 Well WCR2018-009210, Ms. Marion Collamer, Client
 Humboldt County Assessor's Parcel Map (locations approximate)

Figure 2
 December 29, 2022
 Project 0496.00
 1" ≈ 2,100'

SECS 28, 29, 30, 31, 32 & 33, 2S 2E

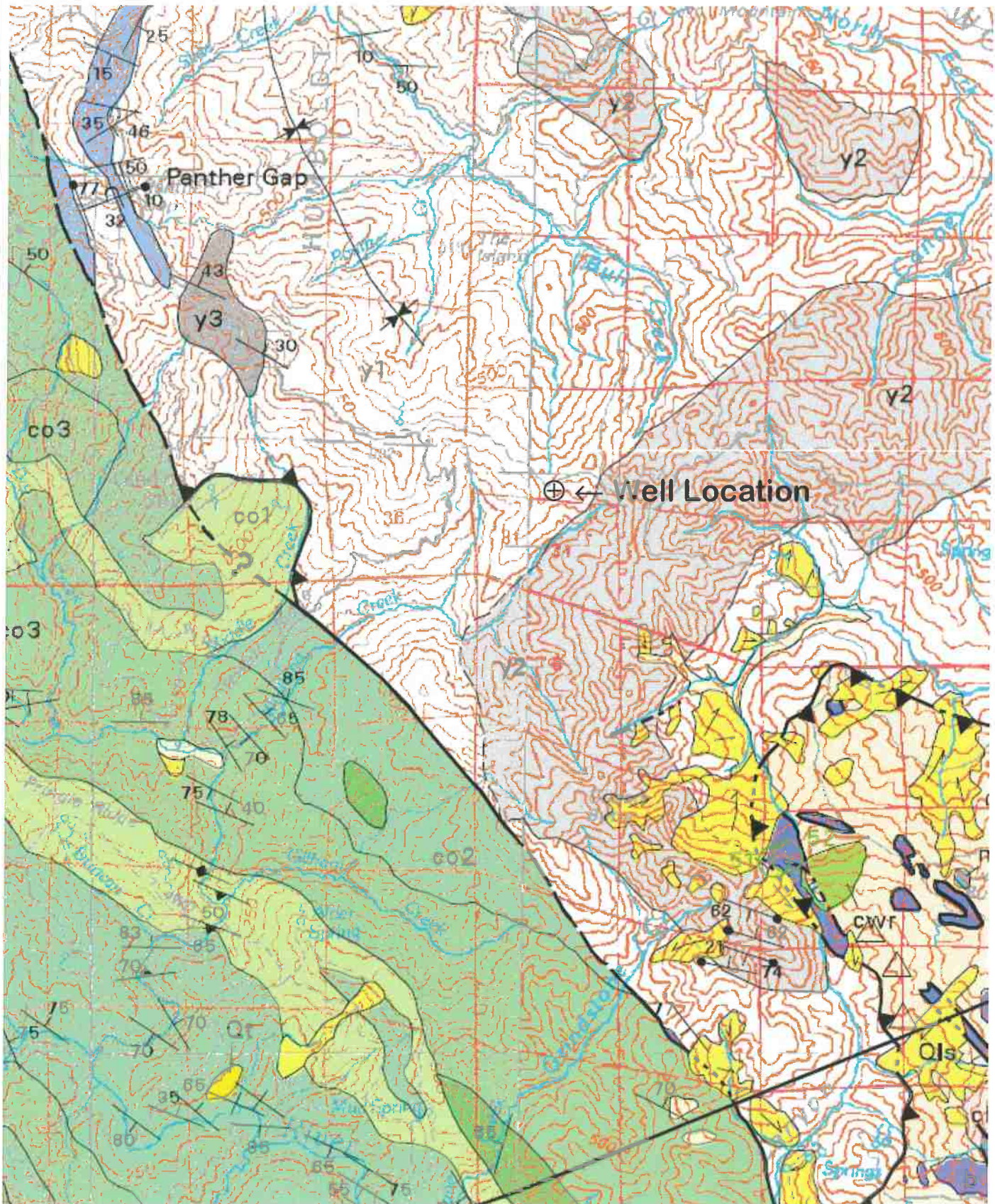
211-18



Lindberg Geologic Consulting	Engineering-Geologic Well Connectivity Assessment Report	Figure 3
Post Office Box 306	1050 Perimeter (Rim) Road, Panther Gap, Honeydew, APN: 211-183-008	December 29, 2022
Cutten, CA 95534	Well WCR2018-009210, Ms. Marion Collamer, Client	Project 0496.00
(707) 442-6000	Satellite Image of Well Location (locations approximate)	1" ≈ 360'



Lindberg Geologic Consulting	Engineering-Geologic Well Connectivity Assessment Report	Figure 4
Post Office Box 306	1050 Perimeter (Rim) Road, Panther Gap, Honeydew, APN: 211-183-008	December 29, 2022
Cutten, CA 95534	Well WCR2018-009210, Ms. Marion Collamer, Client	Project 0496.00
(707) 442-6000	Geologic Map (locations approximate)	1" ≈ 5,000'



DESCRIPTION OF MAP UNITS

QUATERNARY AND TERTIARY OVERLAP DEPOSITS

- Qal** Alluvial deposits (Holocene and late Pleistocene?)
- Qma** Undeformed marine shoreline and aolian deposits (Holocene and late Pleistocene)
- Qt** Undifferentiated nonmarine terrace deposits (Holocene and Pleistocene)
- Qls** Landslide deposits (Holocene and Pleistocene)
- QTog** Older alluvium (Pleistocene and/or Pliocene)
- Qtw** Marine and nonmarine overlap deposits (late Pleistocene to middle Miocene)
- Ti** Volcanic rocks of Fickie Hill (Oligocene)

COAST RANGES PROVINCE
FRANCISCAN COMPLEX

-- Coastal Belt --

Coastal terranes (Pliocene to Late Cretaceous)

Sedimentary, igneous, and metamorphic rocks of the Coastal terrane (Pliocene to Late Cretaceous):

- co1** Melange
 - co2** Melange
 - co3** Broken sandstone and argillite
 - co4** Intact sandstone and argillite
 - cob** Basaltic Rocks (Late Cretaceous)
 - cois** Limestone (Late Cretaceous)
 - cm** Undivided blueschist (Jurassic?)
- King Range terrane (Miocene to Late Cretaceous)
- Krp** Igneous and sedimentary rocks of Point Delgada (Late Cretaceous)
 - m** Undivided blueschist blocks (Jurassic?)
- Sandstone and argillite of King Peak (middle Miocene to Paleocene?):
- krk1** Melange and (or) folded argillite
 - krk2** Highly folded broken formation
 - krk3** Highly folded, largely unbroken rocks
 - kt** Limestone
 - krc** Chert
 - krb** Basalt

False Cape terrane (Miocene? to Oligocene?)

- fc** Sedimentary rocks of the False Cape terrane (Miocene? to Oligocene?)

Yager terrane (Eocene to Paleocene?)

Sedimentary rocks of the Yager terrane (Eocene to Paleocene?):

- y1** Sheared and highly folded mudstone
- y2** Highly folded broken mudstone, sandstone, and conglomeratic sandstone
- y3** Highly folded, little-broken sandstone, conglomerate, and mudstone
- Ycgl** Conglomerate

-- Central belt --

Melange of the Central belt (early Tertiary to Late Cretaceous):

Unnamed Metasandstone and meta-argillite (Late Cretaceous to Late Jurassic):

- cm1** Melange
- cm2** Melange
- cb1** Broken formation
- cb2** Broken formation
- cvr** White Rock metasandstone of Jayko and others (1989) (Paleogene and/or Late Cretaceous)
- chr** Haman Ridge graywacke of Jayko and others (1989) (Cretaceous?)
- cfs** Fort Seward metasandstone (age unknown)
- cls** Limestone (Late to Early Cretaceous)

- cc** Chert (Late Cretaceous to Early Jurassic)
- bs** Basaltic rocks (Cretaceous and Jurassic)
- m** Undivided blueschist blocks (Jurassic?)
- gs** Greenstone
- c** Metachert
- yb** Metasandstone of Yolla Bolly terrane, undivided
- b** Melange block, lithology unknown

-- Eastern Belt --

Pickett Peak terrane (Early Cretaceous or older)

Metasedimentary and meta-volcanic rocks of the Pickett Peak terrane (Early Cretaceous or older):

- ppsm** South Fork Mountain Schist
- mtb** Chinguapiin Metabasalt Member (Irwin and others, 1974)
- ppv** Valentine Springs Formation
- mv** Metabasalt and minor metachert

Yolla Bolly terrane (Early Cretaceous to Middle Jurassic?)

Metasedimentary and meta-volcanic rocks of the Yolla Bolly terrane (Early Cretaceous to Middle Jurassic?):

- ybt** Tallaferra Metamorphic Complex of Suppe and Armstrong (1972) (Early Cretaceous to Middle Jurassic?)
- ybc** Chicago Rock melange of Blake and Jayko (1983) (Early Cretaceous to Middle Jurassic)
- gs** Greenstone
- c** Metachert
- ybh** Metagraywacke of Hammenhorn Ridge (Late Jurassic to Middle Jurassic)
- c** Metachert
- gs** Greenstone
- sp** Serpentinite
- ybd** Devils Hole Ridge broken formation of Blake and Jayko (1983) (Early Cretaceous to Middle Jurassic)
- c** Radiolarian chert
- ybl** Little Indian Valley argillite of McLaughlin and Ohlin (1984) (Early Cretaceous to Late Jurassic)

Yolla Bolly terrane

- yb** Rocks of the Yolla Bolly terrane, undivided

GREAT VALLEY SEQUENCE AND COAST RANGE OPHIOLITE

Elder Creek(?) terrane

- ecms** Mudstone (Early Cretaceous)
- Coast Range ophiolite (Middle and Late Jurassic):
- ecg** Layered gabbro
- ecsp** Serpentinite melange

Del Puerto(?) terrane

- Rocks of the Del Puerto(?) terrane:
- dpms** Mudstone (Late Jurassic)
- Coast Range ophiolite (Middle and Late Jurassic):
- dpt** Tuffaceous chert (Late Jurassic)
- dpb** Basaltic flows and keratophyric tuff (Jurassic?)
- dptd** Diabase (Jurassic?)
- dpsp** Serpentinite melange (Jurassic?)
- sp** Undivided Serpentinized peridotite (Jurassic?)

KLAMATH MOUNTAINS PROVINCE

- Undivided Great Valley Sequence:
- Ks** Sedimentary rocks (Lower Cretaceous)

GREAT VALLEY SEQUENCE OVERLAP ASSEMBLAGE

Hayfork terrane

Eastern Hayfork subterrane:

- eh** Melange and broken formation (early? Middle Jurassic)
- ehls** Limestone
- ehsp** Serpentinite

Western Hayfork subterrane:

- whu** Hayfork Bolly Meta-andesite of Irwin (1985), undivided (Middle Jurassic)
- whwg** Wildwood (Chanchelulla Peak of Wright and Faltan, 1988) pluton (Middle Jurassic)
- whwp** Clinopyroxenite
- wtji** Diorite and gabbro plutons (Middle? Jurassic)

Rattlesnake Creek terrane

- rcm** Melange (Jurassic and older)
- rcis** Limestone
- rcc** Radiolarian chert
- rcis** Volcanic Rocks (Jurassic or Triassic)
- rcic** Intrusive complex (Early Jurassic or Late Triassic)
- rcp** Plutonic rocks (Early Jurassic or Late Triassic)
- rcum** Ultramafic rocks (age uncertain)
- rcpd** Blochy peridotite

Western Klamath terrane

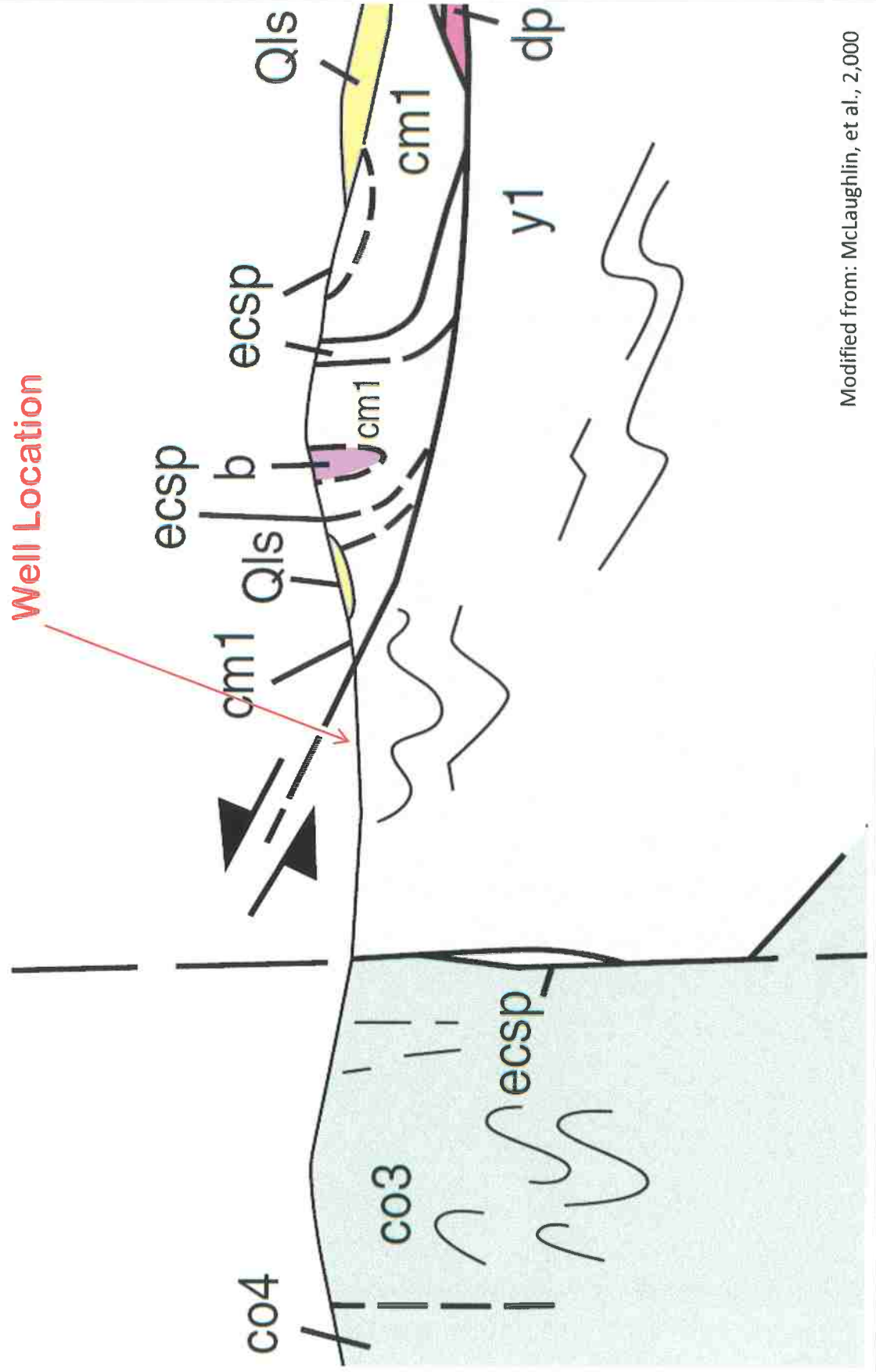
Smith River subterrane:

- srs** Galice? formation (Late Jurassic)
- srv** Pyroclastic andesite
- srqb** Glen Creek gabbro-ultramafic complex of Irwin and others (1974)
- srpd** Serpentinized peridotite

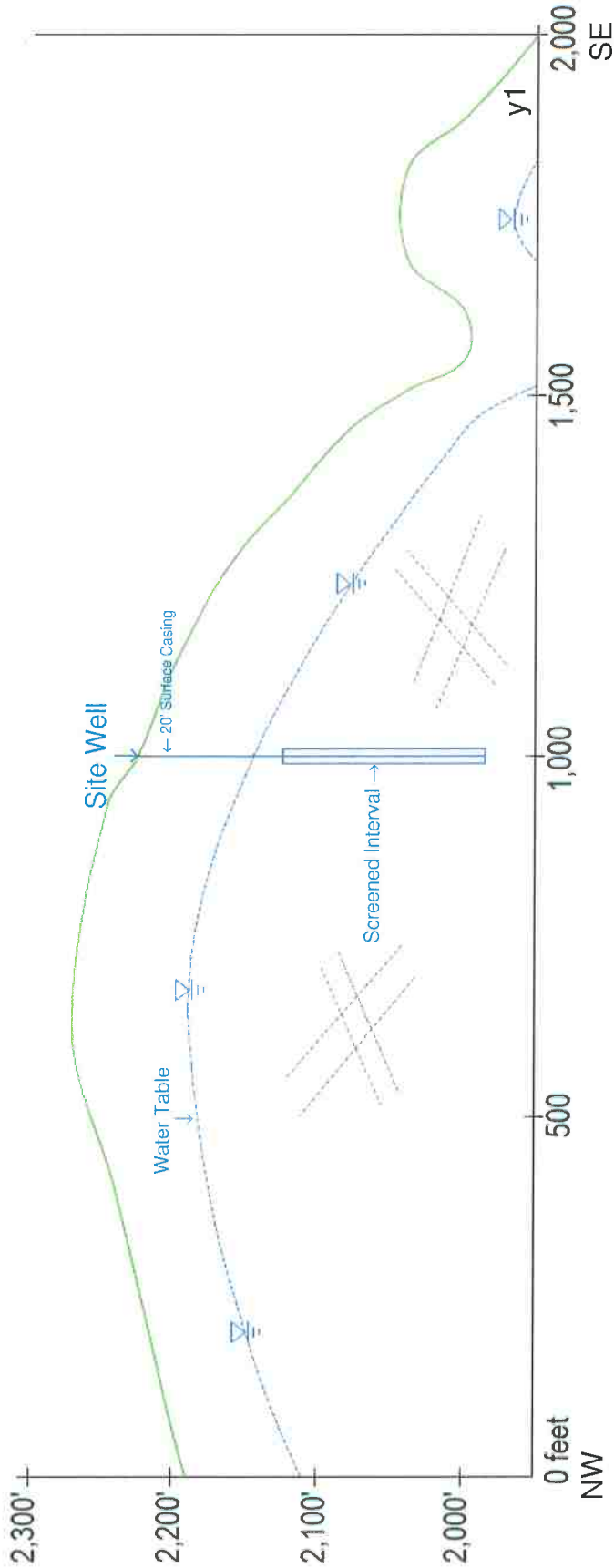
MAP SYMBOLS

- Contact
- Fault
- Thrust fault
- Trace of the San Andreas fault associated with 1906 earthquake rupture
- Strike and dip of bedding:
- 10° / Vertical
- Horizontal
- 10° / Overturned
- Approximate
- Joint
- 10° / Strike and dip of cleavage
- Shear foliation:
- 10° / Inclined
- Vertical
- Folds:
- Synclinal or synformal axis
- Anticlinal or antiformal axis
- Overturned syncline
- Landslide
- Melange Blocks:
- △ Serpentinite
- Chert
- ◇ Blueschist
- Greenstone
- ¹⁰ Fossil locality and number

Lindberg Geologic Consulting	Engineering-Geologic Well Connectivity Assessment Report	Figure 5
Post Office Box 306	1050 Perimeter (Rim) Road, Panther Gap, Honeydew, APN: 211-183-008	December 29, 2022
Cutten, CA 95534	Well WCR2018-009210, Ms. Marion Collamer, Client	Project 0496.00
(707) 442-6000	Geologic Cross Section (locations approximate)	Not to Scale

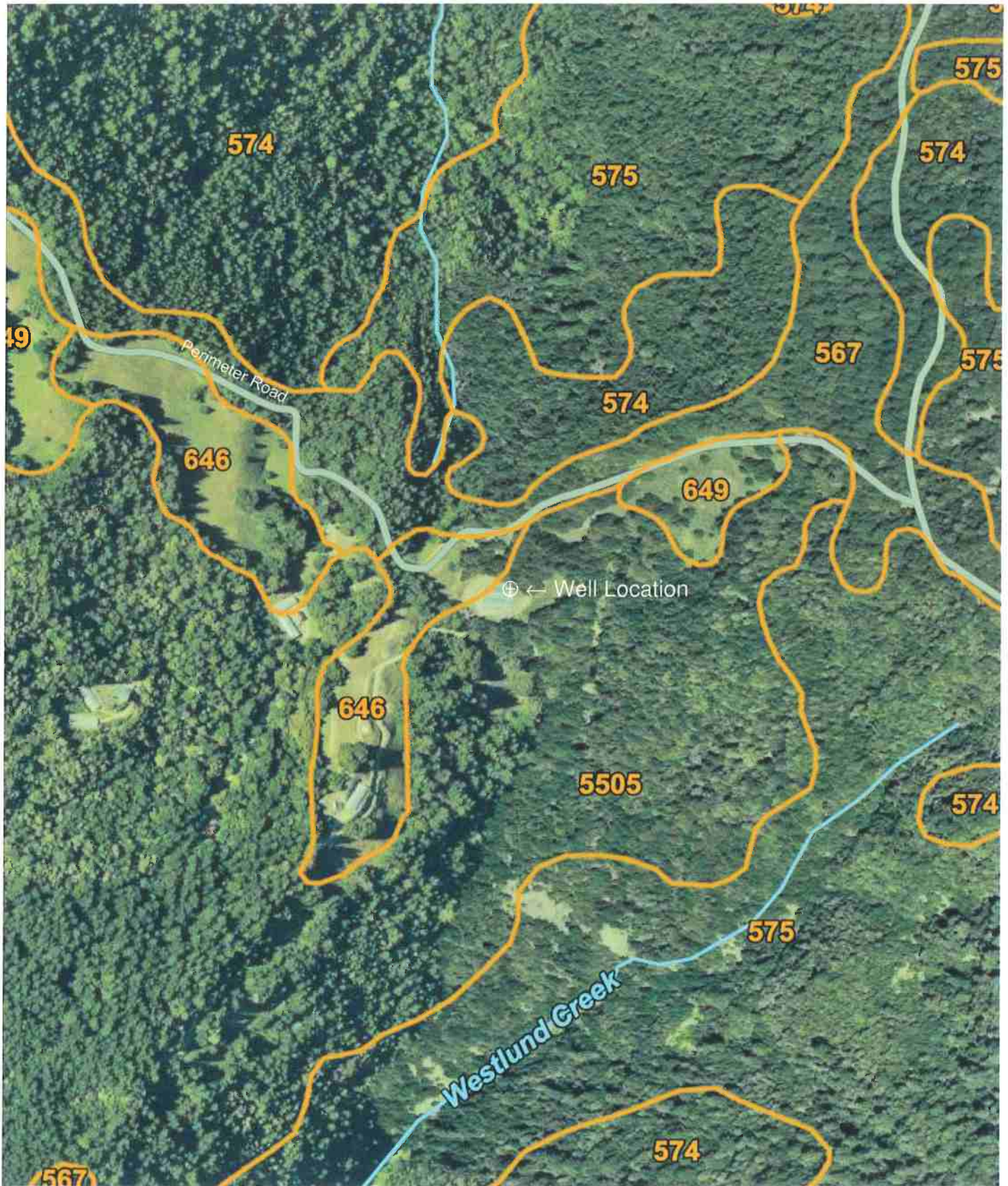


Modified from: McLaughlin, et al., 2,000



In this vertically exaggerated (~2x) cross section, the view is looking to the northeast toward the Bull Creek divide. Groundwater flow in this cross section is southwesterly, toward the viewer, or out of the page. Groundwater is presumed to flow from recharge areas in the higher ground to the northeast. This well is sited high on the ridge above Westlund Creek valley. Subgrade is composed of interbedded argillite and sandstone of the Yager Terrane (y1), a component of the Coastal Belt of the Franciscan Complex. Groundwater is envisioned to flow through fractured bedrock. Fractures are interpreted to be the primary permeability, providing preferential flow paths for the local groundwater. The driller noted that first water occurred 80 feet below the surface. Static water was also reported to be 80 feet below the surface. A bentonite sanitary surface seal was installed by the driller from the ground surface to the 20-foot depth. This well is cased to 100 feet below the existing ground surface, and screened from 100 to 240 feet, and draws groundwater from those depths. Bedrock mapping (Figure 4), is from McLaughlin, et al., (2000).

Lindberg Geologic Consulting	Engineering-Geologic Well Connectivity Assessment Report	Figure 7
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Cutten, CA 95534	Well WCR2018-009210, Ms. Marion Collamer, Client	Project 0496.00
(707) 442-6000	USDA-NRCS Soil Map (locations approximate)	Scale Not Determined



State of California
Well Completion Report
 Form DWR 188 Submitted 10/17/2018
 WCR2018-009210

Owner's Well Number _____ Date Work Began 05/03/2012 Date Work Ended 05/07/2012
 Local Permit Agency Humboldt County Department of Health & Human Services - Land Use Program
 Secondary Permit Agency _____ Permit Number 18/19-0293 Permit Date 10/16/2018

Well Owner (must remain confidential pursuant to Water Code 13752)	Planned Use and Activity
Name <u>Greg Ester</u>	Activity <u>New Well</u>
Mailing Address <u>600 F Street, Suite 3 #207</u>	Planned Use <u>Water Supply Irrigation - Agriculture</u>
City <u>Arcata</u> State <u>CA</u> Zip <u>95521</u>	

Well Location					
Address <u>0 Panther Gap & Rim RD</u>			APN <u>211-183-008</u>		
City <u>Honeydew</u>	Zip <u>95545</u>	County <u>Humboldt</u>	Township <u>02 S</u>		
Latitude _____ N	Longitude _____ W	Range <u>02 E</u>	Section <u>30</u>		
Deg. Min. Sec.	Deg. Min. Sec.	Baseline Meridian <u>Humboldt</u>			
Dec. Lat. <u>40.2558000</u>	Dec. Long. <u>-123.9977000</u>	Ground Surface Elevation _____			
Vertical Datum _____	Horizontal Datum <u>WGS84</u>	Elevation Accuracy _____			
Location Accuracy _____	Location Determination Method _____	Elevation Determination Method _____			

Borehole Information	
Orientation <u>Vertical</u>	Specify _____
Drilling Method <u>Direct Rotary</u>	Drilling Fluid <u>Air</u>
Total Depth of Boring <u>240</u>	Feet
Total Depth of Completed Well <u>240</u>	Feet

Water Level and Yield of Completed Well			
Depth to first water <u>80</u>	(Feet below surface)		
Depth to Static _____			
Water Level <u>80</u> (Feet)	Date Measured <u>05/07/2012</u>		
Estimated Yield* <u>15</u> (GPM)	Test Type <u>Air Lift</u>		
Test Length <u>4</u> (Hours)	Total Drawdown <u>160</u> (feet)		
*May not be representative of a well's long term yield.			

Geologic Log - Free Form		
Depth from Surface Feet to Feet		Description
0	2	top soil
2	68	weathered sand stone
68	218	sandstone fractured grey
218	240	shale dark grey

Humboldt County, South Part, California

5505—Crazycoyote-Sproulish-Canoe creek complex, 30 to 50 percent slopes

Map Unit Setting

National map unit symbol: 2mhhg
Elevation: 200 to 3,280 feet
Mean annual precipitation: 60 to 100 inches
Mean annual air temperature: 48 to 57 degrees F
Frost-free period: 240 to 300 days
Farmland classification: Not prime farmland

Map Unit Composition

Crazycoyote and similar soils: 35 percent
Sproulish and similar soils: 30 percent
Canoe creek and similar soils: 20 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Crazycoyote

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Concave, convex, linear
Across-slope shape: Linear
Parent material: Colluvium derived from sandstone and/or residuum weathered from sandstone

Typical profile

O_i - 0 to 2 inches: gravelly slightly decomposed plant material
A₁ - 2 to 5 inches: gravelly loam
A₂ - 5 to 15 inches: gravelly loam
B_{t1} - 15 to 25 inches: gravelly loam
B_{t2} - 25 to 35 inches: very paragravelly loam
BC_t - 35 to 52 inches: very paragravelly loam
C - 52 to 79 inches: paragravelly sandy loam

Properties and qualities

Slope: 30 to 50 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (K_{sat}): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water supply, 0 to 60 inches: Moderate (about 7.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6e

Hydrologic Soil Group: B

Ecological site: F004BJ102CA - Dry, steep mountain slopes

Hydric soil rating: No

Description of Sproulish

Setting

Landform: Mountain slopes

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Mountainflank

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Colluvium derived from mudstone and/or sandstone and/or residuum weathered from mudstone and/or sandstone

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material

A - 2 to 4 inches: loam

Bt1 - 4 to 24 inches: loam

Bt2 - 24 to 39 inches: gravelly clay loam

Bt3 - 39 to 55 inches: very gravelly clay loam

BcT - 55 to 79 inches: gravelly clay loam

Properties and qualities

Slope: 30 to 50 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Runoff class: High

Capacity of the most limiting layer to transmit water

(Ksat): Moderately high to high (0.20 to 2.00 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water supply, 0 to 60 inches: High (about 9.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6e

Hydrologic Soil Group: C

Ecological site: F004BJ102CA - Dry, steep mountain slopes

Hydric soil rating: No

Description of Canoeecreek

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Colluvium derived from mudstone and/or sandstone and/or residuum weathered from mudstone and/or sandstone

Typical profile

O_i - 0 to 2 inches: gravelly slightly decomposed plant material
A - 2 to 12 inches: very gravelly loam
B_w - 12 to 24 inches: very gravelly loam
C₁ - 24 to 35 inches: very gravelly loam
C₂ - 35 to 71 inches: extremely gravelly loam

Properties and qualities

Slope: 30 to 50 percent
Surface area covered with cobbles, stones or boulders: 1.0 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (K_{sat}): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: B
Ecological site: F004BJ102CA - Dry, steep mountain slopes
Hydric soil rating: No

Minor Components

Windynip

Percent of map unit: 7 percent
Landform: Mountain slopes
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Kingrange

Percent of map unit: 6 percent

Landform: Mountain slopes

Landform position (two-dimensional): Shoulder

Landform position (three-dimensional): Mountainflank

Down-slope shape: Convex

Across-slope shape: Convex

Hydric soil rating: No

Rock outcrop

Percent of map unit: 2 percent

Landform: Mountain slopes

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Center third of
mountainflank

Down-slope shape: Convex

Across-slope shape: Convex

Hydric soil rating: No

Data Source Information

Soil Survey Area: Humboldt County, South Part, California

Survey Area Data: Version 12, Sep 2, 2022