LINDBERG GEOLOGIC CONSULTING
David N. Lindberg, CEG
Post Office Box 306
Cutten California 95534
(707) 442-6000

June 30, 2022 Project No: 0455.00

Big River Farm, LLC
Attention: Lesley Doyle, Elevated Solutions, LLC
3900 Walnut Drive
Eureka, California 95503

Subject: Hydrologic Isolation of Existing Well from Surface Waters
Big River Farm, 9320 Wilder Ridge Road, Ettersburg, California
APN: 108-023-008, WCR2018-009856
APPS 11892

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 adjacent wetlands and or surface waters, and if pumping this well could affect surface waters in nearby water courses. Runoff in the vicinity of this well drains to ephemeral tributaries of Jewett Creek and thence to Bear Creek (Figure 1). The well location is shown approximately on the attached figures. A California-Certified Engineering Geologist visited this site on June 3, 2022, to observe the subject well and local site conditions. Based on our professional experience, our observations, and research, it is our opinion the subject well has a low likelihood of being hydrologically connected to nearby surface waters in any manner that could affect adjacent wetlands and or surface waters in the vicinity. We understand that the water from this well is to be used 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 the applicant can supply that information.

By the Humboldt County WebGIS website, parcel 108-023-008 (Figure 2) encompasses approximately 90 acres. Based on our on-site GPS measurements, the subject well is located approximately at latitude 40.15051° north, and longitude 124.05488° west (±9'). As reported by the driller, we confirmed this well is in Section 34, T3S, R1E, HB&M (Figures 1 and 2).

Based on the Humboldt County WebGIS mapping, this well is approximately 1,450 feet from the nearest mapped surface waters; ephemeral tributaries of Jewett Creek are located more than 1,400 feet to the northeast and southwest of the site well (Figure 1). Based on interpolation from the USGS Honeydew (1970), topographic quadrangle map (Figure 1), and the Humboldt County WebGIS, well elevation is approximately 1,840 feet above sea level. At the nearest point to this well, the elevation of the ephemeral Jewett Creek tributaries are 1,400 feet (SW) and 1,300 feet (NE) feet. The elevation of the bottom of the well is approximately 1,530 feet which is 130 feet to 230 feet higher than elevations of the ephemeral tributaries of Jewett Creek at their nearest points to this well, according to the Humboldt County WebGIS map.

No springs are mapped in the northwest quarter of Section 34 on the USGS Honeydew topographic quadrangle map (Figure 1). From the well, the nearest mapped spring appears to be at least 1.5 miles to the northwest, at an elevation of approximately 1,800 on parcel 107-136-005 (3400 Fox Springs Road). We observed no other springs mapped within one mile of the subject well.

This well was drilled by Watson Well Drilling Inc., of Eureka, California, in October 2018, under county permit #17/18-1912. Watson Well Drilling is a licensed well-drilling contractor (C-57 #1014048). Watson Well submitted the well completion report (DWR 188) electronically on November 1, 2018 (attached). Based on a five-hour air lift pump test, Watson estimated the yield of this well to be 100 gallons per minute on November 30, 2018. The drawdown which presumably occurred, was not reported. As noted on the driller's report, 100 gallons per minute may not be representative of this well's long-term yield. A sustainable long-term pumping rate for this well has not been determined.

Borehole diameter as reported by the driller is 13-inches from the surface to 20 feet, and approximately 8-inches from 20 feet to 310 feet. Total drilled depth is 310 feet. From grade to 20 feet, 8.625-inch low carbon steel casing pipe was installed. A bentonite surface sanitary seal was installed to seal the annulus of the conductor casing. From the ground surface (bgs) to 300, 5-inch blank (unslotted) PVC casing was installed. From 120 feet to 300 feet, PVC well screen with 0.032-inch milled was installed, which then alternated with 20-foot sections of blank casing. This pattern of alternating slotted screen and blank casing continued to the 300-foot total depth. Below the surface seal at 20 feet, the annulus was not back filled (no annular fill). Depth to first water was reported to be 70 feet below grade. Depth to static water in the completed and developed well was reported as 73 feet when the driller conducted the pump test on October 30, 2018.

On the geologic map (Figure 4), by McLaughlin et al., (2000), this area is underlain by sedimentary, igneous, and metamorphic rocks of the Coastal terrane of the Franciscan Complex. The Coastal terrane is assigned an age of Pliocene to Late Cretaceous. "Predominantly sandstone, argillite and minor polymict conglomerate, that forms highly sheared mélange and broken formation and is highly folded locally. Sandstone locally is thin-bedded to massive, rhythmically interbedded with argillite, arkosic, rich in felsitic intermediate volcanic detritus; and commonly it is veined with calcite, laumontite, and quartz. Interbedded penetratively sheared sandstone and thin-bedded argillite sequences in the Coastal terrane contains carbonate concretions with fossil planktic foraminifers, dinoflagellates, and spores and pollen, mostly indicative of a middle to late Eocene age (McLaughlin and others, 1994). At one locality south of the map area, low-latitude foraminifers of Late Cretaceous (Maastrichtian to Campanian) age occur in argillite interbedded with basaltic rocks in a mélange (McLaughlin and others, 1994). Age of penetrative deformation of Coastal terrane mélange is late Eocene and younger. Along the coast between False Cape and Cape Mendocino, and along north fork of the Mattole River near Petrolia, penetrative deformation is very young, due to rapid uplift of the subduction margin. Here, mélange blocks with Pliocene

bathyal foraminifers and bioclastic debris are incorporated into mélange (McLaughlin and others, 1994; Aalto and others, 1995). The Pliocene strata are assigned to Marine and nonmarine overlap deposits (QTw). Sandstone and argillite of the Coastal terrane are divided into 4 subunits based principally on topographic expression on aerial photographs and outcrop data:"

- Mélange (co1): "Dominantly of highly folded argillite and abundant clayey, penetratively sheared rock that exhibits rounded, lumpy, and irregular, poorly incised topography."
- Mélange (co2): "Subequal amounts of shattered sandstone and argillite with much clayey, penetratively sheared rock that exhibits generally irregular topography lacking well-incised sidehill drainages."
- Broken sandstone and argillite (co3): "Exhibits sharp-crested topography with a well-incised system of irregular sidehill drainage."
- Intact sandstone and argillite (co4): "Exhibits sharp crested topography with a regular, well-incised system of sidehill drainage."

Materials reported on the geologic log of the driller's well completion report (attached) include four feet of "Brown/Black Topsoil" over 12 feet of "Tan clay". From a depth of 16 to 35 feet, the driller logged "Brown clay". Brown clay was in turn underlain by 75 feet (35'to 110') of "Blue Shale w/clay". In the final 200 feet (110' to 310') the driller logged "Blue Grey Shale".

We interpret the tan clay and brown clay section of this profile from 4 feet to 35 feet to be an aquitard; a material of low permeability and transmissivity. Shaley materials below approximately 70 feet, are apparently the water-bearing aquifer materials in this well and have higher transmissivity and permeability. At the location of the site well, the elevation of the water-bearing aquifer unit is thus between approximately 1,770 feet and 1,530 feet.

Below the four feet of top-soil, the earth materials encountered in the boring are likely the co2 mapped by McLaughlin et al., (2000). In this well, shale appears to have a moderate to high hydraulic conductivity and constitute a significant aquifer. We interpret the underlying sequence of materials described by the driller (clay and shale), as lithologies within the Coastal Belt of the Franciscan Complex. Shaley rock materials may not typically be expected to have significant hydraulic conductivity, however, in our interpretation of this well, blue shale with clay and blue gray shale are the water bearing units at this location.

A geologic cross section of the area after McLaughlin et al. (2000) shows the structural and stratigraphic relationships between the local geologic units (Figure 5). The coastal belt mélange unit co2 is shown to be highly deformed by folding and faulting. To the southwest the coastal belt mélange lies in thrust fault contact with the king range terrane. On-site, no dip of the rock units could be observed in the mélange because it was mantled with soil and hillslope colluvium, and covered with vegetation. We interpret faults to be hydrologic boundaries of minimal permeability (due to grinding and shearing along the fault planes) which effectively separate portions of the coastal belt Franciscan mélange units from each other, and limit groundwater flow between these fault-bound units.

Based on our experience, observations, and review of pertinent and available information, it is our professional opinion that this well exhibits a low potential of having any direct connection to surface waters. First water was encountered at 70 feet. This well is sealed through the upper 20 feet of any potential unconfined, near-surface aquifers with which it might communicate hydraulically through the borehole because the bentonite-sealed surface casing isolates the topsoil, tan clay, and some of the brown clay materials from the deeper shaley aquifer materials. When considered with the stratigraphy and geologic structure, distances (horizontal and vertically) from the nearest surface waters, depth of the producing zone of this well (~73 - 300 feet), as well as this wells position relative to the nearest adjacent watercourses in the ephemeral tributaries of Jewett Creek, we conclude that the depth of the surface seal is sufficient to preclude the potential for hydraulic connectivity with surface waters. Thus, the water source from which this well draws appears to be a confined subsurface aquifer not connected significantly to any unconfined, near-surface aquifer(s). This well appears, in our professional opinion, likely to be hydraulically isolated from nearby wells, surface waters, springs or wetlands.

It appears, in our professional opinion, that the aquifer tapped by the subject well is likely recharged by water infiltrating from source areas proximal to and upslope of the site well. As noted, the "Water Level and Yield of Completed Well" section of the Well Completion Report estimated the yield of this well at 100 gallons per minute (gpm) on October 30, 2018, after Watson Well Drilling's five-hour air-lift pump test. At a rate of 100 gallons per minute, this well could potentially produce 144,000 gallons per day. As noted on the well completion report, this capacity may not be representative of this well's long-term yield. Additional pump testing would be necessary to estimate the long-term sustainable yield of this site well.

As discussed, in our opinion the subject well does not appear to be hydrologically connected to, or capable of influencing surface water flows in the nearby ephemeral tributaries of Jewett Creek. Nor does this well appear to be hydrologically connected to the local springs or ephemeral wetlands (if any). Given the horizontal distances involved, and the elevation differences between the water-producing zone in the subject well, and the surface waters of the nearest watercourses, the potential for hydrologic connectivity between surface waters and groundwater in this deep bedrock aquifer appears low. Further, given the apparently limiting condition of 31 feet of low-transmissivity clayey materials above the water-bearing shale units, the water-producing zone is considered hydrologically isolated from, and not demonstrably connected to any other aquifer(s) in the surrounding, coastal belt Franciscan deposits.

On the Honeydew USGS topographic quadrangle map the nearest mapped springs are shown to the northwest at an elevation of approximately 1,860 feet, and no closer than approximately 1.5 miles (Figure 1) on parcel 108-024-002. These springs are the nearest mapped springs to the subject well and are at an elevation higher than the well (1,840 feet). There do not appear to be any other mapped or unmapped natural springs or wetlands of significance within 1,000 feet of this subject well.

We have researched the California Department of Water Resources (DWR) database to determine if there were other wells within 1,000 feet of the subject well on our client's property. Based on our review of the DWR database, there do not appear to be any wells with 1,000 feet of the subject site well. Nearest to the site well is well WCR 2017-003775, at 9225 Wilder Ridge Road, on assessor's parcel number 108-023-011. According to the Division of Water Resources database, well 003775 is a domestic well 210 feet in depth, with static water at 115 feet and an estimated yield of 10 gallons per minute. Well 003775 is approximately 1,370 feet northwest of the subject site well. The next nearest well is WCR2018-005151, at 9325 Wilder Ridge Road, on assessor's parcel 108-023-010. According to the Division of Water Resources database, well 005151 is an irrigation well 140 feet in depth, with static water at 38 feet and an estimated yield of 15 gallons per minute. Well 005151 is approximately 2,800 feet northwest of the subject site well.

The USDA Natural Resources Conservation Service's, online Web Soil Survey, shows the subject well to be located within the Wirefence-Windynip-Devilshole soil complex (#646, Figure 6), which is characterized as well-drained. The Web Soil Survey Unit description of the Wirefence-Windynip-Devilshole soil complex is attached to this report. Mean annual precipitation in the area is listed as 60 to 100 inches per year. Capacity of the most limiting layer to transmit water (Ksat) is described as moderately high to high (0.20 to 2.00 in/hr). If ten percent of 60 inches of precipitation is absorbed by the soils and does not flow across the surface and drain to local watercourses, then approximately 45 acre-feet, or 14.7 million gallons, of water per year may be expected to recharge the local aquifer below this 90-acre subject property.

On March 28, 2022, our governor issued an executive order (N-7-22) relating to the ongoing drought California is experiencing. In his executive order, the governor outlined several 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*". Your well at 9320 Wilder Ridge Road is not within a basin subject to the Act, and there has been no Groundwater Sustainability Agency established with authority over the area where your permitted well is sited.

Further, the Order states that counties, cities, and other public agencies have been prohibited from issuing permits for new groundwater wells (or alteration of 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*". Note that this Order, and that cited in the preceding paragraph, 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 professional experience, it is our opinion the well at 9320 Wilder Ridge Road has a low likelihood of being hydrologically connected to nearby surface waters or wells in a manner that might affect adjacent wetlands, wells, and or surface waters in the vicinity.

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

Sincerely,

David N. Lindberg

David N. Lindberg, CEG
Lindberg Geologic Consulting

DNL:sll
Attachments:

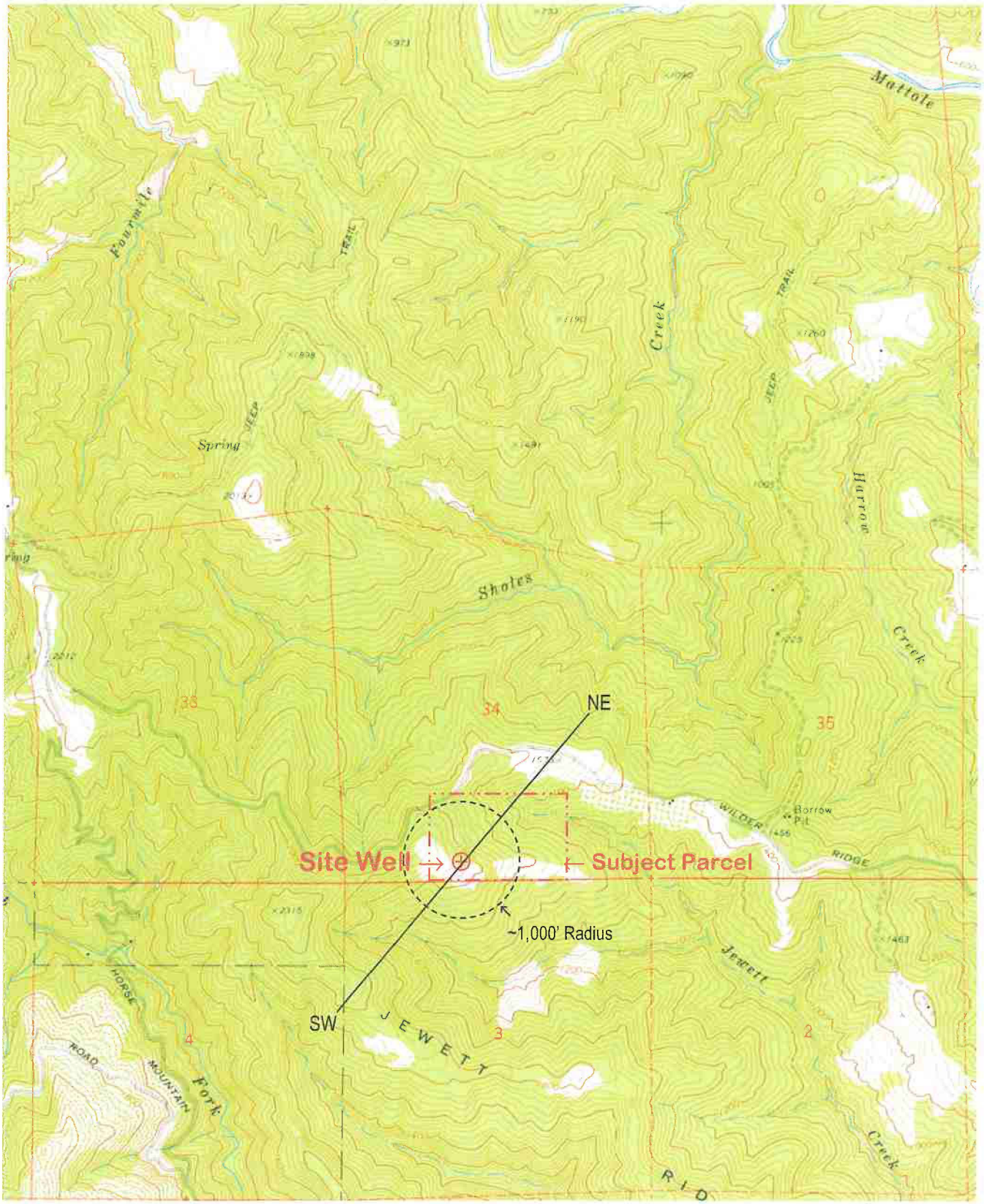
Figure 1:	Topographic Well Site Location Map
Figure 2:	Humboldt County Assessor's Parcel Map
Figure 3:	Satellite Image of Well Site
Figure 4:	Geologic Map
Figure 5:	Geologic Cross Section
Figure 6:	Hydrogeologic Cross Section
Figure 6a:	Geologic Map Explanation
Figure 7:	Soils Map

State of California Well Completion Reports:

Subject Well:	WCR2018-009856
Well on APN 108-023-011:	WCR2017-003775
Well on APN 108-023-010:	WCR2018-005151

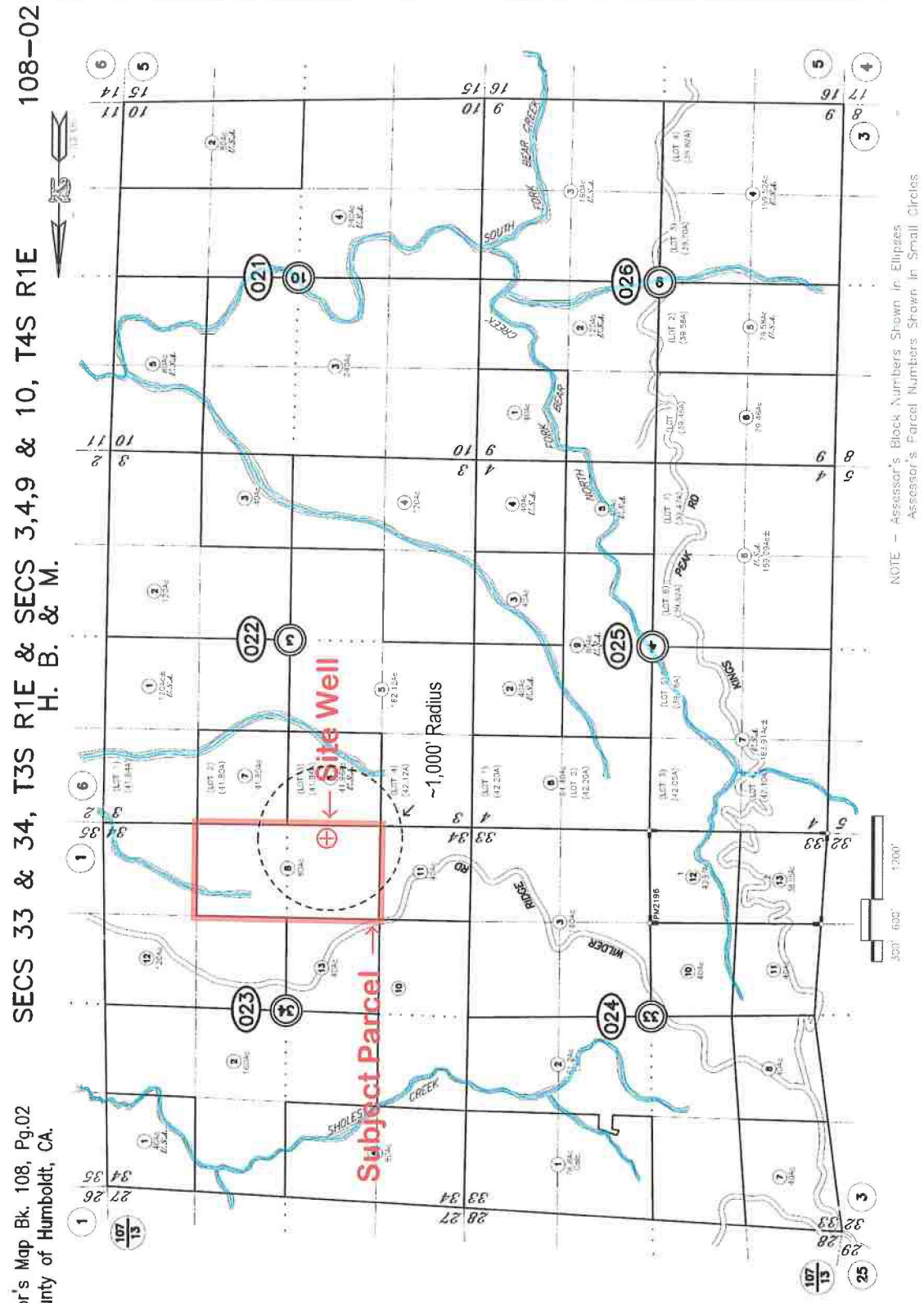
Web Soil Survey, NRCS Unit Description:
Wirefence-Windynip-Devilshole complex, 5 to 30 percent slopes.

Lindberg Geologic Consulting	Engineering-Geologic Hydrogeologic Well Connectivity Report	Figure 1
Post Office Box 306	9320 Wilder Ridge Road, Ettersburg, Humboldt County	June 30, 2022
Cutten, CA 95534	APN 108-023-008, Big River Farm, LLC, Lesley Doyle, Client	Project 0455.00
(707) 442-6000	Topographic Well Site Location Map (locations approximate)	1" ≈ 2,350'

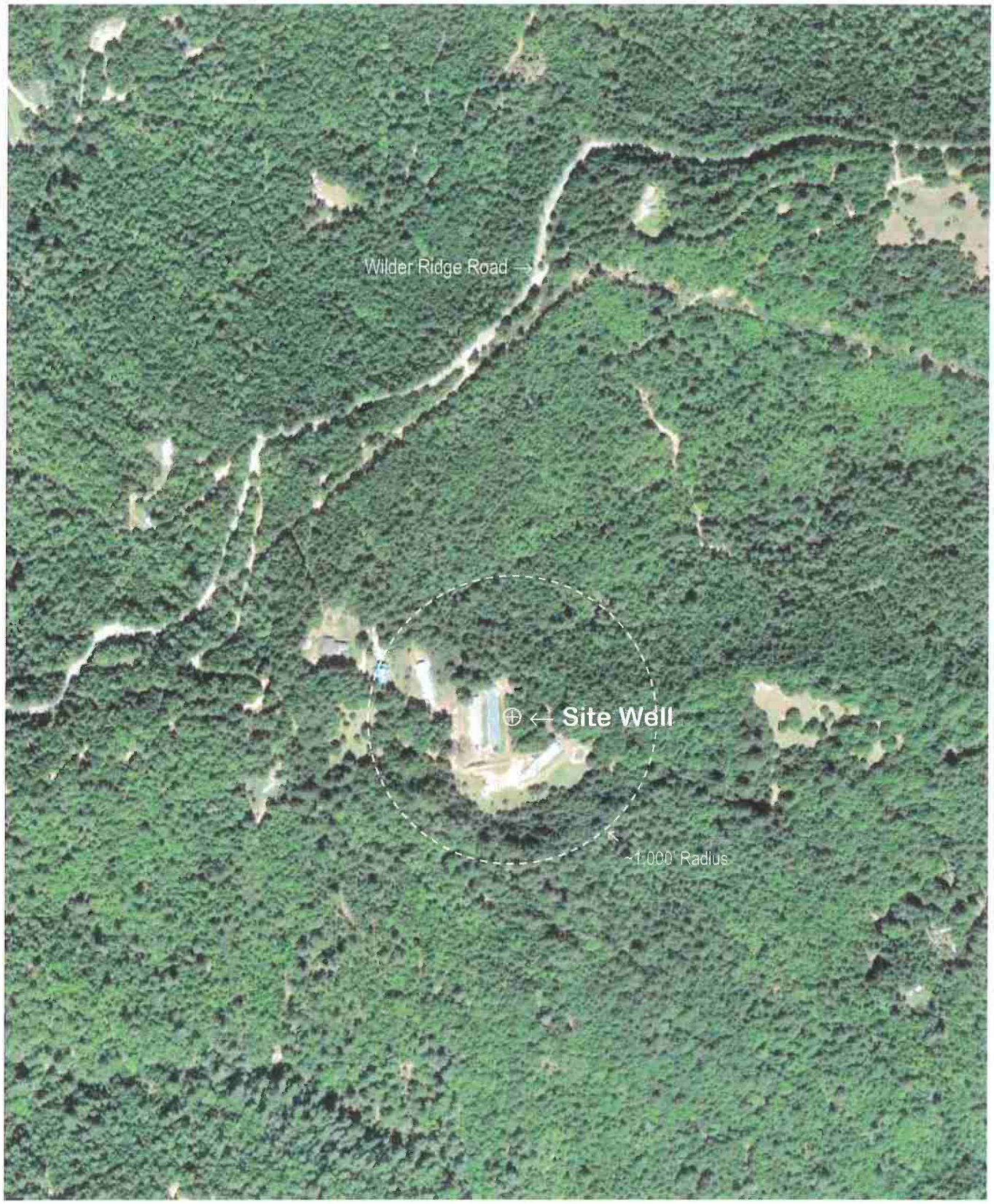


Modified from: USGS "Honeydew Calif.," 7.5' Topographic Quadrangle Map, 1970. N ≈

Lindberg Geologic Consulting	Engineering-Geologic Hydrogeologic Well Connectivity Report	Figure 2
Post Office Box 306	9320 Wilder Ridge Road, Ettersburg, Humboldt County	June 30, 2022
Cutten, CA 95534	APN 108-023-008, Big River Farm, LLC, Lesley Doyle, Client	Project 0455.00
(707) 442-6000	Humboldt County Assessor's Parcel Map (locations approximate)	Scale as Shown

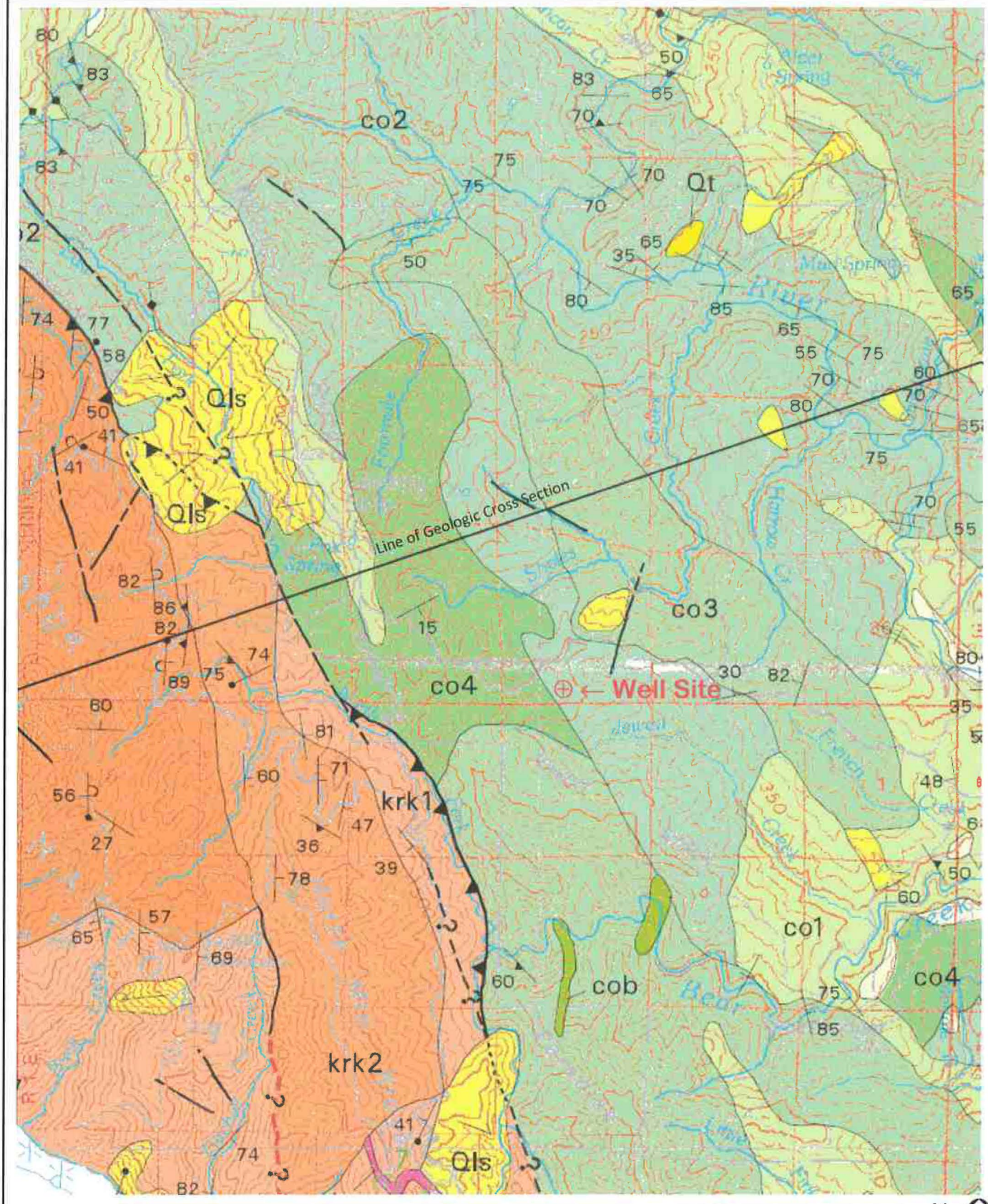


Lindberg Geologic Consulting	Engineering-Geologic Hydrogeologic Well Connectivity Report	Figure 3
Post Office Box 306	9320 Wilder Ridge Road, Ettersburg, Humboldt County	June 30, 2022
Cutten, CA 95534	APN 108-023-008, Big River Farm, LLC, Lesley Doyle, Client	Project 0455.00
(707) 442-6000	Satellite Image of Well Site (locations approximate)	1" ≈ 475'



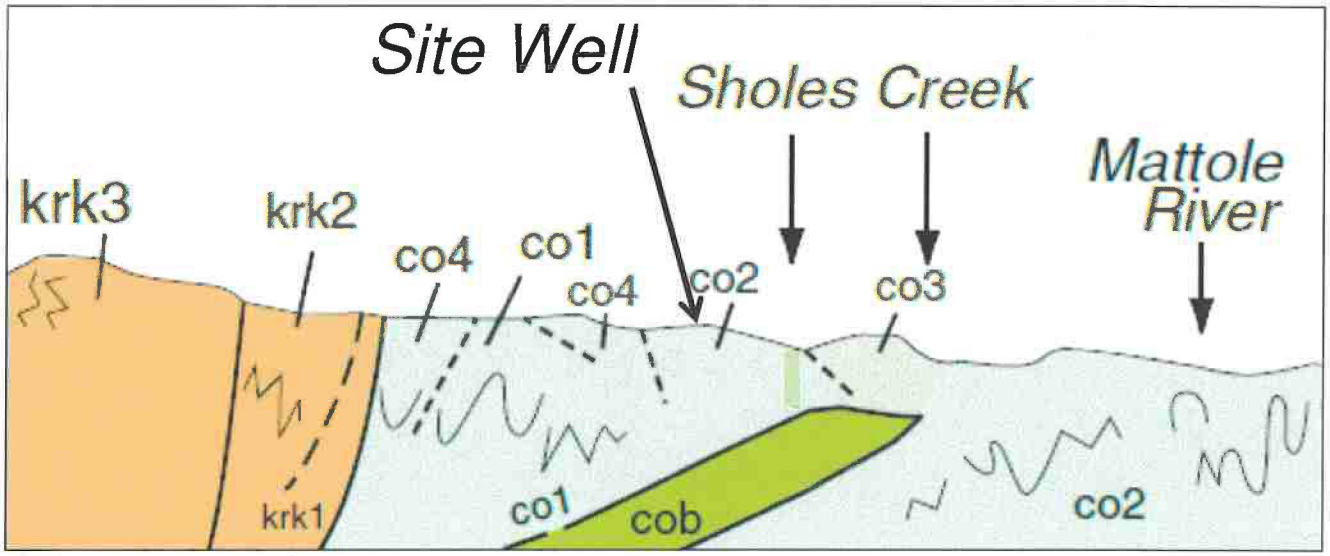
Modified from: Google Earth Imagery of April 21, 2019. N ≈

Lindberg Geologic Consulting	Engineering-Geologic Hydrogeologic Well Connectivity Report	Figure 4
Post Office Box 306	9320 Wilder Ridge Road, Ettersburg, Humboldt County	June 30, 2022
Cutten, CA 95534	APN 108-023-008, Big River Farm, LLC, Lesley Doyle, Client	Project 0455.00
(707) 442-6000	Geologic Map (locations approximate)	1" ≈ 4,700'



Modified from: McLaughlin et al., 2000. N ≈

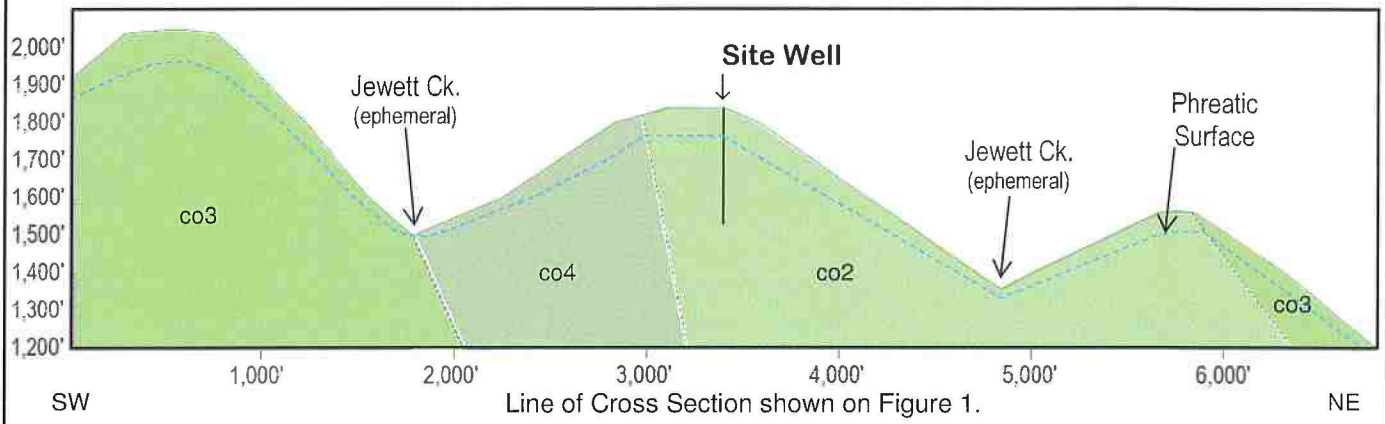
Lindberg Geologic Consulting	Engineering-Geologic Hydrogeologic Well Connectivity Report	Figure 5
Post Office Box 306	9320 Wilder Ridge Road, Ettersburg, Humboldt County	June 30, 2022
Cutten, CA 95534	APN 108-023-008, Big River Farm, LLC, Lesley Doyle, Client	Project 0455.00
(707) 442-6000	Geologic Cross Section (locations approximate)	Not to Scale



SSW ~7 miles ENE

Modified from: McLaughlin et al., 2000.

Lindberg Geologic Consulting	Engineering-Geologic Hydrogeologic Well Connectivity Report	Figure 6
Post Office Box 306	9320 Wilder Ridge Road, Ettersburg, Humboldt County	June 30, 2022
Cutten, CA 95534	APN 108-023-008, Big River Farm, LLC, Lesley Doyle, Client	Project 0455.00
(707) 442-6000	Hydrogeologic Cross Section (locations approximate)	Not to Scale



Line of Cross Section shown on Figure 1.

Lindberg Geologic Consulting	Engineering-Geologic Hydrogeologic Well Connectivity Report	Figure 6a
P. O. Box 306	9320 Wilder Ridge Road, Ettersburg, Humboldt County	June 30, 2022
Cutten, CA 95534	APN 108-023-008, Big River Farm, LLC, Lesley Doyle, Client	Project 0455.00
(707) 442-6000	Geologic Map Explanation	No Scale

DESCRIPTION OF MAP UNITS

QUATERNARY AND TERTIARY OVERLAP DEPOSITS

- Qal — Alluvial deposits (Holocene and late Pleistocene?)
- Qm — 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 Fickle Hill (Oligocene)

COAST RANGES PROVINCE

FRANCISCAN COMPLEX

-- Coastal Belt --

Coastal terrane(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)
- cols — Limestone (Late Cretaceous)
- bs — 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
- krl — 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
- cws — 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)
- c — 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 metavolcanic rocks of the Pickett Peak terrane (Early Cretaceous or older):

- ppsm — South Fork Mountain Schist
- mb — Chinquapin 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 metaigneous rocks of the Yolla Bolly terrane (Early Cretaceous to Middle Jurassic?):

- ybt — Taliaferro 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 Hammerhorn 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?)
- dpd — 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 Bally Meta-andesite of Irwin (1985), undivided (Middle Jurassic)
- whwg — Wildwood (Chanchelulla Peak of Wright and Fahan, 1988) pluton (Middle Jurassic)
- whwp — Clinopyroxenite
- whji — Diorite and gabbro plutons (Middle? Jurassic)

Rattlesnake Creek terrane

- rcm — Melange (Jurassic and older)
- rcls — Limestone
- rcc — Radiolarian chert
- rcls — 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 — Blocky peridotite

Western Klamath terrane

Smith River subterrane:

- srs — Galice? formation (Late Jurassic)
- srv — Pyroclastic andesite
- srgb — 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:

- Inclined
- Vertical
- Horizontal
- Overturned
- Approximate
- Joint
- Strike and dip of cleavage

Shear foliation:

- Inclined
- Vertical

Folds:

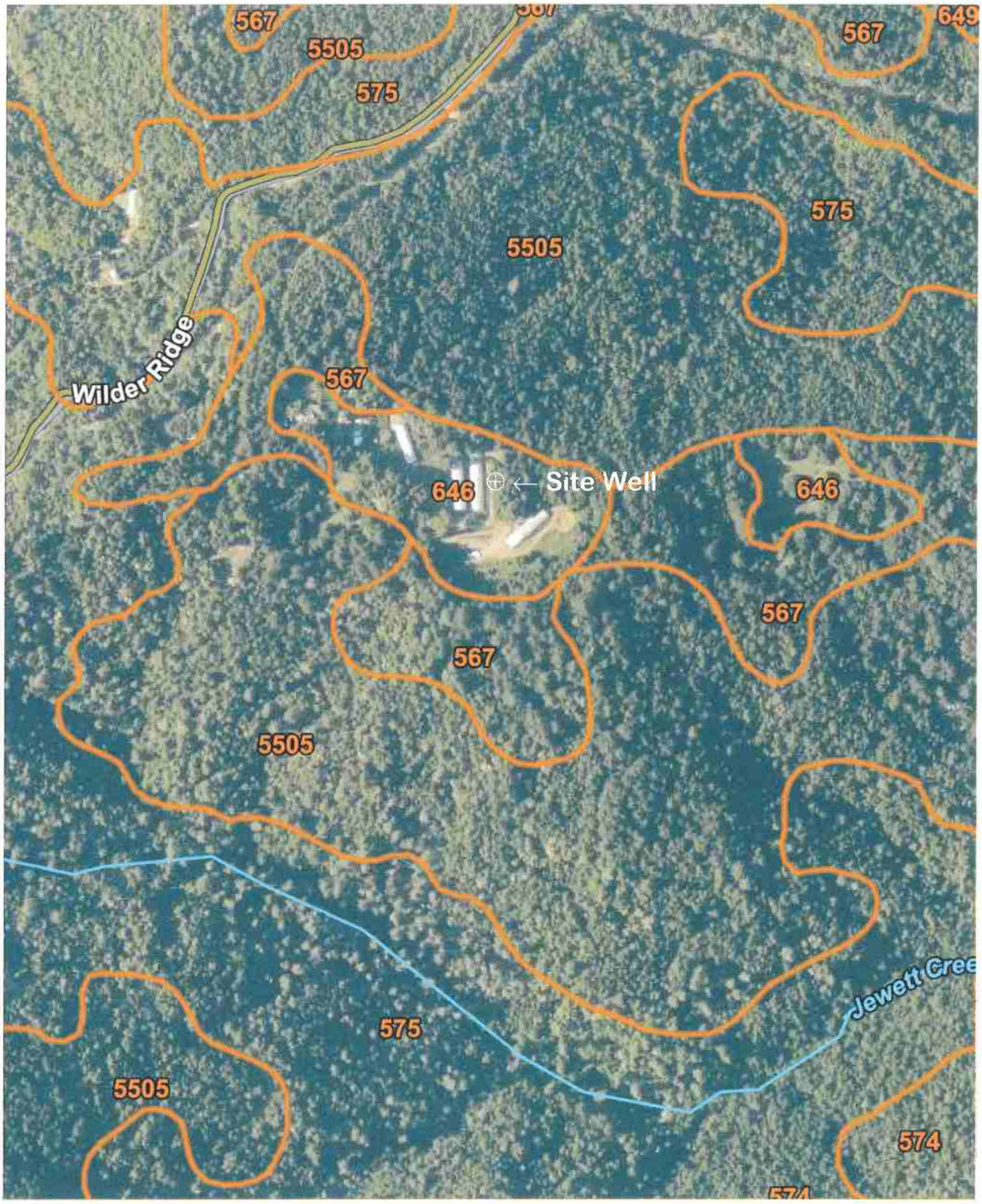
- Synclinal or synformal axis
- Anticlinal or antiformal axis
- Overturned syncline
- Landslide

Melange Blocks:

- Serpentinite
- Chert
- Blueschist
- Greenstone
- Fossil locality and number

GEOLOGY OF THE CAPE MENDOCINO, EUREKA, GARBERVILLE, AND SOUTHWESTERN PART OF THE HAYFORK 30 X 60 MINUTE QUADRANGLES AND ADJACENT OFFSHORE AREA, NORTHERN CALIFORNIA (McLaughlin et al., 2000)

Lindberg Geologic Consulting	Engineering-Geologic Hydrogeologic Well Connectivity Report	Figure 7
Post Office Box 306	9320 Wilder Ridge Road, Ettersburg, Humboldt County	June 30, 2022
Cutten, CA 95534	APN 108-023-008, Big River Farm, LLC, Lesley Doyle, Client	Project 0455.00
(707) 442-6000	Soils Map (locations approximate)	Not to Scale



Modified from: USDA-NRCS Web Soil Survey, 2022. N ≈

State of California

Well Completion Report

Form DWR 188 Complete 12/17/2018

WCR2018-009856

Owner's Well Number: Well #1 | Date Work Began: 10/30/2018 | Date Work Ended: 10/30/2018

Local Permit Agency: Humboldt County Department of Health & Human Services - Land Use Program

Secondary Permit Agency: | Permit Number: 17/18-1912 | Permit Date: 06/05/2018

Well Owner (must remain confidential pursuant to Water Code 13752)

Name: XXXXXXXXXXXXXXXXXXX

Mailing Address: XXXXXXXXXXXXXXXXXXX

XXXXXXXXXXXXXXXXXXX

City: XXXXXXXXXXXXXXXXXXX | State: XX | Zip: XXXXX

Planned Use and Activity

Activity: New Well

Planned Use: Other

Specify: 20' Seal

Well Location

Address: 9320 Wilder Ridge RD

City: Garberville | Zip: 95542 | County: Humboldt

Latitude: 40 Deg. 9 Min. 3.9599 Sec. N | Longitude: -124 Deg. 3 Min. 28.44 Sec. W

Dec. Lat.: 40.1511 | Dec. Long.: -124.0579

Vertical Datum: | Horizontal Datum: WGS84

Location Accuracy: | Location Determination Method:

APN: 108-023-008

Township: 03 S

Range: 01 E

Section: 34

Baseline Meridian: Humboldt

Ground Surface Elevation:

Elevation Accuracy:

Elevation Determination Method:

Borehole Information

Orientation: Vertical | Specify:

Drilling Method: Downhole Rotary Hammer | Drilling Fluid: Air

Total Depth of Boring: 310 Feet

Total Depth of Completed Well: 300 Feet

Water Level and Yield of Completed Well

Depth to first water: 70 (Feet below surface)

Depth to Static Water Level: 73 (Feet) | Date Measured: 10/30/2018

Estimated Yield*: 100 (GPM) | Test Type: Air Lift

Test Length: 5 (Hours) | Total Drawdown: (feet)

*May not be representative of a well's long term yield.

Geologic Log - Free Form

Depth from Surface Feet to Feet		Description
0	4	Brown / Black Topsoil
4	16	Tan clay
16	35	Brown clay
35	110	Blue Shale w/clay
110	310	Blue Grey Shale

Casings

Casing #	Depth from Surface Feet to Feet		Casing Type	Material	Casings Specificatons	Wall Thickness (inches)	Outside Diameter (inches)	Screen Type	Slot Size if any (inches)	Description
1	0	20	Blank	Low Carbon Steel	N/A	0.188	8.625			*
2	0	120	Blank	PVC	N/A	0.291	4.95			*
2	120	140	Screen	PVC	N/A	0.291	4.95	Milled Slots	0.032	*
2	140	160	Blank	PVC	N/A	0.291	4.95			*
2	160	180	Screen	PVC	N/A	0.291	4.95	Milled Slots	0.032	*
2	180	200	Blank	PVC	N/A	0.291	4.95			*
2	200	220	Screen	PVC	N/A	0.291	4.95	Milled Slots	0.032	*
2	220	240	Blank	PVC	N/A	0.291	4.95			*
2	240	260	Screen	PVC	N/A	0.291	4.95	Milled Slots	0.032	*
2	260	280	Blank	PVC	N/A	0.291	4.95			*
2	280	300	Screen	PVC	N/A	0.291	4.95	Milled Slots	0.032	*

Annular Material

Depth from Surface Feet to Feet		Fill	Fill Type Details	Filter Pack Size	Description
0	20	Bentonite	Non Hydrated Bentonite		3/8 hole plug
20	300	Other Fill	See description.		No annular fill

Other Observations:

Borehole Specifications

Depth from Surface Feet to Feet		Borehole Diameter (inches)
0	20	13
20	310	7.875

Certification Statement

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief

Name: WATSON WELL DRILLING INC
Person, Firm or Corporation

500 SUMMER STREET | EUREKA | CA | 95501
Address | City | State | Zip

Signed: *electronic signature received* | 11/01/2018 | 1014048
C-57 Licensed Water Well Contractor | Date Signed | C-57 License Number

DWR Use Only

CSG #	State Well Number	Site Code	Local Well Number

N — Latitude Deg/Min/Sec

W — Longitude Deg/Min/Sec

TRS:

APN:

State of California

Well Completion Report

WCR Form - DWR 188 Complete 09/01/2017

WCR2017-003775

Owner's Well Number 1 Date Work Began 08/17/2017 Date Work Ended 08/17/2017

Local Permit Agency Humboldt County Department of Health & Human Services - Land Use Program

Secondary Permit Agency Permit Number 16/17-0242 Permit Date 09/09/2016

Well Owner (must remain confidential pursuant to Water Code 13752)

Name XXXXXXXXXXXXXXXXXXX

Mailing Address XXXXXXXXXXXXXXXXXXX

XXXXXXXXXXXXXXXXXXX

City XXXXXXXXXXXXXXXXXXX State XX Zip XXXXX

Planned Use and Activity

Activity New Well

Planned Use Water Supply Domestic

Well Location

Address 9225 Wilder Ridge RD

City Garberville Zip 95510 County Humboldt

Latitude Deg. Min. Sec. N Longitude Deg. Min. Sec. W

Dec. Lat. Dec. Long.

Vertical Datum Horizontal Datum WGS84

Location Accuracy Location Determination Method

APN 108-023-011

Township 04 S

Range 01 E

Section 34

Baseline Meridian Humboldt

Ground Surface Elevation

Elevation Accuracy

Elevation Determination Method

Borehole Information

Orientation Vertical Specify

Drilling Method Downhole Hammer Drilling Fluid Air

Total Depth of Boring 210 Feet

Total Depth of Completed Well 210 Feet

Water Level and Yield of Completed Wall

Depth to first water 150 (Feet below surface)

Depth to Static Water Level 115 (Feet) Date Measured 08/17/2017

Estimated Yield* 10 (GPM) Test Type Air Lift

Test Length 4 (Hours) Total Drawdown (Feet)

*May not be representative of a well's long term yield.

Geologic Log - Free Form

Depth from Surface Feet	to Feet	Description
0	25	Brown Clay
25	210	Blue Sandstone with Quartz

Casings

Casing #	Depth from Surface Feet	to Feet	Casing Type	Material	Casings Specifications	Wall Thickness (inches)	Outside Diameter (inches)	Screen Type	Slot Size if any (inches)	Description
1	0	20	Blank	Low Carbon Steel	N/A	0.188	8.625			
2	0	130	Blank	PVC	N/A	0.291	4.95			
2	130	170	Screen	PVC	N/A	0.291	4.95	Milled Slots	0.035	
2	170	190	Blank	PVC	N/A	0.291	4.95			
2	190	210	Screen	PVC	N/A	0.291	4.95	Milled Slots	0.035	

Annular Material

Depth from Surface Feet	to Feet	Fill	Fill Type Details	Filter Pack Size	Description
0	20	Bentonite	Non Hydrated Bentonite		3/8 Hole Plug
20	210	Other Fill	See description.		No Annular Fill

Other Observations:

Borehole Specifications

Depth from Surface Feet to	Feet	Borehole Diameter (inches)
0	20	13
20	210	7.875

Certification Statement

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief

Name: WATSON WELL DRILLING, INC.
Person, Firm or Corporation

500 Summer Street | Eureka | CA | 95501
Address | City | State | Zip

Signed: *electronic signature received* | 08/24/2017 | 1014048
C-57 Licensed Water Well Contractor | Date Signed | C-57 License Number

Attachments

WellReport_05222017_1_20170901_162221.pdf - WCR Final

DWR Use Only

Site Number / State Well Number

Latitude Deg/Min/Sec N

Longitude Deg/Min/Sec W

TRS:

APN:

State of California

Well Completion Report

Form DWR 188 Complete 7/31/2018

WCR2018-005151

Owner's Well Number | Date Work Began 06/22/2018 | Date Work Ended 06/28/2018

Local Permit Agency Humboldt County Department of Health & Human Services - Land Use Program

Secondary Permit Agency | Permit Number 17/18-1669 | Permit Date 04/12/2018

Well Owner (must remain confidential pursuant to Water Code 13752)

Name XXXXXXXXXXXXXXXXXXX

Mailing Address XXXXXXXXXXXXXXXXXXX

XXXXXXXXXXXXXXXXXXX

City XXXXXXXXXXXXXXXXXXX State XX Zip XXXXX

Planned Use and Activity

Activity New Well

Planned Use Water Supply Irrigation - Agriculture

Well Location

Address 9325 Wilder Ridge RD

City Garberville Zip 95542 County Humboldt

Latitude ___ Deg. ___ Min. ___ Sec. N Longitude ___ Deg. ___ Min. ___ Sec. W

Dec. Lat. 40.1564930 Dec. Long. -124.0610550

Vertical Datum | Horizontal Datum WGS84

Location Accuracy | Location Determination Method

APN 108-023-010

Township 03 S

Range 01 E

Section 34

Baseline Meridian Humboldt

Ground Surface Elevation

Elevation Accuracy

Elevation Determination Method

Borehole Information

Orientation Vertical Specify

Drilling Method Other - Under-Ream Down-Hole Hammer Drilling Fluid Air

Total Depth of Boring 140 Feet

Total Depth of Completed Well 140 Feet

Water Level and Yield of Completed Well

Depth to first water 36 (Feet below surface)

Depth to Static Water Level 38 (Feet) Date Measured 06/28/2018

Estimated Yield* 15 (GPM) Test Type Air Lift

Test Length 4 (Hours) Total Drawdown 102 (feet)

*May not be representative of a well's long term yield.

Geologic Log - Free Form

Depth from Surface Feet to Feet		Description
0	1	top soil
1	3	large broken brown sandstone
3	23	brown silty sand & sandstone
23	49	large fractured sandstone
49	57	shale
57	91	blue fractured sandstone
91	140	shale mulache

Casings

Casing #	Depth from Surface Feet to Feet		Casing Type	Material	Casings Specificatons	Wall Thickness (inches)	Outside Diameter (inches)	Screen Type	Slot Size if any (inches)	Description
1	0	40	Blank	Low Carbon Steel	Grade: ASTM A53	0.188	6			
1	40	90	Screen	Low Carbon Steel	Grade: ASTM A53	0.188	6	Milled Slots	0.05	
1	90	140	Blank	Low Carbon Steel	Grade: ASTM A53	0.188	6			

Annular Material

Depth from Surface Feet to Feet		Fill	Fill Type Details	Filter Pack Size	Description
0	20	Bentonite	Other Bentonite		Sanitary Seal
20	140	Filter Pack	Other Gravel Pack	3/8 Inch	Pea Gravel

Other Observations:

Borehole Specifications

Depth from Surface Feet to Feet		Borehole Diameter (inches)
0	140	10

Certification Statement

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief

Name: FISCH DRILLING
Person, Firm or Corporation

3150 JOHNSON ROAD (Address) | HYDESVILLE (City) | CA (State) | 95547 (Zip)

Signed: *electronic signature received* (C-57 Licensed Water Well Contractor) | 06/29/2018 (Date Signed) | 683865 (C-57 License Number)

Attachments

scan.pdf - Location Map

DWR Use Only

CSG #	State Well Number	Site Code	Local Well Number

N — Latitude Deg/Min/Sec

W — Longitude Deg/Min/Sec

TRS:

APN:

Humboldt County, South Part, California

646—Wirefence-Windynip-Devilshole complex, 5 to 30 percent slopes

Map Unit Setting

National map unit symbol: 1lpq7
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

Wirefence and similar soils: 35 percent
Windynip and similar soils: 30 percent
Devilshole and similar soils: 20 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wirefence

Setting

Landform: Ridges
Landform position (two-dimensional): Summit, backslope
Landform position (three-dimensional): Mountaintop
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Colluvium and residuum derived from sandstone

Typical profile

A1 - 0 to 11 inches: loam
A2 - 11 to 21 inches: loam
A3 - 21 to 33 inches: gravelly loam
AB - 33 to 46 inches: gravelly loam
Bw - 46 to 63 inches: very gravelly fine sandy loam
C - 63 to 79 inches: very gravelly fine sandy loam

Properties and qualities

Slope: 5 to 30 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): 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: High (about 9.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Ecological site: F004BI106CA - High precipitation mountain slopes
Hydric soil rating: No

Description of Windynip

Setting

Landform: Ridges
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Mountaintop
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Colluvium and residuum derived from sandstone and mudstone

Typical profile

A1 - 0 to 5 inches: loam
A2 - 5 to 12 inches: clay loam
A3 - 12 to 20 inches: clay loam
AB - 20 to 33 inches: clay loam
Bt1 - 33 to 59 inches: gravelly clay loam
Bt2 - 59 to 79 inches: very gravelly clay loam

Properties and qualities

Slope: 5 to 30 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 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 8.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: R004BI202CA - Loamy Uplands
Hydric soil rating: No

Description of Devilshole

Setting

Landform: Ridges
Landform position (two-dimensional): Summit, shoulder

Landform position (three-dimensional): Mountaintop
Down-slope shape: Convex, linear
Across-slope shape: Linear, convex
Parent material: Residuum weathered from sandstone and/or mudstone

Typical profile

A - 0 to 4 inches: gravelly loam
ABt - 4 to 16 inches: very gravelly loam
Bt - 16 to 28 inches: very gravelly loam
BCt - 28 to 47 inches: extremely gravelly loam
C - 47 to 61 inches: gravel

Properties and qualities

Slope: 5 to 30 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 39 to 59 inches to strongly contrasting textural stratification
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 1.42 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 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Ecological site: R004BI203CA - Loamy-skeletal Uplands
Hydric soil rating: No

Minor Components

Yorknorth, moist

Percent of map unit: 6 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Hydric soil rating: No

Crazycoyote

Percent of map unit: 5 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Center third of mountainflank
Down-slope shape: Concave, convex, linear
Across-slope shape: Linear

Hydric soil rating: No

Rainbear

Percent of map unit: 4 percent
Landform: Mountain slopes, ridges
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Mountainflank
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Data Source Information

Soil Survey Area: Humboldt County, South Part, California
Survey Area Data: Version 10, Sep 6, 2021