LINDBERG GEOLOGIC CONSULTING
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October 26, 2022

Project No: 0475.00

Larabee Farms, LLC
c/o Elevated Solutions
3990 Walnut Drive
Eureka, California 95503

Subject: Hydrologic Isolation of Existing Well from Surface Waters, WCR2012-008156
33865 Highway 36, Bridgeville, APN: 210-051-070, (Legacy Number e0153131)

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. The nearest tributaries in the vicinity of this well (Figure 1) drain to Butte Creek (Figure 1).

A California-Certified Engineering Geologist visited this site on June 10, 2022, to observe the subject well and local site conditions. Based on our research, observations, and our professional experience, 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 springs, wetlands and or surface waters in the vicinity. Here we define the "vicinity" as the area within a 1,000-foot radius of the subject well, and area of approximately 72 acres. We understand that the applicant may use water from this well to irrigate cannabis at some future time. We are not aware of the volume of water to be extracted or what the pumping schedule might be but expect that information is provided elsewhere in the application.

Based on the Humboldt County WebGIS and the Assessor's Parcel Map (Figure 2), parcel 210-051-070 (Figure 2) encompasses approximately 20 acres. GPS located the subject well at latitude 40.44929° north, and longitude 123.6916° west (±9'). This well is in Section 23, T1N, R4E, HB&M, and is 120 feet deep. Based on the Humboldt County WebGIS and the Larabee Valley, Calif. 7.5' topographic map (1977) the wellhead elevation is approximately 2,500 feet (Figure 1).

The Humboldt County WebGIS shows a spring-fed perennial tributary of Butte Creek more than 180 feet north-northeast of the well site (Figure 1). The neighboring property owner reported that the ephemeral tributaries of Butte Creek in this area are dry by mid-July. As stated, based on the Humboldt County WebGIS, and interpolation from the USGS "Larabee Valley, Calif." (1977), topographic quadrangle map (Figure 1), and the Humboldt County WebGIS, the well site elevation is 2,500 feet. The elevation of the spring-fed perennial tributary of Butte Creek to the north-northeast is estimated to be approximately 2,490 feet, making the nearby spring-fed perennial tributary of Butte Creek 110 feet higher than the total depth elevation (2,380') of the well.

Well location is shown approximately on the attached figures, and was drilled by Fisch Drilling, of Hydesville, California, in June 2012, under Humboldt County well permit #11/12-0494 Fisch Drilling is a licensed well-drilling C-57 contractor (#683865). They submitted their well completion report (DWR 188) on June 6, 2012 (attached). The driller estimated a yield of 15 gpm in May 2012, based on a 4-hour air lift pump test. Total drawdown during the pump 4-hour pump test was 60 feet to an elevation of 2,424 feet.

Again, total drilled depth of this well is 120 feet, to elevation 2,380 feet. The borehole diameter is 10-inches from grade to 120-feet. From grade to 20-feet a 5-inch diameter PVC-CL200 blank (unslotted) casing was installed. From 20 to 120-feet, 5-inch diameter PVC-CL200, screened (slots 0.032-inches) casing was installed. Per County requirements, a bentonite sanitary surface seal was installed from the surface to 20 feet. The driller filled the remaining annulus with #3 Sand. The well is cased and sealed through any potential shallow subsurface aquifers. Depth to first water was reported to be at 21 feet below the surface, and depth to static water in the completed developed well was reported to be 16 feet below the ground surface (bgs) when the driller conducted the 4-hour pump test on May 30, 2012.

From the well, the nearest spring is mapped in Section 23 (Figure 1), more than 800 feet to the northwest, at an elevation of approximately 2,510 feet, per the WebGIS. There are no other springs mapped in Section 23. There is also a spring in Section 26, more than 4,000 feet to the southwest of the well site at an elevation of 2,480 feet.

This parcel is located within California's Coast Range Geomorphic Province, in the Central Belt of the Franciscan Complex (McLaughlin et at., 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 Quaternary alluvium (Qal) and mélange (cm2) of the Central Belt of the Franciscan Complex, as shown in Figure 4.

According to the NRCS Web Soil Survey, the near-surface soils are loam, grading with depth to gravelly loam at 35 inches, and very gravelly loamy sand at 47 inches to a depth of 79 inches. Soils are interpreted to be uniformly distributed across that portion of the subject parcel underlain by the Central Belt mélange (cm2). At a depth of approximately seven feet soils are underlain by un-weathered parent material.

Materials reported on the geologic log of the driller's well completion report (attached) include a 3-feet of "Top Soil" over 13-feet (3-feet to 16-feet) of "Clay Brown". Beneath the clay lies 5-feet of "Sand with/Small Gravel Brown" (16 to 21-feet), the first water bearing unit. Below 21-feet the driller logged 6-feet (21 to 27-feet) of "Sand with/Layers of Clay Brown". In the next 12-feet (27- to 39-feet) the driller logged "Blue Clay w/Birds Eye Gravel", followed by 25-feet (39- to 67-feet) of "Blue Clay w/ Sand Layers". In the next 25-feet (67- to 92-feet) "Dark Blue Clay" was logged. In the final 28-feet (47 to 140-feet) "Sandstone Blue" was logged.

We interpret the upper clayey section of the soil profile in this well, from grade to 16 feet, to be an aquitard, a material of low permeability and transmissivity. Sandy and gravelly materials below 16 feet are expected to be porous and permeable, and the sand with clay layers at 16 feet appears to be the first water-bearing aquifer material tapped by this well. From 16 feet to 120 feet, we interpret the sand layers to be aquifer materials. Sand has a higher transmissivity and permeability than clay. At the location of the subject well, the elevation of the water-bearing aquifer unit is thus between approximately 2,504 feet and 2,380 feet, based on the reported lithologies, and the perforated zone in the driller's report.

Below the surface soils, the earth materials encountered in the boring are quaternary alluvium and mélange of the Central Belt Franciscan Complex, as mapped by McLaughlin et al., (2000). Sheared, fractured, and folded metasedimentary rock materials can have variable hydraulic conductivity but can also, under suitable conditions, constitute significant aquifers. We interpret the sequence at depth described by the driller as lithologies within the central belt mélange (cm2) of the Franciscan Complex. Blue sand sections of this profile apparently have a favorable hydraulic conductivity, making them, in our interpretation, primary water bearing material in the 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 central belt mélange is shown dipping east and bounded by thrust fault plane contacts. On-site, no dip of the rock units could be observed because they are mantled with soil and fluvial alluvium and obscured by vegetation. We interpret the faults in the subsurface to be hydrologic boundaries of reduced permeability (due to grinding and shearing along the fault planes), effectively separating units of the Franciscan Complex from each other hydrologically and limiting groundwater flow between these 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 21 feet and rose to a static level at 16 feet bgs. 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. In test pits, excavated for another project in Larabee Valley quaternary alluvium, we found groundwater to be 8.5 feet bgs in January (2021). The bentonite-sealed surface casing isolates the well bore from surface and shallow subsurface water infiltration into the deeper water-bearing aquifers. 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 (~21 to 120 feet), as well as its position relative to the nearest adjacent ephemeral watercourses and surface waters in the vicinity, we conclude that the depth of the surface seal, combined with the 13 feet of brown clay, are sufficient to preclude the potential for hydraulic connectivity with surface waters, of which there are none closer than 180 feet in the spring fed perennial tributary of Butte Creek. Thus, the water source from which this well draws appears to

be a confined subsurface aquifer not demonstrably connected to any surface waters or 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.

The driller estimated the yield of this well at 15 gallons per minute (gpm) on May 30, 2012. Total drawdown was reported to be 60-feet 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 on the well 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 local ephemeral tributaries to Butte Creek, which only flow for a limited period during the winter and spring and then go dry. Nor does this well appear to be hydrologically connected to any local springs or ephemeral wetlands. 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, springs, and ponds, on-site the potential for significant hydrologic connectivity between surface waters and groundwater in the deeper alluvial and bedrock aquifers appears low. Further, given the apparently limiting condition of 13 feet of low-transmissivity brown clay above the water-bearing sandy units, the aquifer is likely isolated from, and not significantly hydraulically connected to any other aquifer(s).

As mentioned, on the Larabee Valley USGS topographic quadrangle map, there is one spring mapped in the southeast quarter of the northwest quarter of Section 23, more than 800 feet northwest of the subject well, at an estimated elevation of 2,510 feet. A spring is also mapped in Section 26, is more than 4,000 feet southwest of the subject well at an elevation 2,580 feet. To the best of our knowledge, there are no other significant (mapped) springs or wetlands mapped within 1,000 feet of this subject well. There is a catchment pond on an adjacent parcel, more than 820 feet to the southeast of the well on APN 210-250-023. We expect this pond is sufficiently sealed to preclude significant seepage, and as such it would not be connected hydrologically to the confined aquifer tapped by well WCR2012-008156.

We researched the California Department of Water Resources (DWR) database to determine if there were wells within 1,000 feet of the subject well. Based on the information available at the present time there are two wells that meet that criterion. The closest well to the subject well is WCRI2022-005782, located at 40.44854°, -123.69198°, APN 210-054-008, more than 280-feet to the southwest at an elevation of 2,520 feet. Well -005782 encountered dissimilar stratigraphy and is a 10-inch, 25 gpm well, 160 feet in depth, screened from the bottom. The well bottom elevation of well -005782 is 2,360 feet. The elevation of the subject well bottom 008156, 2,380-feet, is 40 feet lower than well -005782.

To the northwest of the subject well is another well, WCR2012-008152, located at 40.4497°, -123.6945° on APN 210-051-027, approximately 500 feet from the subject well, at an estimated

elevation of 2,510 feet. Well -008152 is a 10-inch, 120 feet deep well, screened with slotted 5-inch PVC casing from 20 to 120 feet, with a 5-gpm yield. The well bottom is at 2,390 which is 10 feet higher than the subject well -008156.

As groundwater mimics topography and responds to the force of gravity, in general it will flow down slope in a direction subparallel to topography. The ground surface slopes to the east and the groundwater surface does approximately the same and flows to toward the axis of Little Larabee Valley. At the time of our visit the subject well appeared to be in use.

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

The Natural Resources Conservation Service's (NRCS), online Web Soil Survey, shows the subject well within soils of the Frostvalley-Mulecreek complex, on slopes of 2 to 9 percent, (#1002, Figure 7), which the NRCS describes as well-drained. The site is also classified as "Farmland of statewide significance". The Web Soil Survey unit description is attached to this report. Mean annual precipitation in the area is listed by the NRCS as 64 to 76 inches per year. Capacity of the most limiting soil layer to transmit water (Ksat) is described as moderately high to high (0.57 to 2.00 in/hr) with a depth to the water table of greater than 80 inches. If, during the wet season, just ten percent of the "low end" 64 inches of precipitation is absorbed by the soils and does not flow across the surface and into local watercourses, then more than10 acre-feet, or 3.4 million gallons of water per year (MGPY), may be expected to recharge the local aquifer below this 20-acre subject property.

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 on 33867 State Highway 36, Bridgeville, is not within a basin subject to the Act, and there has been no Groundwater Sustainability Agency established with authority over the area where this permitted well is sited.

The order states that counties, cities, and other public agencies are 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* (650,000+ gallons) *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 professional opinion that the well on APN 210-051-070, at 33867 State Highway 36, Bridgeville, has a low likelihood of being hydrologically connected to nearby surface waters or wells in any manner that might significantly impact or 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:

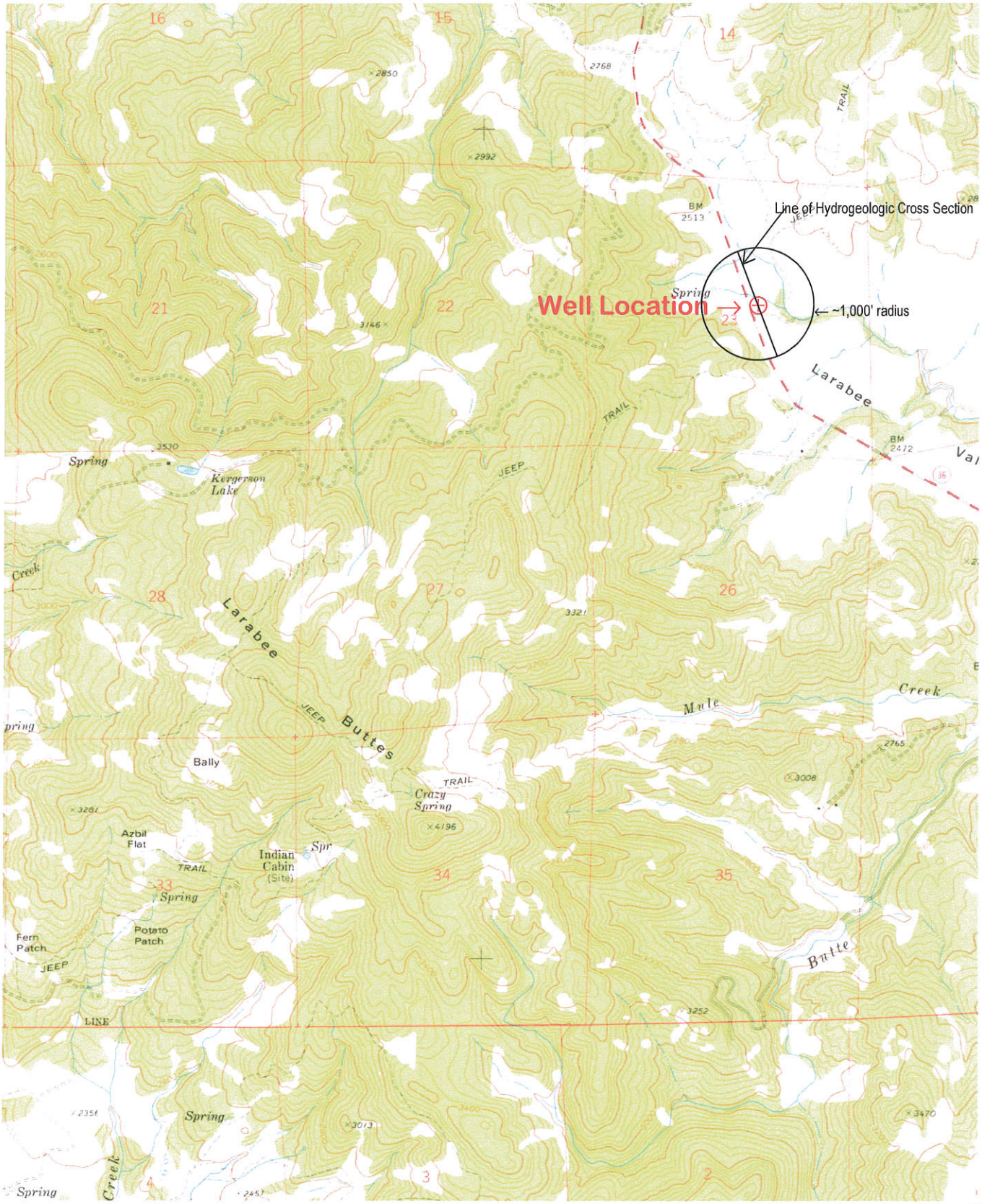
Figure 1:	Topographic Well Location Map
Figure 2:	Humboldt County Assessor's Parcel Map
Figure 3:	Satellite Image of Well location
Figure 4:	Geologic Map
Figure 4a:	Geologic Map Explanation
Figure 5:	Generalized Geologic Cross Section
Figure 6:	Hydrogeologic Cross Section
Figure 7:	USDA-NRCS Soils Map

State of California Well Completion Report:
WCR2012-008156, APN: 210-051-070 (Subject Well)
WCR2022-005782, APN: 210-054-008 (>280 feet to the south)
WCR2012-008152, APN: 210-051-027 (>500 feet to the northwest)

Web Soil Survey, NRCS Map Unit Description:
Frostvalley-Mulecreek complex, #1002, 2 to 9 percent slopes.

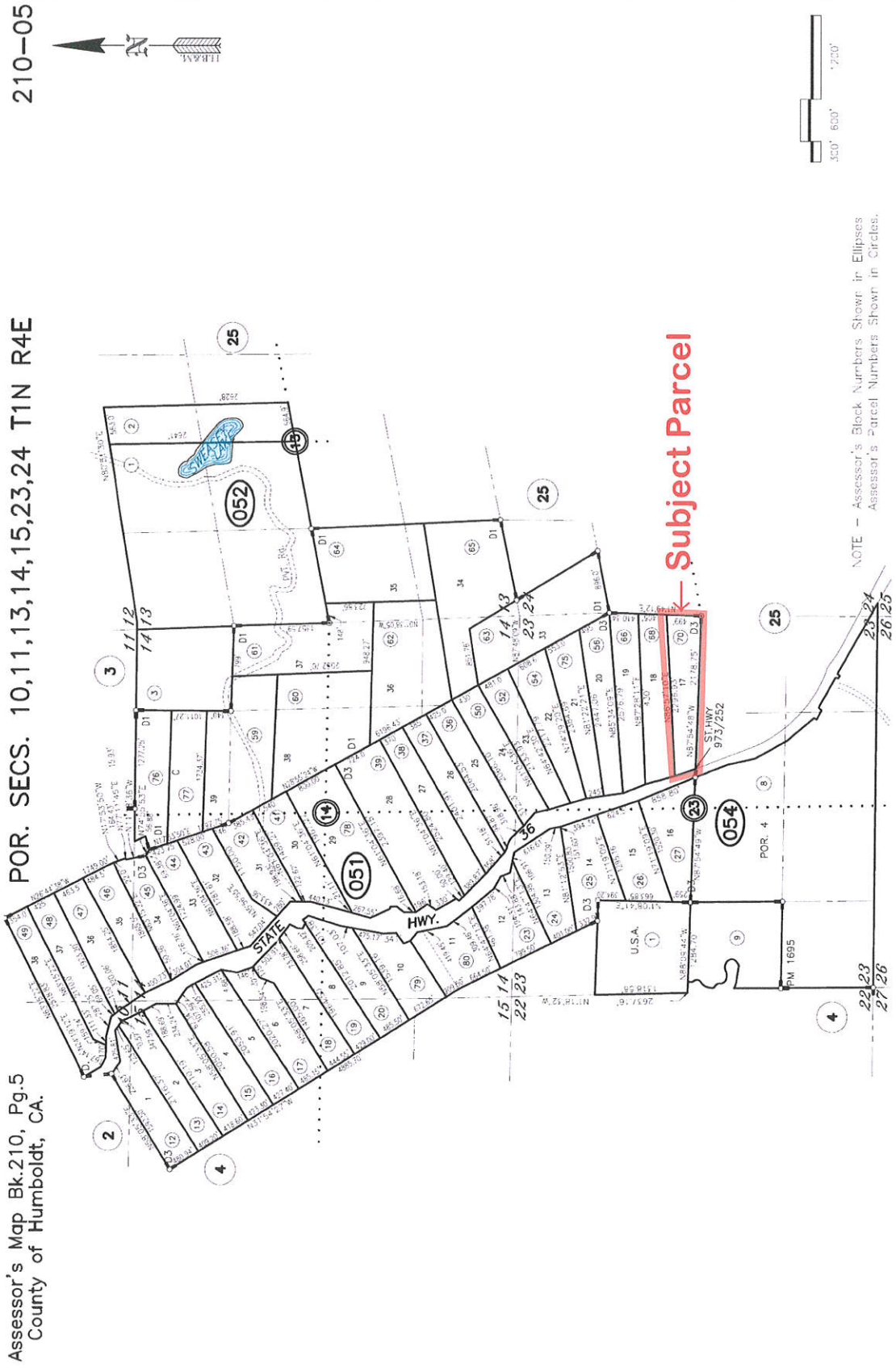
Reference:
Flint et al.: Fine-scale hydrologic modeling for regional landscape applications: the California Basin Characterization Model development and performance. Ecological Process, 2013, 2:25. (doi:10.1186/2192-1709-2-25).

Lindberg Geologic Consulting	Engineering-Geologic Well Connectivity Assessment Report	Figure 1
Post Office Box 306	33865 Highway 36, Bridgeville, California	October 26, 2022
Cutten, CA 95534	DWR Well 2012-008156, APN 210-051-070, Larabee Farm LLC, Client	Project 0475.00
(707) 442-6000	Topographic Well Location Map (locations approximate)	1" ≈ 2,400'



Modified from: USGS "Larabee Valley, Calif." 7.5' Quadrangle Map (1977). N ≅

Lindberg Geologic Consulting	Engineering-Geologic Well Connectivity Assessment Report	Figure 2
Post Office Box 306	33865 Highway 36, Bridgeville, California	October 26, 2022
Cutten, CA 95534	DWR Well 2022-005782, APN 210-051-070, Larabee Farm LLC, Client	Project 0475.00
(707) 442-6000	Humboldt County Assessor's Parcel Map (locations approximate)	Scale as Shown



Lindberg Geologic Consulting	Engineering-Geologic Well Connectivity Assessment Report	Figure 3
Post Office Box 306	33865 Highway 36, Bridgeville, California	October 26, 2022
Cutten, CA 95534	DWR Well 2012-008156, APN 210-051-070, Larabee Farm LLC, Client	Project 0475.00
(707) 442-6000	Satellite Image of Well Location (locations approximate)	1" ≈ 520'

Modified from: Google Earth Imagery of April 30, 2019. N ≈

Lindberg Geologic Consulting	Engineering-Geologic Well Connectivity Assessment Report	Figure 4
Post Office Box 306	33865 Highway 36, Bridgeville, California	October 26, 2022
Cutten, CA 95534	DWR Well 2012-008156, APN 210-051-070, Larabee Farm LLC, Client	Project 0475.00
(707) 442-6000	Geologic Map (locations approximate)	1" ≈ 4,750'

Modified from: McLaughlin, et al., (2,000). N ≈

Lindberg Geologic Consulting	Engineering-Geologic Well Connectivity Assessment Report	Figure 4a
P. O. Box 306	33865 Highway 36, Bridgeville, California	October 26, 2022
Cutten, CA 95534	DWR Well 2012-008156, APN 210-051-070, Larabee Farm LLC, Client	Project 0475.00
(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)
- m — 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
- cwr — 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 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
- ybi — 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
- 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 — 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:

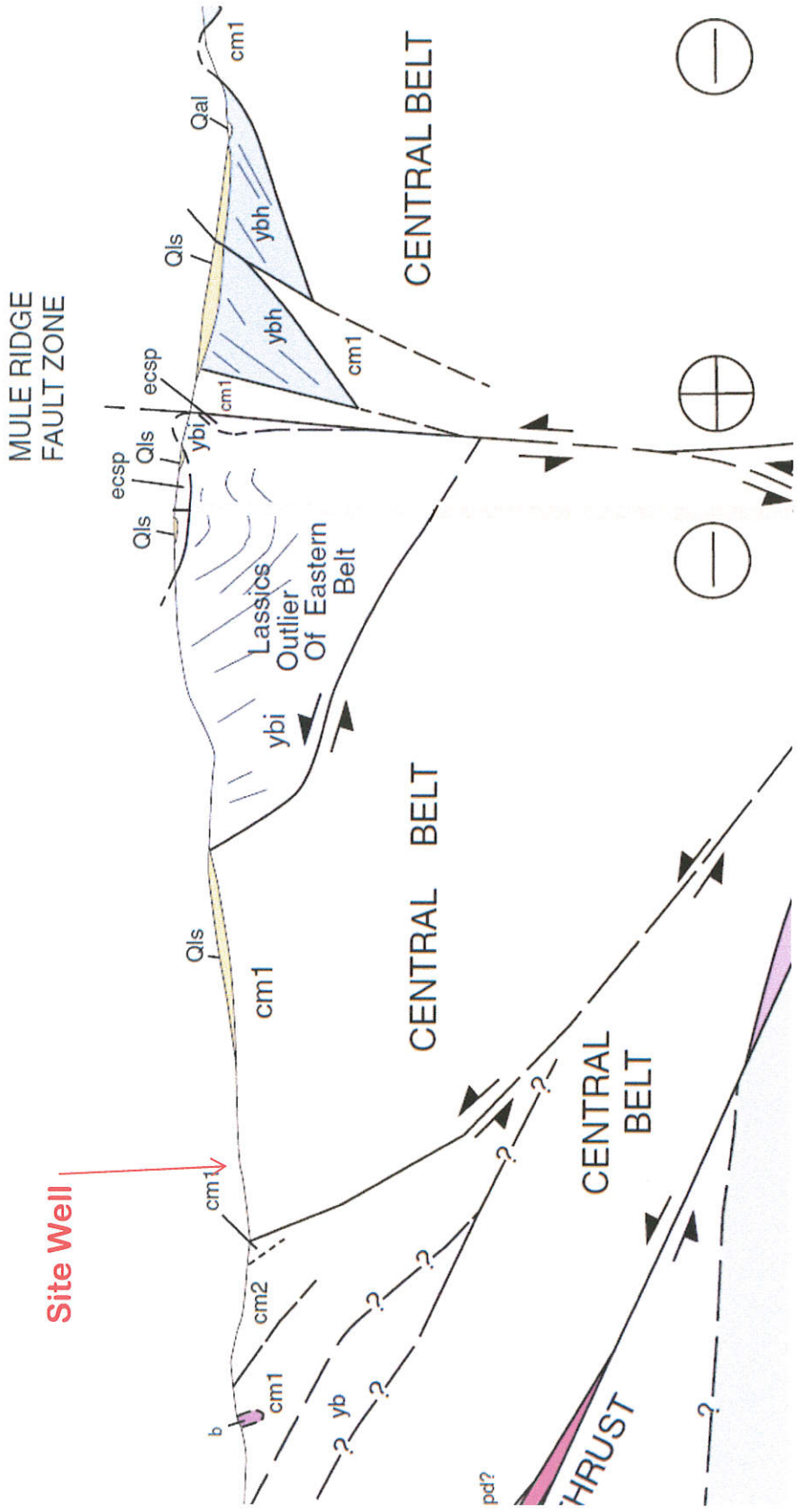
- Inclined
- Vertical

Folds:

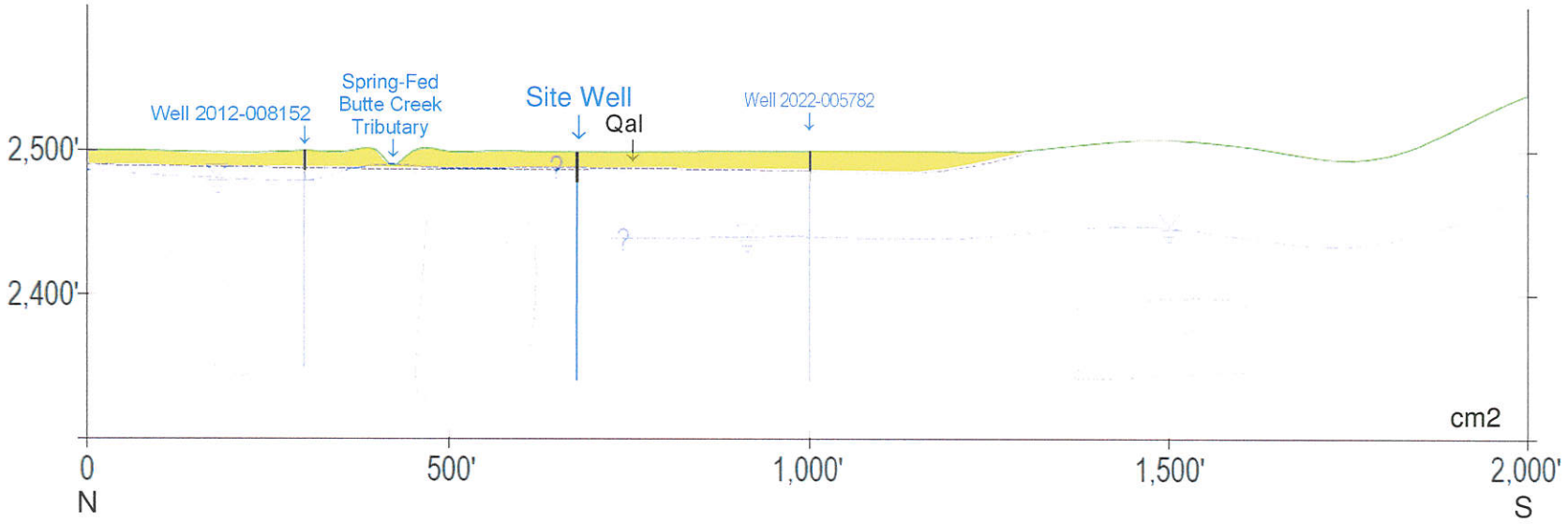
- Synclinal or synformal axis
- Anticlinal or antiformal axis
- Overturned syncline
- Landslide
- Melange Blocks
- Serpentinite
- Chert
- Blueschist
- Greenstone
- Fossil locality and number

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 Well Connectivity Assessment Report	Figure 5
Post Office Box 306	33865 Highway 36, Bridgeville, California	October 26, 2022
Cutten, CA 95534	DWR Well 2012-008156, APN 210-051-070, Larabee Farm LLC, Client	Project 0475.00
(707) 442-6000	Generalized Geologic Cross Section (locations approximate)	Not to Scale



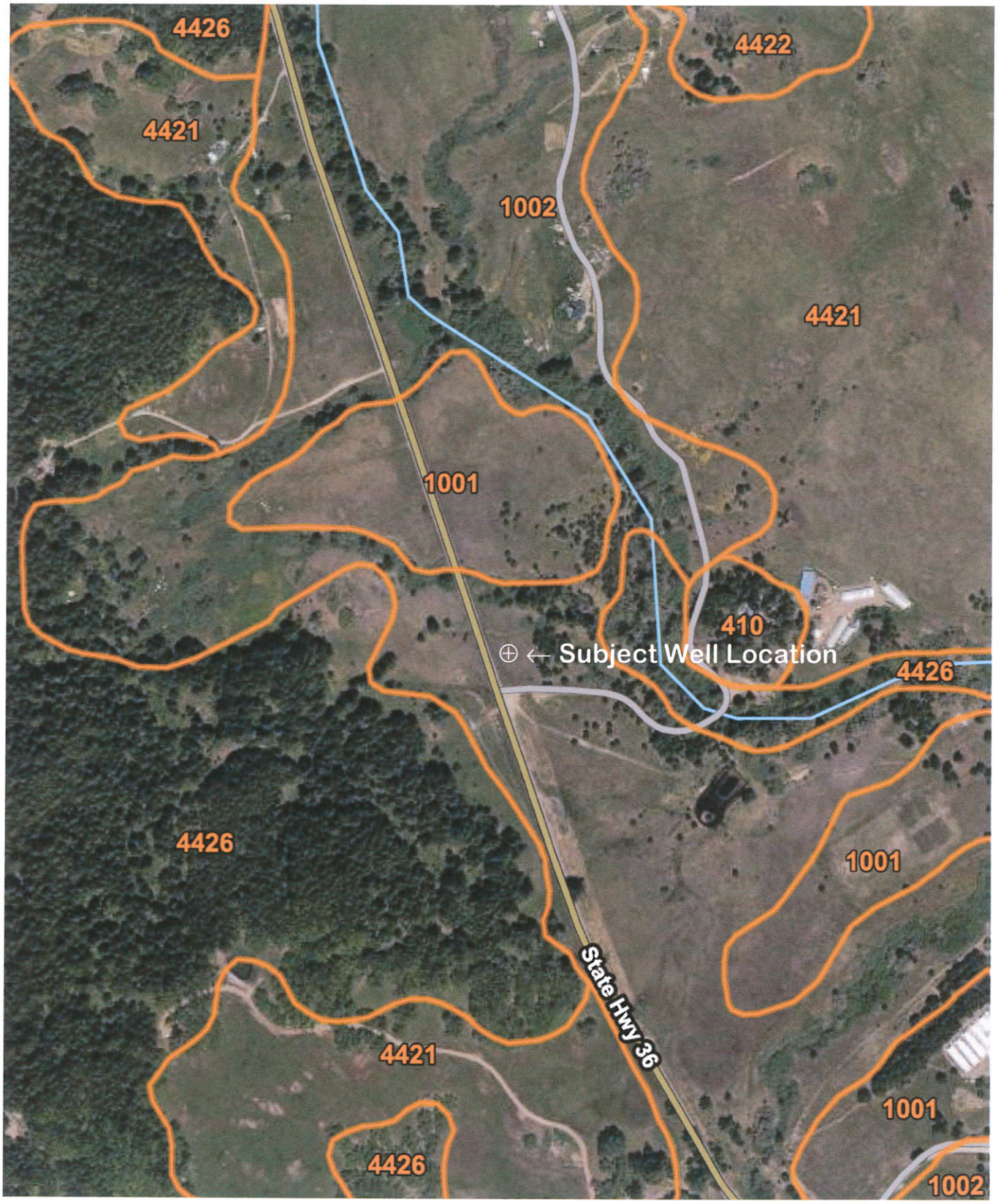
Modified from: McLaughlin, et al., (2,000).



In this vertically exaggerated (~2x) cross section, the view is looking down slope and toward the east. Groundwater flow in this cross section is away from the viewer, or into the page. Groundwater is presumed to flow from recharge areas in the higher ground to the southwest, to the northeast toward Larabee Valley and unnamed tributaries of Butte Creek. Bedrock subgrade is mapped by McLaughlin et al. as composed of mélange (cm2) of the Central Belt of the Franciscan Complex. Mélange is one of several components of the Central Belt Franciscan Complex. Groundwater is envisioned as flowing through fractured zones in the metasandstone portion of the mélange. Fractures are interpreted to be the primary permeability and providing preferential flow paths for groundwater in this area. Differing water levels in the Site Well and well 2012-008152, indicate that they likely encountered different aquifers.

Lindberg Geologic Consulting	Engineering-Geologic Well Connectivity Assessment Report	Figure 6
Post Office Box 306	33865 Highway 36, Bridgeville, California	October 26, 2022
Cutten, CA 95534	DWR Well 2012-008156, APN 210-051-070, Larabee Farm LLC, Client	Project 0475.00
(707) 442-6000	Hydrogeologic Cross Section (locations approximate)	2X V. E.

Lindberg Geologic Consulting	Engineering-Geologic Well Connectivity Assessment Report	Figure 7
Post Office Box 306	33865 Highway 36, Bridgeville, California	October 26, 2022
Cutten, CA 95534	DWR Well 2012-008156, APN 210-051-070, Larabee Farm LLC, Client	Project 0475.00
(707) 442-6000	USDA-NRCS Soil Map (locations approximate)	Scale not Determined



Modified from: USGS-NRCS Web Soil Survey, September 28, 2022 N ≈

*The free Adobe Reader may be used to view and complete this form. However, software must be purchased to complete, save, and reuse a saved form.

File Original with DWR JUN 22 2012

Page 1 of 2

Owner's Well Number 1

Date Work Began 05/29/2012 Date Work Ended 5/30/2012

Local Permit Agency Humboldt County E.H.D.

Permit Number 11/12/0494 Permit Date 6/5/12

State of California

Well Completion Report

Refer to Instruction Pamphlet

No. e0153131

DWR Use Only – Do Not Fill In

State Well Number/Site Number: 01N | 04E - 23

Latitude N | Longitude W

APN/TRS/Other

Geologic Log

Orientation ◉ Vertical ○ Horizontal ○ Angle Specify

Drilling Method Direct Rotary Drilling Fluid Bentonite mud

Depth from Surface Feet	to Feet	Description Describe material, grain size, color, etc
0	3	Top Soil
3	16	Clay Brown
16	21	Sand W/Small Gravel Brown
21	27	Sand W/Layers of Clay Brown
27	39	Blue Clay W/Birds Eye Gravel
39	67	Blue Clay W/Sand Layers
67	92	Dark Blue Clay
92	120	Sandstone Blue

Total Depth of Boring 120 Feet

Total Depth of Completed Well 120 Feet

Well Location

Address 33865 Hwy 36

City Bridgeville County Humboldt

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

Datum ___ Decimal Lat. ___ Decimal Long. ___

APN Book 210 Page 051 Parcel 070

Township 01N Range 04E Section 23

Location Sketch

(Sketch must be drawn by hand after form is printed.)

North / West / East / South

Illustrate or describe distance of well from roads, buildings, fences, rivers, etc. and attach a map. Use additional paper if necessary. Please be accurate and complete.

Activity

◉ New Well
○ Modification/Repair
○ Deepen
○ Other
○ Destroy
Describe procedures and materials under "GEOLOGIC LOG"

Planned Uses

◉ Water Supply
☑ Domestic ☐ Public
☐ Irrigation ☐ Industrial
○ Cathodic Protection
○ Dewatering
○ Heat Exchange
○ Injection
○ Monitoring
○ Remediation
○ Sparging
○ Test Well
○ Vapor Extraction
○ Other

Water Level and Yield of Completed Well

Depth to first water 21 (Feet below surface)

Depth to Static Water Level 16 (Feet) Date Measured 05/30/2012

Estimated Yield * 15 (GPM) Test Type Air Lift

Test Length 4.0 (Hours) Total Drawdown 60 (Feet)

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

Casings

Depth from Surface Feet	to Feet	Borehole Diameter (Inches)	Type	Material	Wall Thickness (Inches)	Outside Diameter (Inches)	Screen Type	Slot Size if Any (Inches)
0	20	10	Blank	PVC Sch. 80	CL200	5		
20	120	10	Screen	PVC Sch. 80	CL200	5	Milled Slots	0.032

Annular Material

Depth from Surface Feet	to Feet	Fill	Description
0	20	Bentonite	Sanitary Seal
20	120	Filter Pack	#3 Sand

Attachments

☐ Geologic Log
☐ Well Construction Diagram
☐ Geophysical Log(s)
☐ Soil/Water Chemical Analyses
☑ Other Location Map

Attach additional information, if it exists.

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 HYDESVILLE CA 95547
Address City State Zip

Signed
C-57 Licensed Water Well Contractor

06/06/2012 Date Signed

683865 C-57 License Number

DWR 188 REV. 1/2006

IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM

State of California

Well Completion Report

Form DWR 188 Submitted 5/23/2022

WCR2022-005782

Owner's Well Number

Date Work Began 05/19/2022 Date Work Ended 05/20/2022

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

Secondary Permit Agency

Permit Number 20/21-1183 Permit Date 09/20/2021

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

Name 4 WHEEL PROPERTIES LLC.

Mailing Address P.O. Box 202

City Carlotta State CA Zip 95528

Planned Use and Activity

Activity New Well

Planned Use Water Supply Domestic

Well Location

Address 2238 Run Down Acres RD

City Bridgeville Zip 95526 County Humboldt

Latitude 40 Deg. 26 Min. 54.888 Sec. N Longitude -123 Deg. 41 Min 31.1279 Sec W

Dec. Lat. 40.44858 Dec. Long. -123.69198

Vertical Datum Horizontal Datum WGS84

Location Accuracy Location Determination Method

APN 210-054-008

Township 01 N

Range 04 E

Section 23

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 160 Feet

Total Depth of Completed Well 160 Feet

Water Level and Yield of Completed Well

Depth to first water 61 (Feet below surface)

Depth to Static Water Level 20 (Feet) Date Measured 05/20/2022

Estimated Yield* 25 (GPM) Test Type Air Lift

Test Length 4 (Hours) Total Drawdown 11 (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	16	Brown Clay
16	32	Brown Silty Clay/Brown Sandstone
32	61	Brown Sandstone
61	83	Blue Sandstone
83	130	Fractured Shale
130	131	Shale Clay
131	160	Fractured 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	160	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	160	Filter Pack	Other Gravel Pack	3/8 inch	Pea Gravel

Other Observations:

Borehole Specifications

Depth from Surface Feet to Feet		Borehole Diameter (inches)
0	160	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) | 05/23/2022 (Date Signed) | 683865 (C-57 License Number)

Attachments

Location Map.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:

*The free Adobe Reader may be used to view and complete this form. However, software must be purchased to complete, save, and reuse a saved form.

File Original with DWR

Page 1 of 2 JUN -4 2012

Owner's Well Number 1

Date Work Began 05/23/2012 Date Work Ended 5/29/2012

Local Permit Agency Humboldt County E.H.D.

Permit Number 11/12-0147 Permit Date 10/6/11

State of California

Well Completion Report

Refer to Instruction Pamphlet

No. e0152676

DWR Use Only – Do Not Fill In

State Well Number/Site Number: 01N | 01E | 23

N | W

Latitude | Longitude

APN/TRS/Other

Geologic Log

Orientation ⊙ Vertical ○ Horizontal ○ Angle Specify

Drilling Method Direct Rotary Drilling Fluid Bentonite mud

Depth from Surface Feet	to Feet	Description Describe material, grain size, color, etc
0	3	Top Soil
3	18	Silty Clay, Brown
18	108	Layered Clay/Sand/Fractured Rock, Grey
108	120	Sandstone, Grey

Total Depth of Boring 120 Feet

Total Depth of Completed Well 120 Feet

Well Location

Address 33796 Hwy 36

City Bridgeville County Humboldt

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

Datum ___ Decimal Lat. ___ Decimal Long. ___

APN Book 210 Page 051 Parcel 027

Township 01N Range 01E Section 23

Location Sketch

(Sketch must be drawn by hand after form is printed.)

North / West / East / South

Illustrate or describe distance of well from roads, buildings, fences, rivers, etc. and attach a map. Use additional paper if necessary. Please be accurate and complete.

Activity

⊙ New Well

○ Modification/Repair
- ○ Deepen
- ○ Other

○ Destroy

Describe procedures and materials under "GEOLOGIC LOG"

Planned Uses

⊙ Water Supply
- ☑ Domestic ☐ Public
- ☐ Irrigation ☐ Industrial

○ Cathodic Protection
○ Dewatering
○ Heat Exchange
○ Injection
○ Monitoring
○ Remediation
○ Sparging
○ Test Well
○ Vapor Extraction
○ Other

Water Level and Yield of Completed Well

Depth to first water 21 (Feet below surface)

Depth to Static Water Level 21 (Feet) Date Measured 05/24/2012

Estimated Yield * 5 (GPM) Test Type Air Lift

Test Length 4.0 (Hours) Total Drawdown 105 (Feet)

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

Casings

Depth from Surface Feet	to Feet	Borehole Diameter (Inches)	Type	Material	Wall Thickness (Inches)	Outside Diameter (Inches)	Screen Type	Slot Size if Any (Inches)
0	20	10	Blank	PVC Sch. 80	CL200	5		
20	120	10	Screen	PVC Sch. 80	CL200	5	Milled Slots	0.032

Annular Material

Depth from Surface Feet	to Feet	Fill	Description
0	20	Bentonite	Sanitary Seal
20	100	Filter Pack	#3 Sand

Attachments

- ☐ Geologic Log
- ☐ Well Construction Diagram
- ☐ Geophysical Log(s)
- ☐ Soil/Water Chemical Analyses
- ☑ Other Location Map

Attach additional information, if it exists.

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 [signature] (C-57 Licensed Water Well Contractor) 05/29/2012 (Date Signed) 683865 (C-57 License Number)

DWR 188 REV. 1/2006

IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM

Humboldt County, Central Part, California

1002—Frostvalley-Mulecreek complex, 2 to 9 percent slopes

Map Unit Setting

National map unit symbol: 2sx6d
Elevation: 2,300 to 3,610 feet
Mean annual precipitation: 64 to 76 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 60 to 120 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Frostvalley and similar soils: 48 percent
Mulecreek and similar soils: 42 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Frostvalley

Setting

Landform: Terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from metasedimentary rock

Typical profile

Ap - 0 to 3 inches: loam
A - 3 to 20 inches: loam
AB - 20 to 35 inches: loam
Bw - 35 to 47 inches: gravelly loam
C - 47 to 79 inches: very gravelly loamy sand

Properties and qualities

Slope: 2 to 9 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 (0.57 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 9.9 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: B
Ecological site: F005XZ003CA - Terraces
Hydric soil rating: No

Description of Mulecreek

Setting

Landform: Terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave, linear
Across-slope shape: Linear, concave
Parent material: Alluvium derived from metasedimentary rock

Typical profile

Ap - 0 to 4 inches: loam
A - 4 to 22 inches: loam
Bt1 - 22 to 30 inches: clay loam
Bt2 - 30 to 37 inches: clay loam
Bt3 - 37 to 55 inches: clay loam
BCt - 55 to 79 inches: clay loam

Properties and qualities

Slope: 2 to 9 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: About 20 to 39 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 11.1 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: F005XZ003CA - Terraces
Hydric soil rating: No

Minor Components

Pasturerock, dry

Percent of map unit: 5 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Concave, convex, linear
Across-slope shape: Linear, concave, convex
Hydric soil rating: No

Rockyglen

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: Convex
Across-slope shape: Linear
Hydric soil rating: No

Data Source Information

Soil Survey Area: Humboldt County, Central Part, California
Survey Area Data: Version 9, Sep 1, 2022