VANNUCCI MOMSEN MORROW

Attorneys at Law
An Association of Sole Practitioners

Philip M. Vannucci
Brian S. Momsen
The Hofman Building
308 S School St., 1st Fl.
Ukiah, CA 95482
Phone: 707.462.0900
Email: pvannucci@vmm-law
Email: bmomsen@vmm-law.com

Colin W. Morrow
The Penny Farthing Building
45060 Ukiah St., 2nd Fl.
P.O. Box 1214
Mendocino, CA 95460
Phone: 707.380.1070
Email: cmorrow@vmm-law.com

April 6, 2021

VIA EMAIL ONLY

County of Mendocino
Department of Planning and Building Services
860 North Bush St.
Ukiah, CA 95482
(pbs@mendocinocounty.org)

Re: Hearing Date & Time: April 8, 2021 @ 11:00 AM
Case Number: B_2017-0043
Date Filed: 6/30/2017
Owner: WM Parentship, LLC & Travis Swithenbank
Applicant: Vance Ricks
Agent: Jim Ronco
Staff Planner: Mark Cliser
Re: Demand for Denial of Boundary Line Adjustment Application

To whom it may concern:

I. Introduction

I represent Dr. William Schieve, and I write on behalf of him in my capacity as his attorney. Dr. Schieve is a resident of Mendocino County. Dr. Schieve resides at—and owns the real property located at—32880 Nameless Lane in the northern Cleone area Fort Bragg, California. Dr. Schieve's real property directly abuts one of the parcels subject to the above referenced boundary line adjustment application. Dr. Schieve wholly objects to the approval of the boundary line adjustment application referenced above, including for the reasons described herein and based upon any and all other reasons that may be raised by other opponents in the course of the review of the above referenced application.

Very generally, the Nameless Lane community and real properties subject to this application straddle the Coastal Zone boundary. The area possesses only marginal water resources. At least seventy-three species of sensitive flora and forty-three species of sensitive fauna can reasonably be expected to be found in the vicinity of the area. There facts are contained in documents attached hereto as Exhibit A that the applicant himself has submitted to

the California Coastal Commission. Nameless Lane is a small private road only twenty feet in width that connects to Highway One at a T-shaped intersection lacking any turn pocket. There is no other route in ingress or egress serving the community. Residents depend upon individual groundwater wells, but a Department of Water Resources survey excerpts of which are attached hereto as Exhibit B not that among other things, "[n]orth of Cleone . . . terrace deposits are generally less than 10 m (33 ft) thick, discontinuous, and less dependable as sources of usable groundwater." This report also notes that there may be a concealed hinge fault located in the area.

For the reasons described below, and any other arguments that may be raised in relation to this matter, the above referenced boundary line adjustment should not—and cannot—be approved.

II. The Purported Boundary Line Adjustment, As Proposed, Would Impermissibly Result in the Creation of New Parcels Within the Meaning of the Subdivision Map Act

The exclusion from the Subdivision Map Act ordinarily applicable to boundary line adjustments is found in Government Code section 66412, subdivision (d). Among the constraints in this subdivision is that a boundary line adjustment cannot create "a greater number of parcels than originally existed." Mendocino County Code section 17-17.5 similarly constrains any boundary line adjustment as "not for the purpose of creating an additional lot or parcel."

The definition of a lot or parcel for purposes of the Subdivision Map Act is broad. Under Government Code section 66424:

> "Subdivision" means the division, by any subdivider, of any unit or units of improved or unimproved land, or any portion thereof, shown on the latest equalized county assessment roll as a unit or as contiguous units, for the purpose of sale, lease, *or financing*, whether immediate or future.

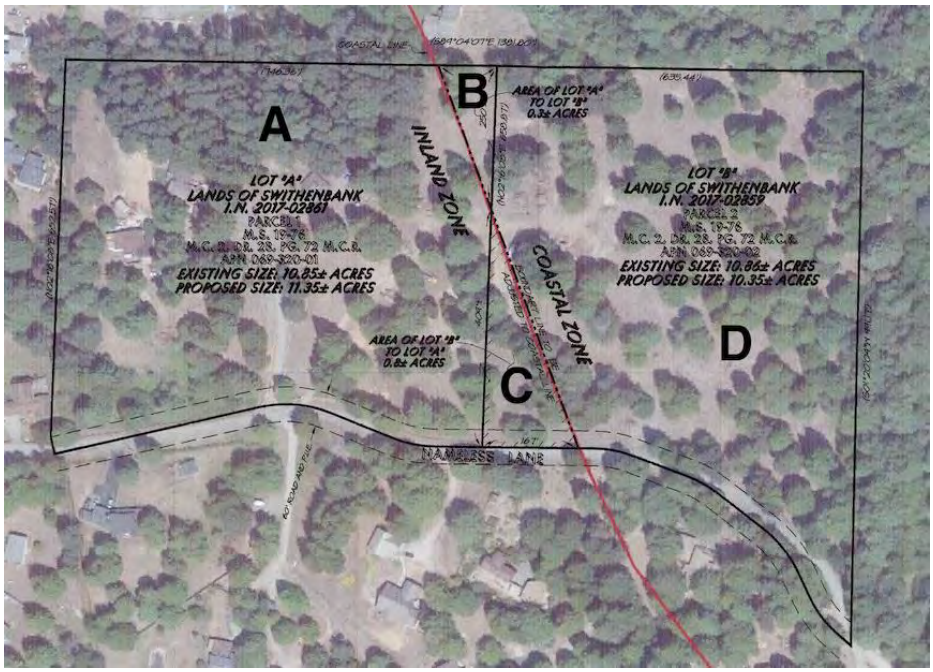
(Emphasis added.)

This definition has routinely and consistently been broadly construed. Especially pertinent here—without limitation—is that the act of creating multiple deeds of trust upon different portions of a parcel or unit of land constitutes a division of land within the meaning of a "subdivision" under this section. (58 Op.Atty.Gen. 408 (1975); *see also* Miller & Starr, 7 Cal. Real Est. (4th Ed., Through Nov. 2020 Update) § 20:3 ["A 'subdivision' within the Act also includes any "division" of land for purposes of financing."].)

Here, as demonstrated by the preliminary title report attached hereto as Exhibit C, APN 069-320-01 ("Tract One") is owned by WM Partnership, LLC ("WM Partnership") subject to a deed of trust recorded in Official Records as 2019-06260 stating that it secures an indebtedness in favor of beneficiary Summit State Bank ("Summit"). APN 069-320-02 ("Tract Two") is owned by Travis Swithenbank ("Swithenbank") subject to a deed of trust recorded in Official

Records as 2019-00113 stating that it secures an indebtedness in favor of beneficiary Richard L. Perry, Jr. and Dorothy L. Perry, Trustees of the Richard L. Perry, Jr. and Dorothy L. Perry Living Trust dated March 1, 2005 (collectively "Perry").

Accordingly, even if WM Partnership and Swithenbank execute a deed to effectuate the boundary line adjustment, because that deed will be subject to the existing deeds of trust, such a boundary line adjustment will result in four parcels or lots as those terms are broadly defined under the Subdivision Map Act. The following figure—based of a figure provided in Swithenbank's own application—illustrates as much:



The labels of A, B, C, and D on the above figure illustrate that under the broad definition of a lot, parcel, and/or subdivision under the Subdivision Map Act, four parcels will exist:

> **A** represents the portion of the new Tract One that will be subject to the Summit deed of trust.
> **B** represents the portion of the new Tract Two that will be subject to the Summit deed of trust.
> **C** represents the portion of the new Tract One that will be subject to the Perry deed of trust.
> **D** represents the portion of the new Tract Two that will be subject to the Perry deed of trust.

Put simply—at a bare minimum—to approve the boundary line adjustment as submitted would be contrary to both the Subdivision Map Act and the Mendocino County Code. The boundary line adjustment would improperly be creating additional and substandard parcels. The

County would not be proceeding in a manner required by law.

III. The Boundary Line Application Fails to Supply Required Information

Mendocino County Code section 17-17.5 requires that a "tentative map of a proposed boundary line adjustment *shall* contain"—among other things—"[t]he approximate location of all existing or proposed easements together with the purpose thereof." (Mendocino County Code section 17-17.5 & *id.* at subd. (E) (emphasis added).)

As the preliminary title report attached hereto as Exhibit C demonstrates, the subject parcels are burdened by, among other things, easements described in the deeds recorded at Book 40 of Deeds Page 543; Book 46 of Deeds Page 365; and Book 898 Page 163 of Deeds; as well as the subdivision map recorded at Map Case 2, Drawer 28, Page 72.

Copies of these instruments are collectively attached hereto as Exhibit D. Nevertheless, the only easement referenced in the boundary line adjustment application is the sixty-foot-wide road and public utility easement on Nameless Lane.[1] The subdivision map recorded at Map Case 2, Drawer 28, Page 72 specifically calls out that "[a]ll natural draws and creeks constitute a drainage easement being determined by the highwater mark plus five feet or a minimum width of twenty feet," yet there is not an iota of information describing these easements in the boundary line adjustment application. Such easements may render vast swaths of the proposed boundary adjusted parcels unbuildable, but one cannot tell without the easements being depicted as required under the County of Mendocino's own code. The easements described in the deeds recorded in Book 40 of Deeds Page 543 and Book 46 of Deeds Page 365 similarly appear to have been totally glossed over.

The Mendocino County Code in unequivocal as to it being required that these easements "shall" be described in the tentative map, but the applicant has failed to describe them. Accordingly, to approve the boundary line adjustment would be to fail proceed in a manner required by law.

IV. Approval of the Boundary Line Adjustment Is Not Exempt from CEQA; the County Is Engaging Impermissible Piecemealing

The California Environmental Quality Act ("CEQA") generally requires that a government project be subject to environmental review both to educate all sides as to potential environmental impacts and to consider appropriate mitigation measures. CEQA defines a "project" as a public action "which may cause either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment." (Pub. Res. Code § 21065.) "CEQA's conception of a project is broad," and "the term is broadly construed and

[1] Please note, however, that this easement—even though described as Nameless Lane—has only been developed as a far narrower twenty-foot-wide driveway and does not appear to meet the CalFire regulations attached hereto as Exhibit E.

applied in order to maximize protection of the environment." (*Nelson v. County of Kern* (2010) 190 Cal.App.4th 252, 271.)

Here, it is plain that this is not a boundary line adjustment existing in isolation—which is all that categorical exemption 5a was ever intended to address. Instead, this application is part of a broader subdivision project that is indisputably not exempt from CEQA and will undoubtedly have effects on the environment. The entire project must be examined as a whole and cannot be piecemealed:

> An accurate, stable and finite project description is the *sine qua non* of an informative and legally sufficient EIR; the defined project and not some different project must be the EIR's bona fide subject. . . . . CEQA compels an interactive process of assessment of environmental impacts and responsive project modification which must be genuine. It must be . . . , premised upon a full and meaningful disclosure of the scope, purposes, and effect of a consistently described project, with flexibility to respond to unforeseen insights that emerge from the process.

(*Burbank-Glendale-Pasadena Airport Authority v. Hensler* (1991) 233 Cal.App.3d 577, 592 [284 Cal.Rptr. 498, 506–507 (citations and quotation marks omitted); *see also Golden Door Properties, LLC v. County of San Diego* (2018) 27 Cal.App.5th 892, 905–906 [invalidating environmental planning document for taking piecemeal approach].)

Additionally, even where a CEQA exemption applies, there are also exceptions to the exemptions and the respondent, defendant, or real party in interest in any judicial proceeding that challenges an act will need to defend not just the exemption but all implied findings that the exceptions to the exemptions do not apply. (*See* Cal. Code Regs., tit. 14, § 15300.2; Miller and Starr, 8 Cal. Real Est. (4th Ed., Through Nov. 2020 Update) § 26:9.)

At least three exceptions to any CEQA emptions are plainly present here: Location, cumulative impacts, and the presence of hazardous waste. (Cal. Code Regs., tit. 14, § 15300.2, subdivisions (a, b, & e).)

As to location, the County of Mendocino itself admits the project to be hydrologically connected to the Inglenook Fen watershed via an onsite wetland. The County of Mendocino itself explains that the Inglenook Fen is a Resource Area as designated by the California Natural Areas Coordinating Council and acknowledges that future development should be conditioned to establish buffer areas so that development does not encroach upon the wetland. The County of Mendocino itself also notes soils conducive to sensitive Bishop Pine forest and that Bishop Pines were noted on the site in question. Additional information on Inglenook Fen is described in the material attached hereto as Exhibit F.

As to cumulative impacts, this dovetails with the already mentioned subdivision and piecemealing. Traffic will increase, additional vehicle miles driven by residents of new

development will have greenhouse gas implications, the local water table that feeds neighbors' groundwater wells will be impacted, soil will be disturbed, flora and fauna will be impacted. The list goes on.

As to hazardous waste, there are unaddressed hazardous waste concerns in relation to the subject real property. Per the documents attached hereto as Exhibit G, in September 2010, the Mendocino County Air Quality Management ("MCEHD") district collected a soil sample at the subject real property that contained high diesel and motor oil concentrations. In December 2010, MCEHD issued an unauthorized release report for unpermitted activities involving crushing using heavy equipment of vehicles and appliances for metal scraping. This matter is still open and unremedied. Per Exhibit G, in February 2021 petroleum/hydrocarbon products were still present in the soil. Neighbors report a history of vehicle crushing operations on the subject real property, and such vehicles could have contained a multitude of contaminants. My client and the other real property owners in the area depend upon both groundwater wells for their domestic water and any plumes or other contamination within the water table are of paramount concern. Finally on the topic of hazardous waste—and dovetailing with the concerns of cumulative impacts and piecemealing—the only recent testing has been at the very surface of the soil. If the land is to be subdivided and developed, however, deeper plumes may be disturbed and caused to migrate. The impacts could affect not just human neighbors, but also the flora and fauna that call the area home. The research attached as Exhibit H demonstrates that metal contamination in soils can affect Bishop Pines, which are present in the area.

"[A] finding of categorical exemption cannot be sustained if there is a 'fair argument' based on substantial evidence that the project will have significant environmental impacts, even where the agency is presented with substantial evidence to the contrary." (*Banker's Hill, Hillcrest, Park West Community Preservation Group v. City of San Diego* (2006) 139 Cal.App.4th 249, 262, fn. 12 quoting *Fairbank v. City of Mill Valley* (1999) 75 Cal. App. 4th 1243.) "This unusual 'fair argument' standard of review over a public agency's decision has been characterized as setting a 'low threshold requirement for initial preparation of an EIR and reflects a preference for resolving doubts in favor of environmental review when the question is whether any such review is warranted.'" (*Georgetown Preservation Society v. County of El Dorado* (2018) 30 Cal.App.5th 358, 370 quoting *Sierra Club v. County of Sonoma* (1992) 6 Cal.App.4th 1307, 1316–1317.)

Finally on the subject of CEQA, this matter is not subject to the ministerial exemption. The County has already demonstrated discretion exists, the boundary line adjustment is part of a broader project, and—as discussed below—state statutes and local codes contemplate that the project must be found to comport with the general plan, and such a finding is necessarily discretionary.

In other words, relying upon a categorical exemption is the weakest CEQA approach to rely upon if a matter ends up in Court. It is the approach most likely to expose the County of Mendocino, Swithenbank, and WM Partnership to a court order compelling it to comply with CEQA and to pay the opposing party's legal fees.

V. To Approve the Application Would Be Contrary to the General Plan

"[T]he general plan has been aptly described as the constitution for all future developments within the city or county." (*Orange Citizens for Parks & Recreation v. Superior Court* (2016) 2 Cal.5th 141, 152 ["*Orange*"] (citations and quotation marks omitted).) "The propriety of virtually any local decision affecting land use and development depends upon consistency with the applicable general plan and its elements.'" (Citizens of Goleta Valley v. Board of Supervisors (1990) 52 Cal.3d at 553, 570 quoting *Resource Defense Fund v. County of Santa Cruz* (1982) 133 Cal.App.3d 800, 806.) "'An action, program, or project is consistent with the general plan if, considering all its aspects, it will further the objectives and policies of the general plan and not obstruct their attainment.;" (Orange, *supra,* 2 Cal.5th at p. 153 quoting Governor's Office of Planning & Research, General Plan Guidelines (2003) p. 164.)

To approve this boundary line adjustment in the context of the applicant's broader plan to subdivide real property for development would be contrary to Mendocino County's General Plan. Moreover, Government Code section 66412, subdivision (d)—discussed above—specifically contemplates that body reviewing will consider whether a "lot line adjustment will conform to the local general plan."

Mendocino County's General Plan contemplates that part of the costal element is "[t]o preserve and maintain the character of the rural atmosphere and visual quality of" villages such as Cleone and other nearby communities. (General Plan, Costal Element, Chapter 2.2, Rural Village Land Use Classification.) The "principal permitted use" for parcels in rural coastal villages such as Cleone is "[o]ne dwelling unit per *existing* parcel and associated utilities and light agriculture." (*Ibid.* (emphasis added).).

Expanded traffic pressure from a subdivision enabled by the boundary line adjustment may also run contrary to the Mendocino County General Plan's specific acknowledgement of Public Resources Code section 30254's requirement that "in rural areas of the coastal zone [Highway 1] remain a scenic two-lane road." (General Plan, Costal Element, Chapter 3.8, Transportation, Utilities and Public Services.)

The applicable staff report also fails to adequately address Costal Element Policy 3.8-7. This policy requires that:

> Land divisions and subdivisions creating new parcels or building sites or other proposed development, *including lot line adjustments*, mergers and issuance of conditional certificates of compliance shall be approved only where a community sewage disposal system with available capacity exists

> and is obligated to provide service or where a satisfactory site for a sewage system exists. *Leach field approval shall require satisfactory completion of a site evaluation on the site of each proposed septic system*.

(Emphasis added.)

The plain reading of this policy is that before a boundary line adjustment can be processed in a coastal area such as Nameless Lane that does not have a community sewage disposal system then an actual site evaluation of any contemplated leach field must be completed prior to the boundary line adjustment. Per the subdivision map recorded at Map Case 2, Drawer 28, Page 72 "[t]he Division of Environmental Health has [long ago] determined that sub surface drainage may be required to assure proper functioning of sewage system disposal fields." Nevertheless, the County is glossing over what it has already identified as being an issue.

VI. Judicial Relief Will Be Sought If Necessary

The County of Mendocino should not—and cannot—approve this boundary line adjustment application. The County would not be proceeding in a manner required by law for a plurality of separate and independent reasons. The County would be wantonly exposing itself, WM Partnership, and Swithenbank to a potential writ or declaratory relief action. A prevailing plaintiff attorney fee award under—without limitation—Code of Civil Procedure section 1021.5 inclusive of potential catalyst fees would almost be certain.

There is no guarantee that Swithenbank in his capacity as applicant will have the resources to actually indemnify the County of Mendocino for what could potentially prove a costly attorney's fee award in favor of Dr. Schieve as a prevailing party and the County of Mendocino may be stuck footing the bill.

At the end of the day this unlawful boundary line adjustment is nothing more than an effort by WM Partnership and Swithenbank to do an end around longstanding protections coastal protections. WM Partnership and Swithenbank should not be allowed to make use of an unlawful boundary line adjustment in lieu of going through the costal development permitting process. Law and pragmatism both compel the denial of the present application.

On behalf of my client, Dr. William Schieve, I respectfully ask that the present boundary line application be denied.

Respectfully submitted,

Colin Morrow

CC (email only): Client
Concerned Neighbors of the Cleone Community

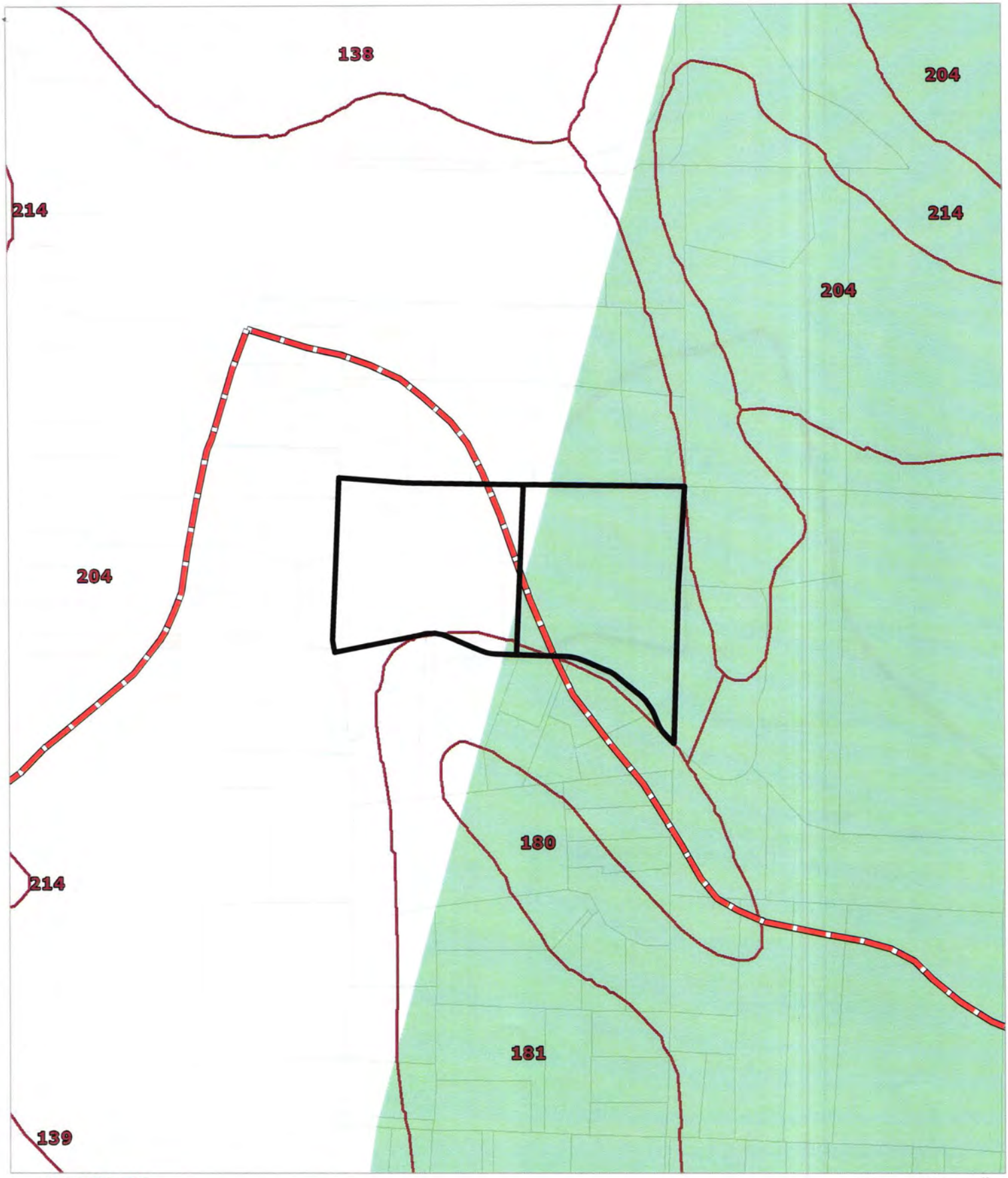
EXHIBIT A

CASE: S 2017-0003
OWNER: SWITHENBANK, Travis
APN: 069-320-01
APLCT: Vance Ricks
AGENT: Jim Ronco
ADDRESS: 32800 Nameless Lane, Fort Bragg

Coastal Zone Boundary
Dunes
Sufficient Water Resources
Marginal Water Resources

0 250 500 Feet
0 0.0425 0.085 Miles
1:6,000

GROUND WATER RESOURCES



CASE: S 2017-0003
OWNER: SWITHENBANK, Travis
APN: 069-320-01
APLCT: Vance Ricks
AGENT: Jim Ronco
ADDRESS: 32800 Nameless Lane, Fort Bragg

Coastal Zone Boundary
Western Soil Classes
Bishop Pine

0 250 500 Feet
0 0.0425 0.085 Miles
N W E S
1:6,000

LOCAL SOILS

5.2 Special-status Species

5.2.1 Special-status Plant Species

Upon review of the resource databases listed in Section 4.2, seventy-three (73) special-status plant species have been documented within the vicinity of the Study Area. Please refer to Appendix B for a table of all special-status plant species with a potential to occur, as well as a discussion of the likelihood for each species to occur within the Study Area based on habitat present. Of the 73 special-status species documented within the vicinity of the Study Area, forty-seven (47) special-status species are unlikely or have no potential to occur due to:

- Hydrologic conditions (e.g., vernal pools, riverine) necessary to support the special-status plant species are not present within the Study Area;
- Edaphic conditions (soils, e.g., rocky outcrops, serpentinite) necessary to support the special-status plant species are not present within the Study Area;
- Topographic conditions (e.g., montane) necessary to support the special-status plant species are not present within the Study Area;
- Unique pH conditions (e.g., alkali scalds, acidic bogs) necessary to support the special-status plant species are not present within the Study Area;
- Associated vegetation communities (e.g., interior chaparral, tidal marsh) necessary to support the special-status plant species are not present within the Study Area;
- The Study Area is geographically isolated (e.g., outside of required elevations, coastal environment) from the documented range of the special-status plant species;

The twenty-six (26) special-status plant species with potential to occur within the Study Area are described below:

- **Humboldt County milk-vetch** (*Astragalus agnicidus* - Rare Plant Species Rank 1B.1): Broadleafed upland forest, North Coast coniferous forest, mixed evergreen forests; openings, disturbed areas, sometimes roadsides; Blooming period – April to September.
- **Bolander's reed grass** (*Calamagrostis bolanderi*- Rare Plant Rank 4.2): Bogs and fens, Broadleafed upland forest, Closed-cone coniferous forest, Coastal scrub, Meadows and seeps (mesic), Marshes and swamps (freshwater), North Coast coniferous forest/mesic. Elevation ranges from 0-1495 feet. Blooming period- May to August.
- **coastal bluff morning-glory** (*Calystegia purpurata ssp. saxicola*- Rare Plant Rank 1B.2): Coastal bluff scrub, Coastal dunes Coastal scrub, North Coast coniferous forest. Elevation ranges from 0-345 feet. Blooming period- (March) April to September.
- **swamp harebell** (*Campanula californica*- Rare Plant Rank 1B.2): North Coast coniferous forest, Marshes and swamps (freshwater), Bogs and fens, Closed-cone coniferous forest, Coastal prairie, Meadows and seeps/mesic. Elevation ranges from 0-1330 feet. Blooming period- June to October.
- **lagoon sedge** (*Carex lenticularis var. limnophila*- Rare Plant Rank 2B.2): Bogs and fens, Marshes and swamps, North Coast coniferous forest/ shores, beaches, often gravelly. Elevation ranges from 0-20 feet. Blooming period- June to August.

- **green yellow sedge** (*Carex viridula ssp. viridula*- Rare Plant Rank 2B.3): North Coast coniferous forest (mesic), Bogs and fens, Marshes and swamps (freshwater). Elevation ranges from 0-5250 feet. Blooming period- (June) July to September (November).
- **Pacific golden saxifrage** (*Chrysosplenium glechomifolium*- Rare Plant Rank 4.3): North Coast coniferous forest, Riparian forest/ streambanks, sometimes seeps, sometimes roadsides. Elevation ranges from 30-1495 feet. Blooming period- February to June (July).
- **Oregon goldthread** (*Coptis laciniata* – Rare Plant Species Rank 4.2): Meadows and seeps, North Coast coniferous forest (streambanks), redwood forest, Douglas-fir forest, riparian; mesic, equally likely to occur in wetland and non-wetland; Blooming period- March to April.
- **Bunchberry** (*Cornus canadensis*- Rare Plant Rank 2B.2): Bogs and fens, Meadows and seeps, North Coast coniferous forest. Elevation ranges 195-6300 feet. Blooming period- May to July.
- **Tracy's tarplant** (*Hemizonia congesta ssp. tracyi*- Rare Plant Rank 4.3): Coastal prairie, Lower montane coniferous forest, North Coast coniferous forest/openings, sometimes serpentinite. Elevation ranges from 390-3935 feet. Blooming period- May to October.
- **harlequin lotus** (*Hosackia gracilis* - Rare Plant Species Rank 4.2): Wetlands, roadsides, occasionally non-wetlands; broadleaf upland forest, coastal bluff scrub, closed-cone coniferous forest, cismontane woodland, coastal prairie, coastal scrub, meadows and seeps, marshes and swamps, North Coast coniferous forest, mixed evergreen forest, valley and foothill grassland. Blooming period- March to July.
- **marsh pea** (*Lathyrus palustris*- Rare Plant Rank 2B.2): Bogs and fens, Coastal prairie, Coastal scrub, Lower montane coniferous forest, Marshes and swamps, North Coast coniferous forest/ mesic. Elevation ranges from 0-330 feet. Blooming period- March to August.
- **coast lily** (*Lilium maritimum*-Rare Plant Rank 1B.1): Broadleafed upland forest, Closed-cone coniferous forest, Coastal prairie, Coastal scrub, Marshes and swamps (freshwater), North Coast coniferous forest/ sometimes roadsides. Elevation ranges from 15-1560 feet. Blooming period- May- to August.
- **redwood lily** (*Lilium rubescens* – Rare Plant Species Rank 4.2): Broadleafed upland forest, chaparral, lower montane coniferous forest, North Coast coniferous forest, upper montane coniferous forest, red fir forest, yellow pine forest; sometimes serpentinite, sometimes roadsides; Blooming period – April to August.
- **heart-leaved twayblade** (*Listera cordata*- Rare Plant Rank 4.2): Bogs and fens, Lower montane coniferous forest, North Coast coniferous forest. Elevation ranges from 15-4495 feet. Blooming period- February to July.
- **running-pine** (Lycopo*dium clavatum*- Rare Plant Rank 4.1): Lower montane coniferous forest (mesic), Marshes and swamps, North Coast coniferous forest (mesic)/ often edges, openings, and roadsides. Elevation ranges from 145-4020 feet. Blooming period- June to August (September).

- **leafy-stemmed miterwort** (*Mitellastra caulescens*- Rare Plant Rank 2B.2): Broadleafed upland forest, Lower montane coniferous forest, Meadows and seeps, North Coast coniferous forest/ mesic, sometimes roadsides. Elevation ranges from 15-5575 feet. Blooming period- (January-February) March to May.
- **Wolf's evening-primrose** (*Oenothera wolfii*- Rare Plant Rank 1B.1): Coastal scrub, North Coast coniferous forest/ sometimes roadsides. Elevation ranges from 95-2135 feet. Blooming period- (January-April) May to July (Augsut).
- **white-flowered rein orchid** (*Piperia candida*- Rare Plant Rank 1B.2): Broadleafed upland forest, Lower montane coniferous forest, North Coast coniferous forest/ sometimes serpentinite. Elevation ranges from 95-4300 feet. Blooming period- (March) May to September.
- **California pinefoot** (*Pityopus californicus*- Rare Plant Rank 4.2): Broadleafed upland forest, Lower montane coniferous forest, North Coast coniferous forest, Upper montane coniferous forest/mesic. Elevations range from 45-7300 feet. Blooming period- (March-April) May to August.
- **nodding semaphore grass** (*Pleuropogon refractus*- Rare Plant Rank 4.2): Lower montane coniferous forest, Meadows and seeps, North Coast coniferous forest, Riparian forest/ mesic. Elevation ranges from 0-5250 feet. Blooming period- (March) April to August.
- **angel's hair lichen** (*Ramalina thrausta*- Rare Plant Rank 2B.1): North Coast coniferous forest/ On dead twigs and other lichens. Elevation ranges from 245-1410 feet.
- **maple-leaved checkerbloom** (*Sidalcea malachroides*- Rare Plant Rank 4.2): Broadleafed upland forest, Coastal prairie, Coastal scrub, North Coast coniferous forest, Riparian woodland/ often in disturbed areas. Elevations range from 0-2395 feet. Blooming period- (March) April to August.
- **trifoliate laceflower** (*Tiarella trifoliata var. trifoliata*- Rare Plant Rank 3.2): Lower montane coniferous forest, North Coast coniferous forest/ edges, moist shady banks, streambanks. Elevation ranges from 555-4920 feet. Blooming period- (May) June to August.
- **Methuselah's beard lichen** (*Usnea longissima*- Rare Plant Rank 4.2): Broadleafed upland forest, North Coast coniferous forest/ On tree branches; usually on old growth hardwoods and conifers. Elevations range from 160-4790 feet.
- **fringed false-hellebore** (*Veratrum fimbriatum*- Rare Plant Rank 4.3): Bogs and fens, Coastal scrub, Meadows and seeps, North Coast coniferous forest/ mesic. Elevation ranges from 5-985 feet. Blooming period- July to September.

5.2.2 Special-status Animal species

Upon review of the resource databases listed in Section 4.2, forty-three (43) special-status wildlife species have been documented within the vicinity of the Study Area. Please refer to Appendix B for a table of all special-status wildlife species with a potential to occur, as well as a discussion of the likelihood for each species to occur within the Study Area based on habitat assessment.

No special-status wildlife species were observed within the Study Area during the site assessment. Twenty-three (23) special-status wildlife species have the moderate potential to occur within the Study Area. The remaining twenty (20) special-status wildlife species do not have the potential to occur due to one or more of the following reasons:

- Aquatic Habitats (e.g., streams, rivers, vernal pools) necessary to support special-status wildlife species are not present within the Study Area;
- Vegetation Habitats (e.g., forested area, riparian, grassland) that provide nesting and/or foraging resources necessary to support special-status wildlife species are not present within the Study Area;
- Physical Structures and Vegetation (e.g., caves, old-growth trees) that provide nesting, cover, and/or foraging habitat necessary to support special-status wildlife species are not present within the Study Area;
- Host Plants (e.g., *Cirsium sp.*) that provide larval and nectar resources necessary to support special-status wildlife species are not present within the Study Area;
- Historic and Contemporary Disturbance (e.g., cattle grazing, agriculture) deter the presence of the special-status wildlife species from occupying the Study Area;
- The Study Area is outside the documented nesting range of special-status wildlife species.

The twenty (20) special-status wildlife species with potential to occur within the Study Area are described in below.

- **pacific tailed frog** (*Ascaphus truei*): Coastal tailed frogs are primarily associated with perennial, cold, swift flowing streams in mature or old-growth forest stands. Other stream habitat characteristics which may predict presence include high canopy cover, coarse substrates such as cobble, boulder, and/or bedrock, low fine sediment loads, and steep gradients. Streams are typically perennial due to the prolonged time to metamorphose, which can vary between 1 to 3 years. However, *A. truei* populations have been shown to persist in streams which dry infrequently, even though these frogs are extremely intolerant of both desiccation and warm temperatures.
- **California giant salamander** (*Dicamptodon ensatus*): *D. ensatus* require aquatic habitat for reproduction and often are found in meadows and seeps within north coast coniferous forest and riparian habitats. Aquatic larvae are found in cold, clear streams, occasionally in lakes and ponds. Adults are known to occur in wet forests under rocks and logs near streams and lakes.

- **Northern red-legged frog** (*Rana draytonii*): The northern red-legged frog (NRLF) occupies mesic forests and riparian areas with quiet, permanent or near permanent pools in streams, marshes and occasionally ponds with extensive shoreline vegetation. This frog is also known to occupy and breed in artificial habitats, such as stock ponds and drainage ditches, while coastal streams may be crucial for juvenile dispersal. The NRLF is unusually terrestrial for a ranid frog; individuals have been discovered from 5 to 80 meters away from water. Breeding season is from December to April.
- **foothill yellow-legged frog** *(Rana boylii): R. boylii* occupy a diverse range of ephemeral and permanent streams, rivers, and adjacent moist terrestrial habitats. Occupied streams are often partly shaded, low gradient, and dominated by coarse, unconsolidated rocky substrates. Adults breed and tadpoles develop in slow water velocity habitats. Dispersing juvenile and adult frogs will seek refugia in Class II streams pre-and-post breeding, opposite of salmonids.
- **southern torrent salamander** *(Rhyacotriton variegatus): R. variegatus* occur in coastal forests of northwestern California south to Point Arena in Mendocino County. This species is found primarily in cold, well shaded permanent streams and spring seepages (Behler and King 1979) in redwood, Douglas fir, mixed conifer, montane riparian, and montane hardwood-conifer habitats. Critical habitat requirements for *R. variegates* is cold water temperatures (6.5° - 15 °C) and loose, rocky substrates composed of gravel and cobble (Thomson et al. 2016). This species is likely to inhabit north-facing slopes in more arid regions since it is the most vulnerable North American amphibian to desiccation.
- **red-bellied newt** (*Taricha rivularis*): Inhabits coastal forests, typically in redwood (*Sequoia sempervirens*) forest habitat although also found in other forest types (hardwood etc.). Adults are terrestrial and fossorial. Transformed juveniles leave aquatic environments and go into hiding in underground shelters, often until ready to reproduce. Breeding occurs in streams often with relatively strong flows.
- **northern goshawk** *(Accipiter gentilis)*: *A. gentilis* are often found in dense, mature and old-growth stands of conifer and deciduous habitats. Younger seral stands that include larger residual or defective trees are also used. Nest often on cooler (northerly or easterly) moderate slopes in dense vegetation or within riparian zones, but close to openings (Squires, Reynolds 1997). Nest sites are often located next to water, which may provide a break in canopy for easy access to the nest stand or may influence microclimate or prey distribution.
- **Olive-sided flycatcher** (*Contopus cooperi*) *C. cooperi* breeds mostly in northern and montane coniferous forest from sea level to timberline and the edge of the tundra. They are most numerous in mid- and higher-elevation forest in mountains (3,000–7,000 feet elevation) and around burned or boggy areas with numerous openings and dead trees. Nests are open-cup structures placed at various heights above ground and well out from the trunk of a coniferous tree in a cluster of needles and twigs on a horizontal branch.

- **purple martin** (*Progne subis*): *P. subis* often inhabit tall old-growth trees or snags in coniferous forests with multilayered canopy and are second-cavity nesters using old woodpecker cavities, crevices in rocks, trees and cactus. Typically, *P. subis* forage in open areas near water.
- **northern spotted owl** (*Strix occidentalis caurina*): Northern spotted owls (NSO) are permanent residents in Mendocino County. They require mature forest patches with permanent water and suitable nesting trees and snags (Zeiner et al. 1990a). Northern spotted owls use dense, old-growth forests, or mid- to late- seral stage forest, with a multi-layered canopy for breeding (Remsen 1978). Mixed conifer, redwood, and Douglas-fir habitats are required for nesting and roosting. Northern spotted owl nests are most often found on existing structures (old raptor nest, squirrel nest, red-tree vole nest), or debris piled on a broken topped tree; although, they have been found inside tree cavities. Successful nest sites have canopy cover immediately above nests exceeding 85% with nesting/roosting activity centers surrounding the nest with canopy closure often exceeding 80%. The primary prey for NSOs in this area is the dusky-footed woodrat (*Neotoma fuscipes*). NSOs feed in forest habitats where they usually search from a perch and pounce on the prey in vegetation or on the ground. Foraging habitat is the most flexible of NSO habitat.
- **obscure bumble bee** (*Bombus caliginosus*): The obscure bumble bee is a species of bumblebee native to the west coast of the United States, where its distribution extends from Washington through to Southern California. The workers are most often seen on Fabaceae, the legume family, while queens are most often seen on Ericaceae, the heath family, and males have been observed most often on Asteraceae, the aster family. Common plants visited by the workers include ceanothus, thistles, sweet peas, lupines, rhododendrons, Rubus, willows, and clovers.
- **Sonoma tree vole** *(Arborimus pomo): A. pomo* lives only in humid coastal forests consisting of Douglas-fir, grand fir, western hemlock, and/or Sitka spruce. This species requires Douglas-fir and grand fir needles as a food source and nesting materials. Nests are frequently found in trees along the bole, in branch crotches, or in the top of snags. Nests are most often found along roads, skid trails, or forest edges; however, they could exist further in the forest with dense canopies making nest identification difficult. This species is distributed along the North Coast from Sonoma County north to the Oregon border, being practically restricted to the fog belt.
- **Townsend's big-eared bat** (*Corynorhinus townsendii*): *C. townsendii* is associated with a wide variety of habitats from deserts to mid-elevation mixed coniferous-deciduous forest. Females form maternity colonies in buildings, caves and mines and males roost singly or in small groups. Foraging occurs in open forest habitats where they glean moths from vegetation.

- **silver-haired bat** (*Lasionycteris noctivagans*): Silver-haired bat (*Lasionycteris noctivagans*): The silver-haired bat is primarily a coastal and montane forest dweller, roosting and foraging within lower montane coniferous forest, oldgrowth, and riparian forests. Roosting habitat consists of within hollow trees, beneath exfoliating bark, abandoned woodpecker holes, snags, buildings, caves and rarely under rocks. *L. noctivagans* feeds over streams, ponds and open brushy areas.
- **hoary bat** *(Lasiusus cinereus):* Hoary bats can be yearlong residents of Mendocino County. This bat is one of the few bats knows to both migrate south for winter and to hibernate locally. *L. cinereus* prefers a diet of moths, yet will also consume beetles, wasps, flies, grasshoppers, dragonflies, and termites. Hoary bat daytime roosts are typically dense foliage of medium to large sized trees. This bat occupies a variety of habitats including dense forest, forest edges, coniferous forests, deserts, and broadleaf forests.
- **little brown bat** (*Myotis lucifugus*): *M. lucifugus* typically lives and feeds in forested areas near or over water. The little brown bat lives in three different roosting sites throughout the year: day roosts, night roosts, and hibernation roosts. Stable, ambient temperatures greatly influence site selection. Manmade structures are often selected, however both day and night roosts may be found in trees, under rocks, and in piles of wood. Day roost provide excellent shelter, limited to no light, and typically have southwestern exposure. Night roosts are larger areas these bats can use when outside temperatures necessitate communal congregation for warmth. Hibernaculum habitats tend to include mines and caves and are typically warmer and more humid.
- **fringed myotis** (*Myotis thysanodes*): *M. thysanodes* occupy a variety of habitats including pinyon-juniper, valley and foothill grasslands and hardwood-conifer habitats. Roosting and maternity colony sites include caves, mines, buildings and crevices. Foraging occurs around streams, lakes, and ponds, and their diet consists of various arthropods (moths, beetles and spiders) captured in flight or gleaned from plants. Foraging often occurs close to vegetative canopy.
- **Long-legged myotis** (*Myotis volans*): The long-legged myotis forages in chaparral, coastal scrub, Great Basin shrub habitats, and early successional stages of woodlands and forests. They roost in caves, mines, buildings, rock crevices, in snags, and under tree bark.
- **Yuma myotis** (*Myotis yumanensis*): *M. yumanensis* will use a variety of lowland western habitats, from scrub to coniferous forest which are near slow moving or standing water habitats.

  Roosting sites include caves, mines, buildings, under bridges, and in cliff and tree crevices. Foraging occurs near or over water sources and their diet consists primarily of aquatic-emergent insects.
- **Ten Mile shoulderband** (*Noyo intersessa*): This snail is an aquatic invertebrate found in coastal dunes, coastal scrub, and riparian redwood forest habitats.

EXHIBIT B

Mendocino County Water Agency
Courthouse
Ukiah CA 95482
(707) 463-4589

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
NORTHERN DISTRICT

MENDOCINO COUNTY COASTAL GROUND WATER STUDY

JUNE 1982

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
NORTHERN DISTRICT

MENDOCINO COUNTY COASTAL

GROUND WATER STUDY

JUNE 1982
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AUGUST 1989

FOREWORD

Throughout history, the availability of an adequate water supply has been the single most important factor in determining the settlement, growth, and productivity of a community. Water is the life blood of any settlement, be it a single-family dwelling or a community of 10,000 residents. In coastal Mendocino County, where ground water is the primary source of water, it has become apparent that what may be considered an adequate water source for a few may not be adequate for many. It is through this realization and the ever-increasing demands on this resource that the county, the California Coastal Commission, and the California Department of Water Resources have jointly undertaken this study.

This report culminates two years of data collection and research. It presents reconnaissance-level information on the geologic and hydrologic conditions that influence the occurrence, storage, and recharge of ground water in the coastal Mendocino County area. It is anticipated that this information will prove useful in managing the coastal ground water resources and will provide a basis for detailed studies of local water supplies and development potential. The report also presents recommendations for conserving ground water resource and for a water level monitoring program, which will be useful in anticipating water shortages and evaluating the impacts of continued development.

Albert J. Dolcini, Chief
Northern District

State of California
The Resources Agency
DEPARTMENT OF WATER RESOURCES
Northern District

Albert J. Dolcini . . . . . Chief, Northern District
Philip J. Lorens . . . . . Chief, Resource Evaluation Branch

This report was prepared under the direction of

Ralph Scott . . . . . Senior Engineering Geologist

by

Dennis G. Parfitt . . . . . Assistant Engineering Geologist

and

Laura F. Germain[1/] . . . . . Assistant Engineering Geologist

Special services were provided by

Well Monitoring

William G. Rummel, R.S. . . . . Environmental Consultant

Cover

Michael Serna . . . . . Drafting Aid II

Report Preparation

Diane McGill . . . . . Secretary
Helen Chew . . . . . Office Assistant II
Mitch Clogg . . . . . Research Writer
Sheryl Lewis . . . . . Student Assistant

1/ Laura Germain was the project geologist from July 1, 1980 to June 30, 1981, and author of the "Mendocino County Coastal Ground Water Study" Memorandum Report, 1980.

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SUMMARY AND CONCLUSIONS

The Mendocino County coastal ground water study area lies within the Coast Range geomorphic province, extending from Rockport to Gualala along the coast and inland 1 to 8 km (0.6 to 5 mi) to include all Quaternary marine terrace deposits. The terrace deposits are thickest and most widespread in the Fort Bragg-Mendocino area, and are the primary ground water source throughout most of the study area. North of Cleone and south of Albion (except for the Point Arena-Manchester area) the terrace deposits are generally less than 10 m (33 ft) thick, discontinuous, and less dependable as sources of usable ground water.

A monthly ground water-level monitoring program was established which provided data from 185 wells in the study area. Total ground water storage and changes in storage were estimated using these and other data. Data from 507 "Water Well Drillers' Reports" were used to estimate aquifer characteristics and to determine depths to bedrock. The coastal study area was divided into five subunits. The aquifer area, storage capacity, and the estimated change in storage for each subunit are summarized below. The aquifer area is the land area underlain by the water-yielding materials (marine terrace deposits or alluvium); storage capacity is the maximum volume of ground water contained in the aquifer; change in storage is the estimated percent change in the volume of ground water which occurs between spring and fall.

Subunit		Aquifer Area [1] ha (ac)	Storage Capacity dam³ (ac-ft)	Percent Change in Storage Spring to Fall [3]
Westport	Qt:	595 (1,470)	3 590 (2,910)	34
	Qal:	405 (1,000)	7 400 (6,000)	1 to 8
Fort Bragg	Qt:	8 100 (20,000)	99 700 (80,800)	17
Albion	Qt:	4 110 (10,100)	33 000 (26,800)	18
Elk	Qt:	1 150 (2,840)	2 800 (2,270)	80
	Qal:	86 (215)	1 590 (1,290)	8
Point Arena [2]	Qt:	2 400 (5,930)	22 700 (18,400)	37
	Qal:	1 550 (3,830)	17 000 (13,800)	8
Total for Study Area	Qt:	16 345 (40,340)	161 790 (131,180)	18 to 80
	Qal:	2 040 (5,050)	25 990 (21,090)	1 to 8

1/ Qt = Marine terrace aquifers
Qal = Alluvial aquifers

2/ Point Arena - Manchester area only

3/ Based on 1980-82 data base

The "availability of ground water", based on aquifer characteristics, spring-to-fall changes in storage, and present land use, is summarized on Figure 3.

For the Mendocino County coastal area, it is concluded that the marine terrace deposits are recharged directly by infiltration of precipitation and under normal rainfall conditions reach maximum storage by mid-January of each year.

The amount of change in storage of the terrace deposits from spring to fall is related to the aquifer's total thickness, i.e., a 3-m (10-ft) decline of the water table in an aquifer 30 m (100 ft) thick will result in a 10-percent change; the same decline in an aquifer 6 m (20 ft) thick results in a 50-percent change. Terrace deposits less than about 1.5 m (5 ft) thick probably do not store any usable ground water; deposits 1.5 to 5 m (5 to 16 ft) thick are likely to experience a 50-to-100-percent decline in storage by early fall.

Alluvial aquifers, occupying perennial stream and river valleys, are continually recharged by surface flow, and are only marginally exploited because of their unlikely location for development and potential for seawater intrusion.

Bedrock units in the study area, though considered "non-water bearing", often yield enough water for domestic needs. Between Albion and Gualala, the fractured bedrock is the primary source of ground water.

Ground water quality is generally good to excellent though the presence of ferrous iron and sulfide does occur sporadically in the study area. Seawater intrusion is not a common problem in the study area, though it has occurred in localized areas near Point Arena where wells drilled below sea level and near the ocean have reduced or reversed the seaward flow of fresh ground water. Alluvial and bedrock aquifers, and the terrace aquifers between Tenmile River and Laguna Point and Alder Creek and Point Arena are susceptible to intrusion.

Fort Bragg Subunit

This subunit encompasses the coastal area between Tenmile River on the north and Big River on the south. It reaches 2 to 8 km (1.25 to 5 mi) inland. The areal extent is about 124 km^2 (48 mi^2). The principal streams in the subunit are Tenmile River, Mill Creek, Pudding Creek, Noyo River, Hare Creek, Mitchell Creek, Jug Handle Creek, Caspar Creek, Russian Gulch, and Big River. The terrace deposits are subdivided into eight units bounded by the streams that separate them. The occurrence of ground water in each of the eight units is presented. The geology and locations of wells are shown in Figures 8 and 9.

Local Geology

Coastal Belt Franciscan rock underlies the entire subunit. Marine terrace deposits lie unconformably on most wave-cut bedrock benches and extend inland 6 to 8 km (3.7 to 5 mi) from Mendocino to the Fort Bragg area, then narrow to 2 km (1.25 mi) north of Cleone (see Figures 10, 11, and 12). Areal extent of the terrace deposits is about 8 100 ha (20,000 ac).

Terraces range from 12 to 200 m (39 to 650 ft) in elevation. Gardner (1967) has identified at least five terrace levels in some areas. Topographic features can give erroneous indication of terrace deposit occurrence. Some extensive flat benches show bedrock outcrops and some hilly, inland terrain consists of uplifted and eroded terrace material.

The terrace deposits are exposed in cliffs and road cuts and are better exposed than the bedrock. A soil mantle has developed on most terrace material. Vegetation varies from grass on lower terraces to dense brush and heavy forest inland. On the upper inland terraces, podzolization of the soil has led to large areas of pygmy forest (Fox, 1976).

West-east trends in terrace deposit thickness are similar for the north-to-south extent of the subunit, with deposits thickening eastward. Within 1.5 km (1 mi) of the coastline, deposits are 3 to 9 m (10 to 30 ft) thick and increase to a thickness of about 12 m (39 ft) within the third kilometre (second mile) inland. Beyond the third kilometre, thicknesses range from 15 to 43 m (49 to 140 ft). One noticeable exception to this trend occurs south of Noyo, where terrace deposits 1.5 km (1 mi) inland are 30 m (98 ft) thick. Accompanying the narrowing of terrace width from Fort

Bragg to Tenmile River is a thinning of the deposits to Cleone and then a gradual thickening northward to the river. Aside from general trends, depth to bedrock varies appreciably within short distances. This typical, irregular bedrock-terrace deposit contact can be seen along cliff exposures and is apparent in well-log descriptions.

Thick alluvial deposits are found within the stream channels that dissect the terraces. This Quaternary alluvium lies on top of Coastal Belt Franciscan bedrock in thicknesses of as much as 36 m (120 ft) at the mouths of the streams and rivers. Due to the dense vegetation next to the streams, information about depth and areal extent is from bridge foundation test-boring logs and morphological interpretations.

From Cleone north to Tenmile River, beach and dune deposits occupy about 585 ha (1,445 ac) along the coast and up to 1.2 km (4,000 ft) inland. Although these deposits are not important from a ground water standpoint, they are geologically interesting. The presence of the dunes and the thickening of the marine terrace deposits north of Cleone suggest a possible hinge fault concealed in the axis of Tenmile River Valley with a line of flexure extending northeasterly from Laguna Point.

Occurrence of Ground Water

For the purpose of evaluating the water-yielding characteristics of the marine terrace deposits and bedrock, data were compiled from well drillers' reports for 71 bedrock wells, 48 composite wells, and 136 terrace deposit wells. These are summarized in Table 3.

Bedrock. The Coastal Belt Franciscan rocks are considered non-water bearing. They are consolidated and of low permeability and porosity. Ground water contained in these rocks exists only in the soil, weathered rock, or in secondary openings formed by fractures, joints, and shear zones.

In this subunit, bedrock wells yield water up to 170 L/min (45 gpm), with most wells yielding between 4 and 34 L/min (1 and 9 gpm). Yields are taken from well logs, so testing dates vary for all wells. Composite wells have gravel pack and casing perforations occurring in the terrace deposit and at depth in bedrock. Though the source of water cannot be determined, it can be seen by comparing the mean specific capacities of bedrock wells to composite wells that composite wells yield almost twice the water per metre of drawdown as bedrock wells (Table 3).

SEAWATER INTRUSION AND WATER QUALITY

While seawater intrusion is not a common problem in the study area, the potential for such intrusion must not be ignored. Coastal aquifers come in contact with the ocean at or seaward of the coastline and normally discharge fresh ground water into the ocean. With increased demands for ground water, however, the seaward flow of ground water may be decreased or even reversed, causing seawater to enter the coastal aquifers. If the salt water travels inland, the aquifers become contaminated with salt and may take years to remove even with adequate fresh ground water available to flush out the saline water.

Most marine terrace deposits lie well above sea level and are not susceptible to seawater intrusion. Alluvial and bedrock aquifers, and the terrace aquifers between Tenmile River and Laguna Point and Alder Creek and Point Arena are in contact with the ocean and are susceptible. Where seawater intrusion occurs, it is generally a localized condition.

Two wells in the Point Arena subunit, 13N/17W-34D1 and 11N/16W-4H2 (see Figure 20), appear to be experiencing seawater intrusion. Water samples from these wells, collected in May and August 1980 and analyzed by the U. S. Geological Survey, show moderate to high electrical conductivity (523 and 7 100 microsiemens per litre) and chloride contents of 120 and 3 000 milligrams per litre, respectively. Both wells are drilled below sea level and are in close proximity to the ocean (90 to 120 m [300 to 400 ft]). A well near Mendocino, 17N/17W-30B2 (see Figure 9), is (from interpretation of continuous water level recorder data) hydraulically connected to the ocean via the fractures and fissures in the bedrock. This indicates that there is the potential to induce seawater intrusion here by heavy and continued pumping from this and other deep bedrock wells in the area.

The occurrence of high reduced iron or sulfur content in well water is common in the study area. The process of iron or sulfur reduction, in general, requires the presence of bacteria and organic matter (Hem, 1970).

The occurrence of 1.0 to 10 mg/L of iron in the ground water is common. This type of water is clear when first drawn from the well, but soon becomes cloudy and then brown from precipitating ferric hydroxide (Hem, 1970). The recommended maximum concentration of iron is 0.30 mg/L (California Water Resources Control Board, 1963). Chemical analyses data of well water, provided by the Mendocino County Division of Environmental Health, show iron concentrations as high as 20 to 40 mg/L in some wells. High iron content occurs in water from deep bedrock wells as well as from shallow terrace deposit wells and appears to be erratically distributed around the study area.

Reduced sulfur, in the form of hydrogen sulfide (H_2S), has the distinctive rotten egg odor and can be detected in water containing only a few tenths of a milligram per litre (Hem, 1970). The presence of H_2S in some wells from the Fort Bragg area to the Point Arena area has been reported by coastal residents (personal communications). The problem is an isolated one and not as widespread as the occurrence of iron. Presence of H_2S is not routinely checked in water quality analyses, and no recommended maximum concentration for domestic water has been established.

Domestic water with high concentrations of ferrous iron or sulfide requires aeration and sedimentation to render it palatable.

APPENDIX A

Definitions

Acre-foot (ac-ft)	- equivalent to the volume of water which will cover one acre of land to the depth of one foot. An acre-foot of water equals 325,851 gallons.
Aquifer	- a geologic formation that stores, transmits, and yields significant quantities of water to wells and springs.
Basalt	- a fine-grained, dark-colored volcanic rock.
Conglomerate	- a consolidated sedimentary rock composed of rounded pebbles and cobbles contained in a matrix of finer material.
Cubic Dekametre (dam^3)	- 1 000 m^3; a dam^3 of water equals about four-fifths of an ac-ft or 264,167 gallons
Formation	- a fairly widespread group of rocks having characteristics or origin, age, and composition sufficiently distinctive to differentiate the group from other units.
Ground Water	- subsurface water occurring in the zone of saturation and moving under control of the water table slope.
Hydraulic Gradient	- slope of the water table.
Hydrology	- the origin, distribution, and circulation of water through precipitation, streamflow, infiltration, ground water storage, and evaporation.
Joint	- a fracture or parting in a rock mass along which no appreciable movement has occurred.
Lithology	- a term applied to rocks, referring to their general characteristics such as composition and texture.
Mafic Minerals	- a general term used to describe rock-forming silicate minerals which contain essential iron and/or magnesium.
Metamorphism	- the processes by which changes are brought about in rocks by the agencies of heat, pressure, and chemically active fluids.

Permeability	- the capability of soil or other geologic formation to transmit water.
Porosity	- voids or open spaces in alluvium and rocks that can be filled with water.
Recharge	- flow to ground water storage from precipitation, infiltration from streams, irrigation, spreading basins, and other sources of water.
Salt Water Intrusion	- the movement of salt water into fresh water aquifers.
Shale	- a stratified rock, finely bedded or laminated, and formed by the consolidation of clay, mud, or silt.
Specific Capacity	- the volume of water pumped from a well in gallons per minute per foot of drawdown.
Tracefossil	- sedimentary structures resulting from biological activity.
Tuff	- a general name for consolidated volcanic ash.
Vadose Water	- water which occurs between the ground surface and the water table.
Vesicular	- containing many small openings (vesicles).
Water Table	- the surface where ground water is encountered in a well in an unconfined aquifer.
Weathering	- the process by which rocks are broken down and decomposed by the actions of external agencies such as wind, rain, temperature changes, and plants.
Zone of Saturation	- the area below the water table in which the soil is completely saturated with ground water

APPENDIX B

COUNTY OF MENDOCINO

DIVISION OF ENVIRONMENTAL HEALTH

LAND DIVISION REQUIREMENTS

CONTACT THE OFFICE OF ENVIRONMENTAL HEALTH FOR MOST RECENT REVISION OF THE LAND DIVISION REQUIREMENTS

APPENDIX C

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EXHIBIT C

Redwood Empire Title Company of Mendocino County

405 S. Orchard Avenue, P. O. Box 238
Ukiah, CA 95482
Phone: (707)462-8666 • Fax: (707)462-5010

Our No.: **20210736AP**
Your No.:
Seller: **Owner of Record**
Buyer:

When replying Please Contact:
ESCROW OFFICER: **Adriane Pardini**
apardini@redwoodtitle.com

PRELIMINARY REPORT

Property Address: **32800 and 32700 Nameless Lane, Fort Bragg, CA 95437**

In response to the above referenced application for a policy of title insurance, **Redwood Empire Title Company of Mendocino County** hereby reports that it is prepared to issue, or cause to be issued, as of the date hereof, a Policy or Policies of Title Insurance describing the land and the estate or interest therein hereinafter set forth, insuring against loss which may be sustained by reason of any defect, lien or encumbrance not shown or referred to as an Exception below or not excluded from coverage pursuant to the printed Schedules, Conditions and Stipulations of said Policy forms.

The printed Exceptions and Exclusions from the coverage and Limitations on Covered Risks of said Policy or Policies are set forth in Exhibit A attached. Copies of the Policy forms should be read. They are available from the office which issued this report.

Please read the exceptions shown or referred to below and the exceptions and exclusions set forth in Exhibit A of this report carefully. The exceptions and exclusions are meant to provide you with notice of matters which are not covered under the terms of the title insurance policy and should be carefully considered.

It is important to note that this preliminary report is not a written representation as to the condition of title and may not list all liens, defects and encumbrances affecting title to the land.

This report (and any supplements or amendments hereto) is issued solely for the purpose of facilitating the issuance of a policy of title insurance and no liability is assumed hereby. If it is desired that liability be assumed prior to the issuance of a policy of title insurance, a Binder or Commitment should be requested.

Dated as of March 17, 2021 at 07:30 AM.

Steve Burlesci
Chief Title Officer

sburlesci@redwoodtitle.com

The form of policy of title insurance contemplated by this report is:
ALTA 2006 Extended Loan Policy
CLTA Standard 1990 Owners Policy
Underwritten by Old Republic National Title Insurance Company

SCHEDULE A

1. The estate or interest in the land hereinafter described or referred to covered by this Report is:

   a Fee

2. Title to said estate or interest at the date hereof is vested in:

   WM Partnership, LLC, a California Limited Liability Company, as to Tract One; Travis Swithenbank, an unmarried man, as to Tract Two

3. The land referred to in this report is situated in the State of California, County of Mendocino and is described as follows:

   Tract One:

   Parcel 1, as numbered and designated upon the Parcel Map of Minor Subdivision No. 18-76, filed July 1, 1976 in Map Case 2, Drawer 28, Page 72, Mendocino County Records.

   APN: 069-320-01

   Tract Two:

   Parcel 2, as numbered and designated upon the Parcel Map of Minor Subdivision No. 18-76, filed July 1, 1976 in Map Case 2, Drawer 28, Page 72, Mendocino County Records.

   APN: 069-320-02

SCHEDULE B

At the date hereof exceptions to coverage in addition to the printed Exceptions and Exclusions in the said policy form would be as follows:

1. Taxes and assessments, general and special, for the fiscal year 2021 - 2022, a lien not yet due or ascertainable.

2. Taxes and assessments, general and special, for the fiscal year 2020 - 2021, as follows
   Assessor's Parcel No.: 069-320-02
   Code No.: 076-013
   1st Installment: $676.07, Paid
   2nd Installment: $676.07, Unpaid

3. The lien of supplemental taxes, if any, assessed pursuant to the provisions of Section 75, et seq. of the Revenue and Taxation Code of the State of California.

4. Easement(s) for the purposes stated herein and incidental purposes as provided in the document(s):
   Recorded: June 28, 1887 in Book 40 of Deeds, Page 543
   For: road and public utilities

5. Easement(s) for the purposes stated herein and incidental purposes as provided in the document(s):
   Recorded: January 30, 1889 in Book 46 of Deeds, Page 365
   For: road and public utilities

6. Easement(s) for the purposes stated herein and incidental purposes as provided in the document(s):
   Recorded: August 29, 1972 in Book 898, Page 163 of Official Records
   For: roadway and public utilities

7. Easements, building setback lines, notations and/or recitals as shown or provided for on the map referred to in the legal description.

8. Deed of Trust to secure an indebtedness of the amount stated below and any other amounts payable under the terms thereof,
   Amount : $100,000.00
   Trustor/Borrower : Travis Swithenbank, an unmarried man
   Trustee: Redwood Trust Deed Services
   Beneficiary/Lender: Richard L. Perry, Jr. and Dorothy L. Perry, Trustees of the Richard L. Perry, Jr. and Dorothy L. Perry Living Trust dated March 1, 2005
   Dated: December 14, 2018
   Recorded: January 3, 2019 as 2019-00113 of Official Records

   Affects Tract Two

9. Deed of Trust to secure an indebtedness of the amount stated below and any other amounts payable under the terms thereof,
   Amount : $500,000.00
   Trustor/Borrower : WM Partnership, LLC, a California Limited Liability Company
   Trustee: Redwood Empire Title Company of Mendocino County
   Beneficiary/Lender: Summit State Bank
   Dated: May 22, 2019
   Recorded: May 31, 2019 as 2019-06260 of Official Records

   Affects Tract One

10. Prior to the issuance of any policy of title insurance, the Company will require the following with respect to WM Partnership, LLC, a California Limited Liability Company:
a. A copy of any management or operating agreements and any amendments thereto, together with a current list of all members of said LLC.
b. A certified copy of its Articles of Organization (LLC-1), any certificate of correction (LLC-11), certificate of amendment (LLC-2), or restatement of articles of organization (LLC-10).
c. Recording a certified copy of said LLC-1 and any "amendments thereto".

END OF SCHEDULE B

INFORMATIONAL NOTES:

1. Taxes and assessments, general and special, for the fiscal year 2020 - 2021, as follows
Assessor's Parcel No.: 069-320-01
Code No.: 076-013
1st Installment: $3,419.47, Paid
2nd Installment: $3,419.47, Paid

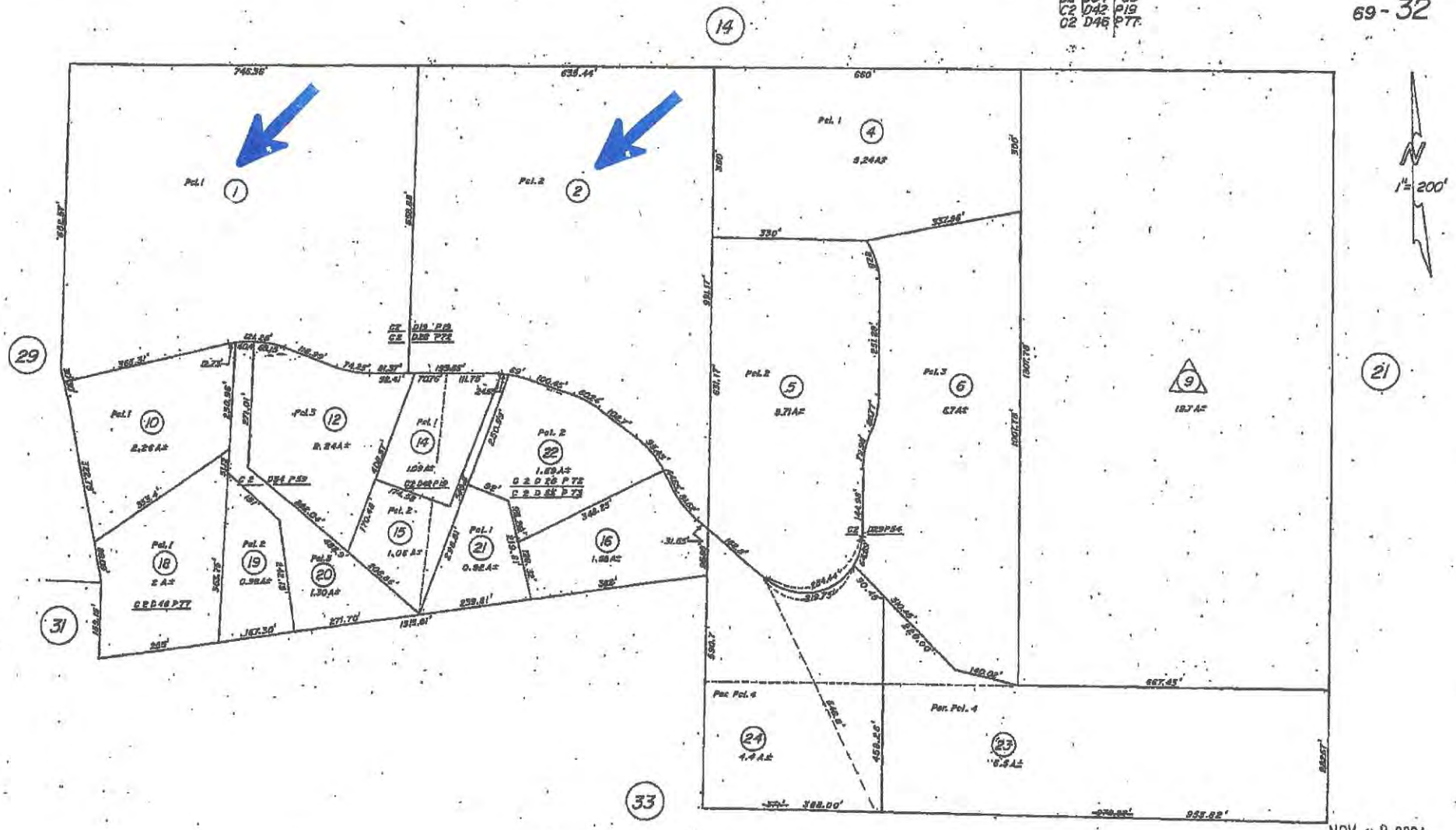
2. NOTE: According to the public records, there have been no deeds conveying the property described in this report recorded within a period of 24 months prior to the date hereof except as follows: NONE

Por. of N.1/2 of SE.1/4 of Sec. 20 T.19N. R.17W. M.D.B.&M.

Ppl. Map C2 D19 P19
" " C2 D28 P72
C2 D29 P54
C2 D34 P59
C2 D42 P19
C2 D46 P77

76-013

69-32



NOV 0 3 2004

Assessor's Map
County of Mendocino, Calif.
September, 1982

NOTE: This map was prepared for assessment purposes only. No liability is assumed for the data delineated

"Notice: This is neither a plat nor a survey. It is furnished merely as a convenience to aid you in locating the land indicated hereon with reference to streets and other land. No liability is assumed by reason of any reliance hereon."

CLTA PRELIMINARY REPORT FORM (EXHIBIT A) (01-01-08)

CALIFORNIA LAND TITLE ASSOCIATION
STANDARD COVERAGE POLICY - 1990

EXCLUSIONS FROM COVERAGE

The following matters are expressly excluded from the coverage of this policy and the Company will not pay loss or damage, costs, attorneys' fees or expenses which arise by reason of:

1. (a) Any law, ordinance or governmental regulation (including but not limited to building or zoning laws, ordinances, or regulations) restricting, regulating, prohibiting or relating (i) the occupancy, use, or enjoyment of the land; (ii) the character, dimensions or location of any improvement now or hereafter erected on the land; (iii) a separation in ownership or a change in the dimensions or area of the land or any parcel of which the land is or was a part; or (iv) environmental protection, or the effect of any violation of these laws, ordinances or governmental regulations, except to the extent that a notice of the enforcement thereof or a notice of a defect, lien, or encumbrance resulting from a violation or alleged violation affecting the land has been recorded in the public records at Date of Policy.

   (b) Any governmental police power not excluded by (a) above, except to the extent that a notice of the exercise thereof or notice of a defect, lien or encumbrance resulting from a violation or alleged violation affecting the land has been recorded in the public records at Date of Policy.

2. Rights of eminent domain unless notice of the exercise thereof has been recorded in the public records at Date of Policy, but not excluding from coverage any taking which has occurred prior to Date of Policy which would be binding on the rights of a purchaser for value without knowledge.

3. Defects, liens, encumbrances, adverse claims or other matters:

   (a) whether or not recorded in the public records at Date of Policy, but created, suffered, assumed or agreed to by the insured claimant;

   (b) not known to the Company, not recorded in the public records at Date of Policy, but known to the insured claimant and not disclosed in writing to the Company by the insured claimant prior to the date the insured claimant became an insured under this policy;

   (c) resulting in no loss or damage to the insured claimant;

   (d) attaching or created subsequent to Date of Policy; or

   (e) resulting in loss or damage which would not have been sustained if the insured claimant had paid value for the insured mortgage or for the estate or interest insured by this policy.

4. Unenforceability of the lien of the insured mortgage because of the inability or failure of the insured at Date of Policy, or the inability or failure of any subsequent owner of the indebtedness, to comply with the applicable doing business laws of the state in which the land is situated.

5. Invalidity or unenforceability of the lien of the insured mortgage, or claim thereof, which arises out of the transaction evidenced by the insured mortgage and is based upon usury or any consumer credit protection or truth in lending law.

6. Any claim, which arises out of the transaction vesting in the insured the estate of interest insured by this policy or the transaction creating the interest of the insured lender, by reason of the operation of federal bankruptcy, state insolvency or similar creditors' rights laws.

EXCEPTIONS FROM COVERAGE - SCHEDULE B, PART I

This policy does not insure against loss or damage (and the Company will not pay costs, attorneys' fees or expenses) which arise by reason of:

1. Taxes or assessments which are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the public records.

   Proceedings by a public agency which may result in taxes or assessments, or notices of such proceedings, whether or not shown by the records of such agency or by the public records.

2. Any facts, rights, interests, or claims which are not shown by the public records but which could be ascertained by an inspection of the land or which may be asserted by persons in possession thereof.

3. Easements, liens or encumbrances, or claims thereof, not shown by the public records.

4. Discrepancies, conflicts in boundary lines, shortage in area, encroachments, or any other facts which a correct survey would disclose, and which are not shown by the public records.

5. (a) Unpatented mining claims; (b) reservations or exceptions in patents or in Acts authorizing the issuance thereof; (c) water rights, claims or title to water, whether or not the matters excepted under (a), (b) or (c) are shown by the public records.

6. Any lien or right to a lien for services, labor or material not shown by the public records.

2006 ALTA LOAN POLICY (06-17-06)

EXCLUSIONS FROM COVERAGE

The following matters are expressly excluded from the coverage of this policy, and the Company will not pay loss or damage, costs, attorneys' fees, or expenses that arise by reason of:

1. (a) Any law, ordinance, permit, or governmental regulation (including those relating to building and zoning) restricting, regulating, prohibiting, or relating to

      (i) the occupancy, use, or enjoyment of the Land;

      (ii) the character, dimensions, or location of any improvement erected on the Land;

      (iii) the subdivision of land; or

      (iv) environmental protection;

      or the effect of any violation of these laws, ordinances, or governmental regulations. This Exclusion 1(a) does not modify or limit the coverage provided under Covered Risk 5.

   (b) Any governmental police power. This Exclusion 1(b) does not modify or limit the coverage provided under Covered Risk 6.

2. Rights of eminent domain. This Exclusion does not modify or limit the coverage provided under Covered Risk 7 or 8.

3. Defects, liens, encumbrances, adverse claims, or other matters:

   (a) created, suffered, assumed, or agreed to by the Insured Claimant;

   (b) not Known to the Company, not recorded in the Public Records at Date of Policy, but Known to the Insured Claimant and not disclosed in writing to the Company by the Insured Claimant prior to the date the Insured Claimant became an Insured under this policy;

   (c) resulting in no loss or damage to the Insured Claimant;

   (d) attaching or created subsequent to Date of Policy (however, this does not modify or limit the coverage provided under Covered Risk 11, 13, or 14); or

   (e) resulting in loss or damage that would not have been sustained if the Insured Claimant had paid value for the Insured Mortgage.

4. Unenforceability of the lien of the Insured Mortgage because of the inability or failure of an Insured to comply with applicable doing-business laws of the state where the Land is situated.

5. Invalidity or unenforceability in whole or in part of the lien of the Insured Mortgage that arises out of the transaction evidenced by the Insured Mortgage and is based upon usury or any consumer credit protection or truth-in-lending law.

6. Any claim, by reason of the operation of federal bankruptcy, state insolvency, or similar creditors' rights laws, that the transaction creating the lien of the Insured Mortgage, is

   (a) a fraudulent conveyance or fraudulent transfer, or

   (b) a preferential transfer for any reason not stated in Covered Risk 13(b) of this policy.

7. Any lien on the Title for real estate taxes or assessments imposed by governmental authority and created or attaching between Date of Policy and the date of recording of the Insured Mortgage in the Public Records. This Exclusion does not modify or limit the coverage provided under Covered Risk 11(b).

The above policy form may be issued to afford either Standard Coverage or Extended Coverage. In addition to the above Exclusions from Coverage, the Exceptions from Coverage in a Standard Coverage policy will also include the following Exceptions from Coverage:

EXCEPTIONS FROM COVERAGE

This policy does not insure against loss or damage (and the Company will not pay costs, attorneys' fees or expenses) that arise by reason of:

1. (a) Taxes or assessments that are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the Public Records; (b) proceedings by a public agency that may result in taxes or assessments, or notices of such proceedings, whether or not shown by the records of such agency or by the Public Records.

2. Any facts, rights, interests, or claims that are not shown by the Public Records but that could be ascertained by an inspection of the Land or that may be asserted by persons in possession of the Land.

3. Easements, liens or encumbrances, or claims thereof, not shown by the Public Records.

4. Any encroachment, encumbrance, violation, variation, or adverse circumstance affecting the Title that would be disclosed by an accurate and complete land survey of the Land and not shown by the Public Records.

5. (a) Unpatented mining claims; (b) reservations or exceptions in patents or in Acts authorizing the issuance thereof; (c) water rights, claims or title to water, whether or not the matters excepted under (a), (b), or (c) are shown by the Public Records.

2006 ALTA OWNER'S POLICY (06-17-06)

EXCLUSIONS FROM COVERAGE

The following matters are expressly excluded from the coverage of this policy, and the Company will not pay loss or damage, costs, attorneys' fees, or expenses that arise by reason of:

1. (a) Any law, ordinance, permit, or governmental regulation (including those relating to building and zoning) restricting, regulating, prohibiting, or relating to

   (i) the occupancy, use, or enjoyment of the Land;

   (ii) the character, dimensions, or location of any improvement erected on the Land;

   (iii) the subdivision of land; or

   (iv) environmental protection;

   or the effect of any violation of these laws, ordinances, or governmental regulations. This Exclusion 1(a) does not modify or limit the coverage provided under Covered Risk 5.

   (b) Any governmental police power. This Exclusion 1(b) does not modify or limit the coverage provided under Covered Risk 6.

2. Rights of eminent domain. This Exclusion does not modify or limit the coverage provided under Covered Risk 7 or 8.

3. Defects, liens, encumbrances, adverse claims, or other matters:

   (a) created, suffered, assumed, or agreed to by the Insured Claimant;

   (b) not Known to the Company, not recorded in the Public Records at Date of Policy, but Known to the Insured Claimant and not disclosed in writing to the Company by the Insured Claimant prior to the date the Insured Claimant became an Insured under this policy;

   (c) resulting in no loss or damage to the Insured Claimant;

   (d) attaching or created subsequent to Date of Policy (however, this does not modify or limit the coverage provided under Covered Risk 9 and 10); or

   (e) resulting in loss or damage that would not have been sustained if the Insured Claimant had paid value for the Title.

4. Any claim, by reason of the operation of federal bankruptcy, state insolvency, or similar creditors' rights laws, that the transaction vesting the Title as shown in Schedule A, is

   (a) a fraudulent conveyance or fraudulent transfer; or

   (b) a preferential transfer for any reason not stated in Covered Risk 9 of this policy.

5. Any lien on the Title for real estate taxes or assessments imposed by governmental authority and created or attaching between Date of Policy and the date of recording of the deed or other instrument of transfer in the Public Records that vests Title as shown in Schedule A.

The above policy form may be issued to afford either Standard Coverage or Extended Coverage. In addition to the above Exclusions from Coverage, the Exceptions from Coverage in a Standard Coverage policy will also include the following Exceptions from Coverage:

EXCEPTIONS FROM COVERAGE

This policy does not insure against loss or damage (and the Company will not pay costs, attorneys' fees or expenses) that arise by reason of:

1. (a) Taxes or assessments that are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the Public Records; (b) proceedings by a public agency that may result in taxes or assessments, or notices of such proceedings, whether or not shown by the records of such agency or by the Public Records.
2. Any facts, rights, interests, or claims that are not shown in the Public Records but that could be ascertained by an inspection of the Land or that may be asserted by persons in possession of the Land.
3. Easements, liens or encumbrances, or claims thereof, not shown by the Public Records.
4. Any encroachment, encumbrance, violation, variation, or adverse circumstance affecting the Title that would be disclosed by an accurate and complete land survey of the Land and that are not shown by the Public Records.
5. (a) Unpatented mining claims; (b) reservations or exceptions in patents or in Acts authorizing the issuance thereof; (c) water rights, claims or title to water, whether or not the matters excepted under (a), (b), or (c) are shown by the Public Records.

Privacy Statement
July 1, 2001

We recognize and respect the privacy expectations of today's consumers and the requirements of applicable federal and state privacy laws. We believe that making you aware of how we use your non-public personal information ("Personal Information"), and to whom it is disclosed, will form the basis for a relationship of trust between us and the public we serve. This Privacy Statement provides that explanation. We reserve the right to change this Privacy Statement from time to time consistent with applicable privacy laws.

In the course of our business, we may collect Personal Information about you from the following sources:

- From applications or other forms we receive from you or your authorized representative;
- From your transactions with, or from the services being performed by us, our affiliates, or others;
- From our Internet web sites;
- From the public records maintained by governmental entities that we either obtain directly from those entities, or from our affiliates or others; and
- From consumer or other reporting agencies.

Our Policies Regarding the Protection of the Confidentiality and Security of Your Personal Information

We maintain physical, electronic and procedural safeguards to protect your Personal Information from unauthorized access or intrusion. We limit access to the Personal Information only to those employees who need such access in connection with providing products or services to you or for other legitimate business purposes.

Our Policies and Practices Regarding the Sharing of Your Personal Information

We may share your Personal Information with our affiliates, such as insurance companies, agents, and other real estate settlement providers. We may also disclose your Personal Information:

- to agents, brokers or representatives to provide you with services you have requested.
- to third-party contractors or service providers who provide services or perform marketing or other functions on our behalf; and
- to others with whom we enter into joint marketing agreements for products or services that we believe you may find of interest.

In addition, we will disclose your Personal Information when you direct or give us permission, when we are required by law to do so, or when we suspect fraudulent or criminal activities. We may also disclose your Personal Information when otherwise permitted by applicable privacy laws such as, for example, when disclosure is needed to enforce our rights arising out of any agreement, transaction or relationship with you.

One of the important responsibilities of some of our affiliated companies is to record documents in the public domain. Such documents may contain your Personal Information.

Right to Access Your Personal Information and Ability to Correct Errors or Request Changes or Deletion

Certain states afford you the right to access your Personal Information and, under certain circumstances, to find out to whom your Personal Information has been disclosed. Also, certain states afford you the right to request correction, amendment or deletion of your Personal Information. We reserve the right, where permitted by law, to charge a reasonable fee to cover the costs incurred in responding to such requests.

All requests must be made in writing to the following address:

Privacy Compliance Officer
Redwood Empire Title Company
P.O. Box 238
Ukiah, CA 95482

Multiple Products or Services

If we provide you with more than one financial product or service, you may receive more than one privacy notice from us. We apologize for any inconvenience this may cause you.

EXHIBIT D

2019-06260
Recorded at the request of
REDWOOD EMPIRE TITLE
05/31/2019 03:11 PM
Fee: $121.00 Pgs: 1 of 12

OFFICIAL RECORDS
Katrina Bartolomie - Clerk-Recorder
Mendocino County, CA

RECORDATION REQUESTED BY:

WHEN RECORDED MAIL TO:
Summit State Bank
P.O. Box 6188
500 Bicentennial Way
Santa Rosa, CA 95406

FOR RECORDER'S USE ONLY

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DEED OF TRUST

THIS DEED OF TRUST is dated May 22, 2019, among WM Partnership, LLC, a California Limited Liability Company, whose address is 18631 N. Highway 1, Fort Bragg, CA 95437 ("Trustor"); Summit State Bank, whose address is P.O. Box 6188, 500 Bicentennial Way, Santa Rosa, CA 95406 (referred to below sometimes as "Lender" and sometimes as "Beneficiary"); and Redwood Empire Title Company of Mendocino County, whose address is 405 S. Orchard Avenue, Ukiah, CA 95482 (referred to below as "Trustee").

CONVEYANCE AND GRANT. For valuable consideration, Trustor irrevocably grants, transfers and assigns to Trustee in trust, with power of sale, for the benefit of Lender as Beneficiary, all of Trustor's right, title, and interest in and to the following described real property, together with all existing or subsequently erected or affixed buildings, improvements and fixtures; all easements, rights of way, and appurtenances; all water, water rights and ditch rights (including stock in utilities with ditch or irrigation rights); and all other rights, royalties, and profits relating to the real property, including without limitation all minerals, oil, gas, geothermal and similar matters, **(the "Real Property") located in Mendocino County, State of California:**

See Exhibit A, which is attached to this Deed of Trust and made a part of this Deed of Trust as if fully set forth herein.

The Real Property or its address is commonly known as 32800 Nameless Lane, Fort Bragg, CA 95437. The Assessor's Parcel Number for the Real Property is 069-320-01.

Trustor presently assigns to Lender (also known as Beneficiary in this Deed of Trust) all of Trustor's right, title, and interest in and to all present and future leases of the Property and all Rents from the Property. This is an absolute assignment of Rents made in connection with an obligation secured by real property pursuant to California Civil Code Section 2938. In addition, Trustor grants to Lender a Uniform Commercial Code security interest in the Personal Property and Rents.

THIS DEED OF TRUST, INCLUDING THE ASSIGNMENT OF RENTS AND THE SECURITY INTEREST IN THE RENTS AND PERSONAL PROPERTY, IS GIVEN TO SECURE (A) PAYMENT OF THE INDEBTEDNESS AND (B) PERFORMANCE OF ANY AND ALL OBLIGATIONS OF THE TRUSTOR UNDER THE NOTE, THE RELATED DOCUMENTS, AND THIS DEED OF TRUST. THIS DEED OF TRUST IS GIVEN AND ACCEPTED ON THE FOLLOWING TERMS:

PAYMENT AND PERFORMANCE. Except as otherwise provided in this Deed of Trust, Trustor shall pay to Lender all amounts secured by this Deed of Trust as they become due, and shall strictly and in a timely manner perform all of Trustor's obligations under the Note, this Deed of Trust, and the Related Documents.

POSSESSION AND MAINTENANCE OF THE PROPERTY. Trustor agrees that Trustor's possession and use of the Property shall be governed by the following provisions:

Possession and Use. Until the occurrence of an Event of Default, Trustor may (1) remain in possession and control of the Property; (2) use, operate or manage the Property; and (3) collect the Rents from the Property.

Duty to Maintain. Trustor shall maintain the Property in tenantable condition and promptly perform all repairs, replacements, and maintenance necessary to preserve its value.

Compliance With Environmental Laws. Trustor represents and warrants to Lender that: (1) During the period of Trustor's ownership of the Property, there has been no use, generation, manufacture, storage, treatment, disposal, release or threatened release of any Hazardous Substance by any person on, under, about or from the Property; (2) Trustor has no knowledge of, or reason to believe that there has been, except as previously disclosed to and acknowledged by Lender in writing, (a) any breach or violation of any Environmental Laws, (b) any use, generation, manufacture, storage, treatment, disposal, release or threatened release of any

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Hazardous Substance on, under, about or from the Property by any prior owners or occupants of the Property, or (c) any actual or threatened litigation or claims of any kind by any person relating to such matters; and (3) Except as previously disclosed to and acknowledged by Lender in writing, (a) neither Trustor nor any tenant, contractor, agent or other authorized user of the Property shall use, generate, manufacture, store, treat, dispose of or release any Hazardous Substance on, under, about or from the Property; and (b) any such activity shall be conducted in compliance with all applicable federal, state, and local laws, regulations and ordinances, including without limitation all Environmental Laws. Trustor authorizes Lender and its agents to enter upon the Property to make such inspections and tests, at Trustor's expense, as Lender may deem appropriate to determine compliance of the Property with this section of the Deed of Trust. Any inspections or tests made by Lender shall be for Lender's purposes only and shall not be construed to create any responsibility or liability on the part of Lender to Trustor or to any other person. The representations and warranties contained herein are based on Trustor's due diligence in investigating the Property for Hazardous Substances. Trustor hereby (1) releases and waives any future claims against Lender for indemnity or contribution in the event Trustor becomes liable for cleanup or other costs under any such laws; and (2) agrees to indemnify, defend, and hold harmless Lender against any and all claims, losses, liabilities, damages, penalties, and expenses which Lender may directly or indirectly sustain or suffer resulting from a breach of this section of the Deed of Trust or as a consequence of any use, generation, manufacture, storage, disposal, release or threatened release occurring prior to Trustor's ownership or interest in the Property, whether or not the same was or should have been known to Trustor. The provisions of this section of the Deed of Trust, including the obligation to indemnify and defend, shall survive the payment of the Indebtedness and the satisfaction and reconveyance of the lien of this Deed of Trust and shall not be affected by Lender's acquisition of any interest in the Property, whether by foreclosure or otherwise.

Nuisance, Waste. Trustor shall not cause, conduct or permit any nuisance nor commit, permit, or suffer any stripping of or waste on or to the Property or any portion of the Property. Without limiting the generality of the foregoing, Trustor will not remove, or grant to any other party the right to remove, any timber, minerals (including oil and gas), coal, clay, scoria, soil, gravel or rock products without Lender's prior written consent.

Removal of Improvements. Trustor shall not demolish or remove any Improvements from the Real Property without Lender's prior written consent. As a condition to the removal of any Improvements, Lender may require Trustor to make arrangements satisfactory to Lender to replace such Improvements with Improvements of at least equal value.

Lender's Right to Enter. Lender and Lender's agents and representatives may enter upon the Real Property at all reasonable times to attend to Lender's interests and to inspect the Real Property for purposes of Trustor's compliance with the terms and conditions of this Deed of Trust.

Compliance with Governmental Requirements. Trustor shall promptly comply with all laws, ordinances, and regulations, now or hereafter in effect, of all governmental authorities applicable to the use or occupancy of the Property, including without limitation, the Americans With Disabilities Act. Trustor may contest in good faith any such law, ordinance, or regulation and withhold compliance during any proceeding, including appropriate appeals, so long as Trustor has notified Lender in writing prior to doing so and so long as, in Lender's sole opinion, Lender's interests in the Property are not jeopardized. Lender may require Trustor to post adequate security or a surety bond, reasonably satisfactory to Lender, to protect Lender's interest.

Duty to Protect. Trustor agrees neither to abandon or leave unattended the Property. Trustor shall do all other acts, in addition to those acts set forth above in this section, which from the character and use of the Property are reasonably necessary to protect and preserve the Property.

DUE ON SALE - CONSENT BY LENDER. Lender may, at Lender's option, declare immediately due and payable all sums secured by this Deed of Trust upon the sale or transfer, without Lender's prior written consent, of all or any part of the Real Property, or any interest in the Real Property. A "sale or transfer" means the conveyance of Real Property or any right, title or interest in the Real Property; whether legal, beneficial or equitable; whether voluntary or involuntary; whether by outright sale, deed, installment sale contract, land contract, contract for deed, leasehold interest with a term greater than three (3) years, lease-option contract, or by sale, assignment, or transfer of any beneficial interest in or to any land trust holding title to the Real Property, or by any other method of conveyance of an interest in the Real Property. If any Trustor is a corporation, partnership or limited liability company, transfer also includes any restructuring of the legal entity (whether by merger, division or otherwise) or any change in ownership of more than twenty-five percent (25%) of the voting stock, partnership interests or limited liability company interests, as the case may be, of such Trustor. However, this option shall not be exercised by Lender if such exercise is prohibited by applicable law.

TAXES AND LIENS. The following provisions relating to the taxes and liens on the Property are part of this Deed of Trust:

Payment. Trustor shall pay when due (and in all events at least ten (10) days prior to delinquency) all taxes, special taxes, assessments, charges (including water and sewer), fines and impositions levied against or on account of the Property, and shall pay when due all claims for work done on or for services rendered or material furnished to the Property. Trustor shall maintain the Property free of all liens having priority over or equal to the interest of Lender under this Deed of Trust, except for the lien of taxes and assessments not due and except as otherwise provided in this Deed of Trust.

Right to Contest. Trustor may withhold payment of any tax, assessment, or claim in connection with a good faith dispute over the obligation to pay, so long as Lender's interest in the Property is not jeopardized. If a lien arises or is filed as a result of nonpayment,

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Trustor shall within fifteen (15) days after the lien arises or, if a lien is filed, within fifteen (15) days after Trustor has notice of the filing, secure the discharge of the lien, or if requested by Lender, deposit with Lender cash or a sufficient corporate surety bond or other security satisfactory to Lender in an amount sufficient to discharge the lien plus any costs and attorneys' fees, or other charges that could accrue as a result of a foreclosure or sale under the lien. In any contest, Trustor shall defend itself and Lender and shall satisfy any adverse judgment before enforcement against the Property. Trustor shall name Lender as an additional obligee under any surety bond furnished in the contest proceedings.

Evidence of Payment. Trustor shall upon demand furnish to Lender satisfactory evidence of payment of the taxes or assessments and shall authorize the appropriate governmental official to deliver to Lender at any time a written statement of the taxes and assessments against the Property.

Notice of Construction. Trustor shall notify Lender at least fifteen (15) days before any work is commenced, any services are furnished, or any materials are supplied to the Property, if any mechanic's lien, materialmen's lien, or other lien could be asserted on account of the work, services, or materials. Trustor will upon request of Lender furnish to Lender advance assurances satisfactory to Lender that Trustor can and will pay the cost of such improvements.

PROPERTY DAMAGE INSURANCE. The following provisions relating to insuring the Property are a part of this Deed of Trust.

Maintenance of Insurance. Trustor shall procure and maintain policies of fire insurance with standard extended coverage endorsements on a replacement basis for the full insurable value covering all Improvements on the Real Property in an amount sufficient to avoid application of any coinsurance clause, and with a standard mortgagee clause in favor of Lender. Trustor shall also procure and maintain comprehensive general liability insurance in such coverage amounts as Lender may request with Trustee and Lender being named as additional insureds in such liability insurance policies. Additionally, Trustor shall maintain such other insurance, including but not limited to hazard, business interruption, and boiler insurance, as Lender may reasonably require. Notwithstanding the foregoing, in no event shall Trustor be required to provide hazard insurance in excess of the replacement value of the improvements on the Real Property. Policies shall be written in form, amounts, coverages and basis reasonably acceptable to Lender and issued by a company or companies reasonably acceptable to Lender. Trustor, upon request of Lender, will deliver to Lender from time to time the policies or certificates of insurance in form satisfactory to Lender, including stipulations that coverages will not be cancelled or diminished without at least ten (10) days prior written notice to Lender. Each insurance policy also shall include an endorsement providing that coverage in favor of Lender will not be impaired in any way by any act, omission or default of Trustor or any other person. Should the Real Property be located in an area designated by the Administrator of the Federal Emergency Management Agency as a special flood hazard area, Trustor agrees to obtain and maintain Federal Flood Insurance, if available, for the full unpaid principal balance of the loan and any prior liens on the property securing the loan, up to the maximum policy limits set under the National Flood Insurance Program, or as otherwise required by Lender, and to maintain such insurance for the term of the loan.

Application of Proceeds. Trustor shall promptly notify Lender of any loss or damage to the Property. Lender may make proof of loss if Trustor fails to do so within fifteen (15) days of the casualty. If in Lender's sole judgment Lender's security interest in the Property has been impaired, Lender may, at Lender's election, receive and retain the proceeds of any insurance and apply the proceeds to the reduction of the Indebtedness, payment of any lien affecting the Property, or the restoration and repair of the Property. If the proceeds are to be applied to restoration and repair, Trustor shall repair or replace the damaged or destroyed Improvements in a manner satisfactory to Lender. Lender shall, upon satisfactory proof of such expenditure, pay or reimburse Trustor from the proceeds for the reasonable cost of repair or restoration if Trustor is not in default under this Deed of Trust. Any proceeds which have not been disbursed within 180 days after their receipt and which Lender has not committed to the repair or restoration of the Property shall be used first to pay any amount owing to Lender under this Deed of Trust, then to pay accrued interest, and the remainder, if any, shall be applied to the principal balance of the Indebtedness. If Lender holds any proceeds after payment in full of the Indebtedness, such proceeds shall be paid to Trustor as Trustor's interests may appear.

Trustor's Report on Insurance. Upon request of Lender, however not more than once a year, Trustor shall furnish to Lender a report on each existing policy of insurance showing: (1) the name of the insurer; (2) the risks insured; (3) the amount of the policy; (4) the property insured, the then current replacement value of such property, and the manner of determining that value; and (5) the expiration date of the policy. Trustor shall, upon request of Lender, have an independent appraiser satisfactory to Lender determine the cash value replacement cost of the Property.

LENDER'S EXPENDITURES. If any action or proceeding is commenced that would materially affect Lender's interest in the Property or if Trustor fails to comply with any provision of this Deed of Trust or any Related Documents, including but not limited to Trustor's failure to discharge or pay when due any amounts Trustor is required to discharge or pay under this Deed of Trust or any Related Documents, Lender on Trustor's behalf may (but shall not be obligated to) take any action that Lender deems appropriate, including but not limited to discharging or paying all taxes, liens, security interests, encumbrances and other claims, at any time levied or placed on the Property and paying all costs for insuring, maintaining and preserving the Property. All such expenditures incurred or paid by Lender for such purposes will then bear interest at the rate charged under the Note from the date incurred or paid by Lender to the date of repayment by Trustor. All such expenses will become a part of the Indebtedness and, at Lender's option, will (A) be payable on demand; (B) be added to the balance of the Note and be apportioned among and be payable with any installment payments to become due during either (1) the term of

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any applicable insurance policy; or (2) the remaining term of the Note; or (C) be treated as a balloon payment which will be due and payable at the Note's maturity. The Deed of Trust also will secure payment of these amounts. Such right shall be in addition to all other rights and remedies to which Lender may be entitled upon Default.

WARRANTY; DEFENSE OF TITLE. The following provisions relating to ownership of the Property are a part of this Deed of Trust:

Title. Trustor warrants that: (a) Trustor holds good and marketable title of record to the Property in fee simple, free and clear of all liens and encumbrances other than those set forth in the Real Property description or in any title insurance policy, title report, or final title opinion issued in favor of, and accepted by, Lender in connection with this Deed of Trust, and (b) Trustor has the full right, power, and authority to execute and deliver this Deed of Trust to Lender.

Defense of Title. Subject to the exception in the paragraph above, Trustor warrants and will forever defend the title to the Property against the lawful claims of all persons. In the event any action or proceeding is commenced that questions Trustor's title or the interest of Trustee or Lender under this Deed of Trust, Trustor shall defend the action at Trustor's expense. Trustor may be the nominal party in such proceeding, but Lender shall be entitled to participate in the proceeding and to be represented in the proceeding by counsel of Lender's own choice, and Trustor will deliver, or cause to be delivered, to Lender such instruments as Lender may request from time to time to permit such participation.

Compliance With Laws. Trustor warrants that the Property and Trustor's use of the Property complies with all existing applicable laws, ordinances, and regulations of governmental authorities.

Survival of Representations and Warranties. All representations, warranties, and agreements made by Trustor in this Deed of Trust shall survive the execution and delivery of this Deed of Trust, shall be continuing in nature, and shall remain in full force and effect until such time as Trustor's Indebtedness shall be paid in full.

CONDEMNATION. The following provisions relating to eminent domain and inverse condemnation proceedings are a part of this Deed of Trust:

Proceedings. If any eminent domain or inverse condemnation proceeding is commenced affecting the Property, Trustor shall promptly notify Lender in writing, and Trustor shall promptly take such steps as may be necessary to pursue or defend the action and obtain the award. Trustor may be the nominal party in any such proceeding, but Lender shall be entitled, at its election, to participate in the proceeding and to be represented in the proceeding by counsel of its own choice, and Trustor will deliver or cause to be delivered to Lender such instruments and documentation as may be requested by Lender from time to time to permit such participation.

Application of Net Proceeds. If any award is made or settlement entered into in any condemnation proceedings affecting all or any part of the Property or by any proceeding or purchase in lieu of condemnation, Lender may at its election, and to the extent permitted by law, require that all or any portion of the award or settlement be applied to the Indebtedness and to the repayment of all reasonable costs, expenses, and attorneys' fees incurred by Trustee or Lender in connection with the condemnation proceedings.

IMPOSITION OF TAXES, FEES AND CHARGES BY GOVERNMENTAL AUTHORITIES. The following provisions relating to governmental taxes, fees and charges are a part of this Deed of Trust:

Current Taxes, Fees and Charges. Upon request by Lender, Trustor shall execute such documents in addition to this Deed of Trust and take whatever other action is requested by Lender to perfect and continue Lender's lien on the Real Property. Trustor shall reimburse Lender for all taxes, as described below, together with all expenses incurred in recording, perfecting or continuing this Deed of Trust, including without limitation all taxes, fees, documentary stamps, and other charges for recording or registering this Deed of Trust.

Taxes. The following shall constitute taxes to which this section applies: (1) a specific tax upon this type of Deed of Trust or upon all or any part of the Indebtedness secured by this Deed of Trust; (2) a specific tax on Trustor which Trustor is authorized or required to deduct from payments on the Indebtedness secured by this type of Deed of Trust; (3) a tax on this type of Deed of Trust chargeable against the Lender or the holder of the Note; and (4) a specific tax on all or any portion of the Indebtedness or on payments of principal and interest made by Trustor.

Subsequent Taxes. If any tax to which this section applies is enacted subsequent to the date of this Deed of Trust, this event shall have the same effect as an Event of Default, and Lender may exercise any or all of its available remedies for an Event of Default as provided below unless Trustor either (1) pays the tax before it becomes delinquent, or (2) contests the tax as provided above in the Taxes and Liens section and deposits with Lender cash or a sufficient corporate surety bond or other security satisfactory to Lender.

SECURITY AGREEMENT; FINANCING STATEMENTS. The following provisions relating to this Deed of Trust as a security agreement are a part of this Deed of Trust:

Security Agreement. This instrument shall constitute a Security Agreement to the extent any of the Property constitutes fixtures, and Lender shall have all of the rights of a secured party under the Uniform Commercial Code as amended from time to time.

Security Interest. Upon request by Lender, Trustor shall take whatever action is requested by Lender to perfect and continue Lender's security interest in the Rents and Personal Property. Trustor shall reimburse Lender for all expenses incurred in perfecting or

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continuing this security interest. Upon default, Trustor shall not remove, sever or detach the Personal Property from the Property. Upon default, Trustor shall assemble any Personal Property not affixed to the Property in a manner and at a place reasonably convenient to Trustor and Lender and make it available to Lender within three (3) days after receipt of written demand from Lender to the extent permitted by applicable law.

Addresses. The mailing addresses of Trustor (debtor) and Lender (secured party) from which information concerning the security interest granted by this Deed of Trust may be obtained (each as required by the Uniform Commercial Code) are as stated on the first page of this Deed of Trust.

FURTHER ASSURANCES; ATTORNEY-IN-FACT. The following provisions relating to further assurances and attorney-in-fact are a part of this Deed of Trust:

Further Assurances. At any time, and from time to time, upon request of Lender, Trustor will make, execute and deliver, or will cause to be made, executed or delivered, to Lender or to Lender's designee, and when requested by Lender, cause to be filed, recorded, refiled, or rerecorded, as the case may be, at such times and in such offices and places as Lender may deem appropriate, any and all such mortgages, deeds of trust, security deeds, security agreements, financing statements, continuation statements, instruments of further assurance, certificates, and other documents as may, in the sole opinion of Lender, be necessary or desirable in order to effectuate, complete, perfect, continue, or preserve (1) Trustor's obligations under the Note, this Deed of Trust, and the Related Documents, and (2) the liens and security interests created by this Deed of Trust as first and prior liens on the Property, whether now owned or hereafter acquired by Trustor. Unless prohibited by law or Lender agrees to the contrary in writing, Trustor shall reimburse Lender for all costs and expenses incurred in connection with the matters referred to in this paragraph.

Attorney-in-Fact. If Trustor fails to do any of the things referred to in the preceding paragraph, Lender may do so for and in the name of Trustor and at Trustor's expense. For such purposes, Trustor hereby irrevocably appoints Lender as Trustor's attorney-in-fact for the purpose of making, executing, delivering, filing, recording, and doing all other things as may be necessary or desirable, in Lender's sole opinion, to accomplish the matters referred to in the preceding paragraph.

FULL PERFORMANCE. If Trustor pays all the Indebtedness when due, and otherwise performs all the obligations imposed upon Trustor under this Deed of Trust, Lender shall execute and deliver to Trustee a request for full reconveyance and shall execute and deliver to Trustor suitable statements of termination of any financing statement on file evidencing Lender's security interest in the Rents and the Personal Property. Lender may charge Trustor a reasonable reconveyance fee at the time of reconveyance.

EVENTS OF DEFAULT. Each of the following, at Lender's option, shall constitute an Event of Default under this Deed of Trust:

Payment Default. Trustor fails to make any payment when due under the Indebtedness.

Other Defaults. Trustor fails to comply with or to perform any other term, obligation, covenant or condition contained in this Deed of Trust or in any of the Related Documents or to comply with or to perform any term, obligation, covenant or condition contained in any other agreement between Lender and Trustor.

Compliance Default. Failure to comply with any other term, obligation, covenant or condition contained in this Deed of Trust, the Note or in any of the Related Documents.

Default on Other Payments. Failure of Trustor within the time required by this Deed of Trust to make any payment for taxes or insurance, or any other payment necessary to prevent filing of or to effect discharge of any lien.

Default in Favor of Third Parties. Should Grantor default under any loan, extension of credit, security agreement, purchase or sales agreement, or any other agreement, in favor of any other creditor or person that may materially affect any of Grantor's property or Grantor's ability to repay the Indebtedness or Grantor's ability to perform Grantor's obligations under this Deed of Trust or any of the Related Documents.

False Statements. Any warranty, representation or statement made or furnished to Lender by Trustor or on Trustor's behalf under this Deed of Trust or the Related Documents is false or misleading in any material respect, either now or at the time made or furnished or becomes false or misleading at any time thereafter.

Defective Collateralization. This Deed of Trust or any of the Related Documents ceases to be in full force and effect (including failure of any collateral document to create a valid and perfected security interest or lien) at any time and for any reason.

Death or Insolvency. The dissolution of Trustor's (regardless of whether election to continue is made), any member withdraws from the limited liability company, or any other termination of Trustor's existence as a going business or the death of any member, the insolvency of Trustor, the appointment of a receiver for any part of Trustor's property, any assignment for the benefit of creditors, any type of creditor workout, or the commencement of any proceeding under any bankruptcy or insolvency laws by or against Trustor.

Creditor or Forfeiture Proceedings. Commencement of foreclosure or forfeiture proceedings, whether by judicial proceeding, self-help, repossession or any other method, by any creditor of Trustor or by any governmental agency against any property securing the Indebtedness. This includes a garnishment of any of Trustor's accounts, including deposit accounts, with Lender. However, this Event of Default shall not apply if there is a good faith dispute by Trustor as to the validity or reasonableness of the claim which is the

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basis of the creditor or forfeiture proceeding and if Trustor gives Lender written notice of the creditor or forfeiture proceeding and deposits with Lender monies or a surety bond for the creditor or forfeiture proceeding, in an amount determined by Lender, in its sole discretion, as being an adequate reserve or bond for the dispute.

Breach of Other Agreement. Any breach by Trustor under the terms of any other agreement between Trustor and Lender that is not remedied within any grace period provided therein, including without limitation any agreement concerning any indebtedness or other obligation of Trustor to Lender, whether existing now or later.

Events Affecting Guarantor. Any of the preceding events occurs with respect to any Guarantor of any of the Indebtedness or any Guarantor dies or becomes incompetent, or revokes or disputes the validity of, or liability under, any Guaranty of the Indebtedness.

Adverse Change. A material adverse change occurs in Trustor's financial condition, or Lender believes the prospect of payment or performance of the Indebtedness is impaired.

Insecurity. Lender in good faith believes itself insecure.

Right to Cure. If any default, other than a default in payment, is curable and if Trustor has not been given a notice of a breach of the same provision of this Deed of Trust within the preceding twelve (12) months, it may be cured if Trustor, after Lender sends written notice to Trustor demanding cure of such default: (1) cures the default within thirty (30) days; or (2) if the cure requires more than thirty (30) days, immediately initiates steps which Lender deems in Lender's sole discretion to be sufficient to cure the default and thereafter continues and completes all reasonable and necessary steps sufficient to produce compliance as soon as reasonably practical.

RIGHTS AND REMEDIES ON DEFAULT. If an Event of Default occurs under this Deed of Trust, at any time thereafter, Trustee or Lender may exercise any one or more of the following rights and remedies:

Election of Remedies. Election by Lender to pursue any remedy shall not exclude pursuit of any other remedy, and an election to make expenditures or to take action to perform an obligation of Trustor under this Deed of Trust, after Trustor's failure to perform, shall not affect Lender's right to declare a default and exercise its remedies.

Foreclosure by Sale. Upon an Event of Default under this Deed of Trust, Beneficiary may declare the entire Indebtedness secured by this Deed of Trust immediately due and payable by delivery to Trustee of written declaration of default and demand for sale and of written notice of default and of election to cause to be sold the Property, which notice Trustee shall cause to be filed for record. Beneficiary also shall deposit with Trustee this Deed of Trust, the Note, other documents requested by Trustee, and all documents evidencing expenditures secured hereby. After the lapse of such time as may then be required by law following the recordation of the notice of default, and notice of sale having been given as then required by law, Trustee, without demand on Trustor, shall sell the Property at the time and place fixed by it in the notice of sale, either as a whole or in separate parcels, and in such order as it may determine, at public auction to the highest bidder for cash in lawful money of the United States, payable at time of sale. Trustee may postpone sale of all or any portion of the Property by public announcement at such time and place of sale, and from time to time thereafter may postpone such sale by public announcement at the time fixed by the preceding postponement in accordance with applicable law. Trustee shall deliver to such purchaser its deed conveying the Property so sold, but without any covenant or warranty, express or implied. The recitals in such deed of any matters or facts shall be conclusive proof of the truthfulness thereof. Any person, including Trustor, Trustee or Beneficiary may purchase at such sale. After deducting all costs, fees and expenses of Trustee and of this Trust, including cost of evidence of title in connection with sale, Trustee shall apply the proceeds of sale to payment of: all sums expended under the terms hereof, not then repaid, with accrued interest at the amount allowed by law in effect at the date hereof; all other sums then secured hereby; and the remainder, if any, to the person or persons legally entitled thereto.

Judicial Foreclosure. With respect to all or any part of the Real Property, Lender shall have the right in lieu of foreclosure by power of sale to foreclose by judicial foreclosure in accordance with and to the full extent provided by California law.

UCC Remedies. With respect to all or any part of the Personal Property, Lender shall have all the rights and remedies of a secured party under the Uniform Commercial Code, including without limitation the right to recover any deficiency in the manner and to the full extent provided by California law.

Collect Rents. Lender shall have the right, without notice to Trustor to take possession of and manage the Property and collect the Rents, including amounts past due and unpaid, and apply the net proceeds, over and above Lender's costs, against the Indebtedness. In furtherance of this right, Lender may require any tenant or other user of the Property to make payments of rent or use fees directly to Lender. If the Rents are collected by Lender, then Trustor irrevocably designates Lender as Trustor's attorney-in-fact to endorse instruments received in payment thereof in the name of Trustor and to negotiate the same and collect the proceeds. Payments by tenants or other users to Lender in response to Lender's demand shall satisfy the obligations for which the payments are made, whether or not any proper grounds for the demand existed. Lender may exercise its rights under this subparagraph either in person, by agent, or through a receiver.

Appoint Receiver. Lender shall have the right to have a receiver appointed to take possession of all or any part of the Property, with the power to protect and preserve the Property, to operate the Property preceding foreclosure or sale, and to collect the Rents from the Property and apply the proceeds, over and above the cost of the receivership, against the Indebtedness. The receiver may serve

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without bond if permitted by law. Lender's right to the appointment of a receiver shall exist whether or not the apparent value of the Property exceeds the Indebtedness by a substantial amount. Employment by Lender shall not disqualify a person from serving as a receiver.

Tenancy at Sufferance. If Trustor remains in possession of the Property after the Property is sold as provided above or Lender otherwise becomes entitled to possession of the Property upon default of Trustor, Trustor shall become a tenant at sufferance of Lender or the purchaser of the Property and shall, at Lender's option, either (1) pay a reasonable rental for the use of the Property, or (2) vacate the Property immediately upon the demand of Lender.

Other Remedies. Trustee or Lender shall have any other right or remedy provided in this Deed of Trust or the Note or available at law or in equity.

Notice of Sale. Lender shall give Trustor reasonable notice of the time and place of any public sale of the Personal Property or of the time after which any private sale or other intended disposition of the Personal Property is to be made. Reasonable notice shall mean notice given at least ten (10) days before the time of the sale or disposition. Any sale of the Personal Property may be made in conjunction with any sale of the Real Property.

Sale of the Property. To the extent permitted by applicable law, Trustor hereby waives any and all rights to have the Property marshalled. In exercising its rights and remedies, the Trustee or Lender shall be free to sell all or any part of the Property together or separately, in one sale or by separate sales. Lender shall be entitled to bid at any public sale on all or any portion of the Property.

Attorneys' Fees; Expenses. If Lender institutes any suit or action to enforce any of the terms of this Deed of Trust, Lender shall be entitled to recover such sum as the court may adjudge reasonable as attorneys' fees at trial and upon any appeal. Whether or not any court action is involved, and to the extent not prohibited by law, all reasonable expenses Lender incurs that in Lender's opinion are necessary at any time for the protection of its interest or the enforcement of its rights shall become a part of the Indebtedness payable on demand and shall bear interest at the Note rate from the date of the expenditure until repaid. Expenses covered by this paragraph include, without limitation, however subject to any limits under applicable law, Lender's attorneys' fees and Lender's legal expenses, whether or not there is a lawsuit, including attorneys' fees and expenses for bankruptcy proceedings (including efforts to modify or vacate any automatic stay or injunction), appeals, and any anticipated post-judgment collection services, the cost of searching records, obtaining title reports (including foreclosure reports), surveyors' reports, and appraisal fees, title insurance, and fees for the Trustee, to the extent permitted by applicable law. Trustor also will pay any court costs, in addition to all other sums provided by law.

Rights of Trustee. Trustee shall have all of the rights and duties of Lender as set forth in this section.

POWERS AND OBLIGATIONS OF TRUSTEE. The following provisions relating to the powers and obligations of Trustee are part of this Deed of Trust:

Powers of Trustee. In addition to all powers of Trustee arising as a matter of law, Trustee shall have the power to take the following actions with respect to the Property upon the written request of Lender and Trustor: (a) join in preparing and filing a map or plat of the Real Property, including the dedication of streets or other rights to the public; (b) join in granting any easement or creating any restriction on the Real Property; and (c) join in any subordination or other agreement affecting this Deed of Trust or the interest of Lender under this Deed of Trust.

Obligations to Notify. Trustee shall not be obligated to notify any other party of a pending sale under any other trust deed or lien, or of any action or proceeding in which Trustor, Lender, or Trustee shall be a party, unless the action or proceeding is brought by Trustee.

Trustee. Trustee shall meet all qualifications required for Trustee under applicable law. In addition to the rights and remedies set forth above, with respect to all or any part of the Property, the Trustee shall have the right to foreclose by notice and sale, and Lender shall have the right to foreclose by judicial foreclosure, in either case in accordance with and to the full extent provided by applicable law.

Successor Trustee. Lender, at Lender's option, may from time to time appoint a successor Trustee to any Trustee appointed under this Deed of Trust by an instrument executed and acknowledged by Lender and recorded in the office of the recorder of Mendocino County, State of California. The instrument shall contain, in addition to all other matters required by state law, the names of the original Lender, Trustee, and Trustor, the book and page where this Deed of Trust is recorded, and the name and address of the successor trustee, and the instrument shall be executed and acknowledged by Lender or its successors in interest. The successor trustee, without conveyance of the Property, shall succeed to all the title, power, and duties conferred upon the Trustee in this Deed of Trust and by applicable law. This procedure for substitution of Trustee shall govern to the exclusion of all other provisions for substitution.

Acceptance by Trustee. Trustee accepts this Trust when this Deed of Trust, duly executed and acknowledged, is made a public record as provided by law.

NOTICES. Any notice required to be given under this Deed of Trust shall be given in writing, and shall be effective when actually delivered,

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when actually received by telefacsimile (unless otherwise required by law), when deposited with a nationally recognized overnight courier, or, if mailed, when deposited in the United States mail, as first class, certified or registered mail postage prepaid, directed to the addresses shown near the beginning of this Deed of Trust. Trustor requests that copies of any notices of default and sale be directed to Trustor's address shown near the beginning of this Deed of Trust. All copies of notices of foreclosure from the holder of any lien which has priority over this Deed of Trust shall be sent to Lender's address, as shown near the beginning of this Deed of Trust. Any party may change its address for notices under this Deed of Trust by giving formal written notice to the other parties, specifying that the purpose of the notice is to change the party's address. For notice purposes, Trustor agrees to keep Lender informed at all times of Trustor's current address. Unless otherwise provided or required by law, if there is more than one Trustor, any notice given by Lender to any Trustor is deemed to be notice given to all Trustors.

STATEMENT OF OBLIGATION FEE. Lender may collect a fee, not to exceed the maximum amount permitted by law, for furnishing the statement of obligation as provided by Section 2943 of the Civil Code of California.

ADDITIONAL PROVISION. Without limiting the generality of the subparagraph above captioned "Compliance with Governmental Requirements," Trustor shall not use or permit the use of all or any portion of the Real Property for, or lease or agree to lease all or any portion of the Real Property to a tenant engaged in, the operation of any marijuana- or cannabis-related business, including, without limitation, the growing, cultivation, manufacturing, distribution or selling of marijuana, in violation of federal, state or local law.

MISCELLANEOUS PROVISIONS. The following miscellaneous provisions are a part of this Deed of Trust:

Amendments. This Deed of Trust, together with any Related Documents, constitutes the entire understanding and agreement of the parties as to the matters set forth in this Deed of Trust. No alteration of or amendment to this Deed of Trust shall be effective unless given in writing and signed by the party or parties sought to be charged or bound by the alteration or amendment.

Annual Reports. If the Property is used for purposes other than Trustor's residence, Trustor shall furnish to Lender, upon request, a certified statement of net operating income received from the Property during Trustor's previous fiscal year in such form and detail as Lender shall require. "Net operating income" shall mean all cash receipts from the Property less all cash expenditures made in connection with the operation of the Property.

Caption Headings. Caption headings in this Deed of Trust are for convenience purposes only and are not to be used to interpret or define the provisions of this Deed of Trust.

Merger. There shall be no merger of the interest or estate created by this Deed of Trust with any other interest or estate in the Property at any time held by or for the benefit of Lender in any capacity, without the written consent of Lender.

Governing Law. This Deed of Trust will be governed by federal law applicable to Lender and, to the extent not preempted by federal law, the laws of the State of California without regard to its conflicts of law provisions. This Deed of Trust has been accepted by Lender in the State of California.

No Waiver by Lender. Lender shall not be deemed to have waived any rights under this Deed of Trust unless such waiver is given in writing and signed by Lender. No delay or omission on the part of Lender in exercising any right shall operate as a waiver of such right or any other right. A waiver by Lender of a provision of this Deed of Trust shall not prejudice or constitute a waiver of Lender's right otherwise to demand strict compliance with that provision or any other provision of this Deed of Trust. No prior waiver by Lender, nor any course of dealing between Lender and Trustor, shall constitute a waiver of any of Lender's rights or of any of Trustor's obligations as to any future transactions. Whenever the consent of Lender is required under this Deed of Trust, the granting of such consent by Lender in any instance shall not constitute continuing consent to subsequent instances where such consent is required and in all cases such consent may be granted or withheld in the sole discretion of Lender.

Severability. If a court of competent jurisdiction finds any provision of this Deed of Trust to be illegal, invalid, or unenforceable as to any circumstance, that finding shall not make the offending provision illegal, invalid, or unenforceable as to any other circumstance. If feasible, the offending provision shall be considered modified so that it becomes legal, valid and enforceable. If the offending provision cannot be so modified, it shall be considered deleted from this Deed of Trust. Unless otherwise required by law, the illegality, invalidity, or unenforceability of any provision of this Deed of Trust shall not affect the legality, validity or enforceability of any other provision of this Deed of Trust.

Successors and Assigns. Subject to any limitations stated in this Deed of Trust on transfer of Trustor's interest, this Deed of Trust shall be binding upon and inure to the benefit of the parties, their successors and assigns. If ownership of the Property becomes vested in a person other than Trustor, Lender, without notice to Trustor, may deal with Trustor's successors with reference to this Deed of Trust and the Indebtedness by way of forbearance or extension without releasing Trustor from the obligations of this Deed of Trust or liability under the Indebtedness.

Time is of the Essence. Time is of the essence in the performance of this Deed of Trust.

DEFINITIONS. The following capitalized words and terms shall have the following meanings when used in this Deed of Trust. Unless specifically stated to the contrary, all references to dollar amounts shall mean amounts in lawful money of the United States of America. Words and terms used in the singular shall include the plural, and the plural shall include the singular, as the context may require. Words

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DEED OF TRUST
(Continued)

and terms not otherwise defined in this Deed of Trust shall have the meanings attributed to such terms in the Uniform Commercial Code:

Beneficiary. The word "Beneficiary" means Summit State Bank, and its successors and assigns.

Borrower. The word "Borrower" means WM Partnership, LLC, a California Limited Liability Company and includes all co-signers and co-makers signing the Note and all their successors and assigns.

Deed of Trust. The words "Deed of Trust" mean this Deed of Trust among Trustor, Lender, and Trustee, and includes without limitation all assignment and security interest provisions relating to the Personal Property and Rents.

Default. The word "Default" means the Default set forth in this Deed of Trust in the section titled "Default".

Environmental Laws. The words "Environmental Laws" mean any and all state, federal and local statutes, regulations and ordinances relating to the protection of human health or the environment, including without limitation the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. Section 9601, et seq. ("CERCLA"), the Superfund Amendments and Reauthorization Act of 1986, Pub. L. No. 99-499 ("SARA"), the Hazardous Materials Transportation Act, 49 U.S.C. Section 1801, et seq., the Resource Conservation and Recovery Act, 42 U.S.C. Section 6901, et seq., Chapters 6.5 through 7.7 of Division 20 of the California Health and Safety Code, Section 25100, et seq., or other applicable state or federal laws, rules, or regulations adopted pursuant thereto.

Event of Default. The words "Event of Default" mean any of the events of default set forth in this Deed of Trust in the events of default section of this Deed of Trust.

Guarantor. The word "Guarantor" means any guarantor, surety, or accommodation party of any or all of the Indebtedness.

Guaranty. The word "Guaranty" means the guaranty from Guarantor to Lender, including without limitation a guaranty of all or part of the Note.

Hazardous Substances. The words "Hazardous Substances" mean materials that, because of their quantity, concentration or physical, chemical or infectious characteristics, may cause or pose a present or potential hazard to human health or the environment when improperly used, treated, stored, disposed of, generated, manufactured, transported or otherwise handled. The words "Hazardous Substances" are used in their very broadest sense and include without limitation any and all hazardous or toxic substances, materials or waste as defined by or listed under the Environmental Laws. The term "Hazardous Substances" also includes, without limitation, petroleum and petroleum by-products or any fraction thereof and asbestos.

Improvements. The word "Improvements" means all existing and future improvements, buildings, structures, mobile homes affixed on the Real Property, facilities, additions, replacements and other construction on the Real Property.

Indebtedness. The word "Indebtedness" means all principal, interest, and other amounts, costs and expenses payable under the Note or Related Documents, together with all renewals of, extensions of, modifications of, consolidations of and substitutions for the Note or Related Documents and any amounts expended or advanced by Lender to discharge Trustor's obligations or expenses incurred by Trustee or Lender to enforce Trustor's obligations under this Deed of Trust, together with interest on such amounts as provided in this Deed of Trust.

Lender. The word "Lender" means Summit State Bank, its successors and assigns.

Note. The word "Note" means the promissory note dated May 22, 2019, **in the original principal amount of $500,000.00** from Trustor to Lender, together with all renewals of, extensions of, modifications of, refinancings of, consolidations of, and substitutions for the promissory note or agreement. **NOTICE TO TRUSTOR: THE NOTE CONTAINS A VARIABLE INTEREST RATE.**

Personal Property. The words "Personal Property" mean all equipment, fixtures, and other articles of personal property now or hereafter owned by Trustor, and now or hereafter attached or affixed to the Real Property; together with all accessions, parts, and additions to, all replacements of, and all substitutions for, any of such property; and together with all proceeds (including without limitation all insurance proceeds and refunds of premiums) from any sale or other disposition of the Property.

Property. The word "Property" means collectively the Real Property and the Personal Property.

Real Property. The words "Real Property" mean the real property, interests and rights, as further described in this Deed of Trust.

Related Documents. The words "Related Documents" mean all promissory notes, credit agreements, loan agreements, security agreements, mortgages, deeds of trust, security deeds, collateral mortgages, and all other instruments, agreements and documents, whether now or hereafter existing, executed in connection with the Indebtedness; except that the words do not mean any guaranty or environmental agreement, whether now or hereafter existing, executed in connection with the Indebtedness.

Rents. The word "Rents" means all present and future leases, rents, revenues, income, issues, royalties, profits, and other benefits derived from the Property together with the cash proceeds of the Rents.

Trustee. The word "Trustee" means Redwood Empire Title Company of Mendocino County, whose address is 405 S. Orchard Avenue, Ukiah, CA 95482 and any substitute or successor trustees.

####################034005222019LN10

DEED OF TRUST
(Continued)

Trustor. The word "Trustor" means WM Partnership, LLC, a California Limited Liability Company.

TRUSTOR ACKNOWLEDGES HAVING READ ALL THE PROVISIONS OF THIS DEED OF TRUST, AND TRUSTOR AGREES TO ITS TERMS, INCLUDING THE VARIABLE RATE PROVISIONS OF THE NOTE SECURED BY THIS DEED OF TRUST.

TRUSTOR:

WM PARTNERSHIP, LLC, A CALIFORNIA LIMITED LIABILITY COMPANY

By: _____
Travis Swithenbank, Member of WM Partnership, LLC, a California Limited Liability Company

By: _____
Michaela Biaggi, Member of WM Partnership, LLC, a California Limited Liability Company

CERTIFICATE OF ACKNOWLEDGMENT

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy or validity of that document.

STATE OF California)
) SS
COUNTY OF Mendocino)

On 5-23-19, 20____ before me, Debra Niesen - Notary Public,
(here insert name and title of the officer)

personally appeared **Travis Swithenbank and Michaela Biaggi,** who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

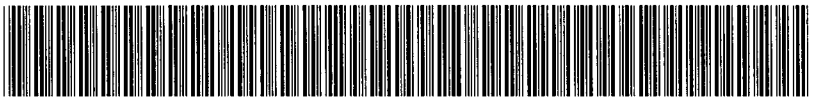
I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature _____
Debra Niesen

DEBRA NIESEN
Notary Public - California
Mendocino County
Commission # 2214130
My Comm. Expires Oct 12, 2021

(Seal)



####################034005222019LN11

DEED OF TRUST
(Continued)

(DO NOT RECORD)

REQUEST FOR FULL RECONVEYANCE

(To be used only when obligations have been paid in full)

To: _____, Trustee

The undersigned is the legal owner and holder of all Indebtedness secured by this Deed of Trust. All sums secured by this Deed of Trust have been fully paid and satisfied. You are hereby directed, upon payment to you of any sums owing to you under the terms of this Deed of Trust or pursuant to any applicable statute, to cancel the Note secured by this Deed of Trust (which is delivered to you together with this Deed of Trust), and to reconvey, without warranty, to the parties designated by the terms of this Deed of Trust, the estate now held by you under this Deed of Trust. Please mail the reconveyance and Related Documents to:

_____.

Date: _____ **Beneficiary:** _____

By: _____

Its: _____

Escrow No.: 20190695DN
Title Order No.:

EXHIBIT A

THE LAND REFERRED TO HEREIN BELOW IS DESCRIBED AS FOLLOWS:

Parcel 1, as numbered and designated upon the Parcel Map of Minor Subdivision No. 18-76, filed July 1, 1976 in Map Case 2, Drawer 28, Page 72, Mendocino County Records.

APN: 069-320-01

Recording Requested By
Redwood Empire Title

When Recorded Mail To
First Equity
528 S. Main St.
Fort Bragg CA 95437

Title Order No. 20181262cw

2019-00113
Recorded at the request of
REDWOOD EMPIRE TITLE
01/03/2019 10:35 AM
Fee: $103.00 Pgs: 1 of 6

OFFICIAL RECORDS
Susan M. Ranochak - Clerk-Recorder
Mendocino County, CA

Space above this line for recorder's use

DEED OF TRUST

RECORDER: INDEX FOR SPECIAL NOTICE

Loan No. **201701738**

This Deed of Trust, made this **14th** day of **December 2018**, among the Trustor, **Travis Swithenbank, an unmarried man** (herein "Borrower"), **Redwood Trust Deed Services** (herein "Trustee"), and the Beneficiary, **Richard L. Perry, Jr. and Dorothy L. Perry, Trustees of the Richard L. Perry, Jr. and Dorothy L. Perry Living Trust dated March 1, 2005, Who's address is: PO Box 1639, Pilikoa St. Hanalei, Hi 96714** (herein "Lender").

The beneficiaries (or assignees) of this deed of trust have agreed in writing to be governed by the desires of the holders of more than 50% of the record beneficial interest therein with respect to actions to be taken on behalf of all holders in the event of default or foreclosure or for matters that require direction or approval of the holders, including designation of the broker, servicing agent, or other person acting on their behalf, and the sale, encumbrance or lease of real property owned by the holders resulting from foreclosure or receipt of a deed in lieu of foreclosure.

GRANT IN TRUST

BORROWER, in consideration of the indebtedness herein recited and the trust herein created, irrevocably grants, transfers, conveys and assigns to Trustee, in trust, with power of sale, the following described property located in the county of **Mendocino**, State of California: **Parcels 2, as numbered and designated upon the Parcel Map of Minor Subdivision No. 18-76, filed July 1, 1976 in Map Case 2, Drawer 28, Page 72, Mendocino County Records**

APN: 069-320-02, which has the address of **32700 Nameless Ln. Fort Bragg CA 95437** (herein "Property Address");

TOGETHER with all the improvements now or hereafter erected on the property, and all easements, rights, appurtenances, rents (subject however to the rights and authorities given herein to Lender to collect and apply such rents), royalties, mineral, oil and gas rights and profits, water, and water rights, and water stock, and all fixtures now or hereafter attached to the property, all of which, including replacements and additions thereto, shall be deemed to be and remain a part of the property covered by this Deed of Trust; and all of the foregoing, together with said property (or the leasehold estate if this Deed of Trust is on a leasehold) are herein referred to as the "Property";

THIS DEED OF TRUST IS MADE TO SECURE TO LENDER:
(a) the repayment of the indebtedness evidenced by Borrower's note (herein "Note") dated **12/14/2018**, in the principal sum of U.S. **$100,000.00**, with payment of interest thereon, the payment of all other sums, with interest thereon, advanced in accordance herewith to protect the security of this Deed of Trust; the performance of the covenants and agreements of Borrower herein contained; and (b) repayment of any future advances, with interest thereon, made to the Borrower by Lender pursuant to paragraph 19 hereof (herein "Future Advances"); and in addition (c) this Deed of Trust shall provide the same security on behalf of the Lender, to cover extensions, modifications or renewals, including without limitation, extensions, modifications or renewals of the Note at a different rate of interest; and the performance of the covenants and agreements of Borrower herein contained.

Borrower covenants that Borrower is lawfully seised of the estate hereby conveyed and has the right to grant and convey the **Property, that the Property is unencumbered except for encumbrances of record, and that Borrower will warrant and defend** generally the title to the Property against all claims and demands, subject to encumbrances of record.

UNIFORM COVENANTS. BORROWER AND LENDER COVENANT AND AGREE AS FOLLOWS:

1. Payments of Principal and/or Interest. Borrower shall promptly pay, when due, the principal of and/or interest on the indebtedness evidenced by the Note, prepayment and late charges as provided in the Note, and the principal of and/or interest on any Future Advances secured by the Deed of Trust.

2. Funds for Taxes and Insurance (Impounds). Subject to applicable law, and if required by the Lender, Borrower shall pay to Lender on the day monthly payments of principal and interest are payable under the Note, until the Note is paid in full, a sum (herein "Funds") equal to one-twelfth of the yearly taxes and assessments (including condominium and planned unit development assessments, if any) which may attain priority over this Deed of Trust, and ground rents on the Property, if any, plus one-twelfth of yearly premium installments for hazard insurance, plus one-twelfth of yearly premium installments for mortgage insurance, if any, all as reasonably estimated initially and from time to time by Lender on the basis of assessments and bills and reasonable estimates thereof. Borrower shall not be obligated to make such payments of Funds to Lender to the extent that Borrower makes such payments to the holder of a prior mortgage or deed of trust if such holder is an institutional Lender.

If Borrower pays Funds to Lender, the Funds shall be held in an institution the deposits or accounts of which are insured or guaranteed by a Federal or state agency (including Lender if Lender is such an institution). Lender shall apply the Funds to pay said taxes, assessments, insurance premiums and ground rents. Lender may not charge for so holding and applying the Funds, analyzing said account or verifying and compiling said assessments and bills, unless Lender pays Borrower interest on the Funds and applicable law permits Lender to make such a charge. Borrower and Lender may agree in writing at the time of execution of this Deed of Trust that interest on the Funds shall be paid to Borrower, and unless such an agreement is made or applicable law requires such interest to be paid, Lender shall not be required to pay Borrower any interest or earnings on the Funds. Lender shall give to Borrower, without charge, an annual accounting of the Funds showing credits and debits to the Funds and the purpose for which each debit to the Funds was made. The Funds are pledged as additional security for the sums secured by this Deed of Trust.

If the amount of Funds held by Lender, together with the future monthly installments of Funds payable prior to the due dates of taxes, assessments, insurance premiums and ground rents, shall exceed the amount required to pay said taxes, assessments, insurance premiums and ground rents, such excess shall be, at Borrower's option, either promptly repaid to Borrower or credited to Borrower on monthly installments of Funds. If the amount of the Funds held by Lender shall not be sufficient to pay taxes, assessments, insurance premiums and ground rents as they fall due, Borrower shall pay to Lender any amount necessary to make up the deficiency in one or more payments as Lender may require.

Upon payment in full of all sums secured by this Deed of Trust, Lender shall promptly refund to Borrower any Funds held by Lender. If under Paragraph 18 hereof the Property is sold or the Property is otherwise acquired by Lender, Lender shall apply, no later than immediately prior to the sale of the Property or its acquisition by Lender, any Funds held by Lender at the time of application as a credit against the sums secured by this Deed of Trust.

3. Application of Payments. Unless applicable law provides otherwise, all payments received by Lender under the Note and paragraphs 1 and 2 hereof shall be applied by Lender first in payment of amounts payable to Lender by Borrower under paragraph 2 hereof, if applicable, then to interest payable on the Note, then to the principal of the Note, and then to interest and principal on any Future Advances.

4. Prior Mortgages and Deeds of Trust; Liens. Borrower shall perform all of Borrower's obligations under any mortgage, deed of trust or other security agreement with a lien which has priority over this Deed of Trust, including Borrower's covenants to make payments when due. Borrower shall pay or cause to be paid, at least 10 days before delinquency, all taxes, assessments and other charges, fines and impositions attributable to the Property which may attain a priority over this Deed of Trust, and leasehold payments or ground rents, if any.

5. Hazard Insurance. Borrower agrees to provide, maintain and deliver to Lender fire insurance satisfactory and with loss payable to Lender. The amount collected under any fire or other insurance policy may be applied by Lender upon any indebtedness secured hereby and in such order as Lender may determine, or at option of Lender the entire amount so collected or any part thereof may be released to the Borrower. Such application or release shall not cure or waive any Default or Notice of Default hereunder or invalidate any act done pursuant to such notice.

The insurance carrier providing the insurance shall be chosen by Borrower subject to approval by Lender; provided that such approval shall not be unreasonably withheld. All insurance policies and renewals thereof shall be in a form acceptable to Lender and shall include a standard mortgage clause in favor of and in a form acceptable to Lender. Lender shall have the right to hold the policies and renewals thereof, subject to the terms of any mortgage, deed of trust or other security agreement with a lien which has priority over this Deed of Trust.

In the event of a loss, Borrower shall give prompt notice to the insurance carrier and Lender. Lender may make proof of loss if not made promptly by Borrower.

If the Property is abandoned by Borrower, or if Borrower fails to respond to Lender within 30 days from the date notice is mailed by Lender to Borrower that the insurance carrier offers to settle a claim for insurance benefits, Lender is authorized to collect and apply their insurance proceeds at Lender's option either to restoration or repair of the Property or to the sums secured by this Deed of Trust.

If Borrower obtains earthquake, flood or any other hazard insurance, or any other insurance on the Property, and such insurance is not specifically required by the Lender, then such insurance shall: (i) name the Lender as loss payee thereunder, and (ii) be subject to all of the provisions of this paragraph 5.

6. Preservation and Maintenance of Property; Leaseholds; Condominiums; Planned Unit Developments. Borrower shall keep the Property in good repair and shall not commit waste or permit impairment or deterioration of the Property and shall comply with the provisions of any lease if this Deed of Trust is on a leasehold. If this Deed of Trust is on a unit in a condominium or a planned unit development, Borrower shall perform all of Borrower's obligations under the declaration of covenants creating or governing the condominium or planned unit development, the by-laws and regulations of the condominium or planned unit development, and constituent documents.

7. Protection of Lender's Security. If Borrower fails to perform the covenants and agreements contained in this Deed of Trust, or if any action or proceeding is commenced which affects Lender's interest in the Property, including but not limited to proceedings by the Lender to obtain relief from stay in any bankruptcy proceeding which would prohibit Lender enforcing its rights under the Deed of Trust, then Lender, at Lender's option, may make such appearances, disburse such sums, including reasonable attorney's fees, and take such action as is necessary to protect Lender's interest. If Lender required mortgage insurance as a condition of making the loan secured by this Deed of Trust, Borrower shall pay the premiums required to maintain such insurance in effect until such time as the requirement for such insurance terminates in accordance with Borrower's and Lender's written agreement or applicable law.

Any amounts disbursed by Lender pursuant to this paragraph 7, with interest thereon, including but not limited to payment of delinquent taxes and assessments, insurance premiums due, and delinquent amounts owed to prior lien holders, shall become additional indebtedness of Borrower secured by this Deed of Trust . Such amounts as are disbursed by Lender shall be payable, upon notice from Lender to Borrower requesting payment thereof, and shall bear interest from the date of disbursement at the rate payable on the Note. Nothing contained in this paragraph 7 shall require Lender to incur any expense or take any action hereunder.

8. Inspection. Lender may make or cause to be made reasonable entries upon and inspection of the Property, provided that Lender shall give Borrower notice prior to any such inspection specifying reasonable cause therefore related to Lender's interest in the Property.

9. Condemnation. The proceeds of any award or claim for damages, direct or consequential, in conjunction with any condemnation or other taking of the Property, or part thereof, or for conveyance in lieu of condemnation, are hereby assigned and shall be paid to Lender, subject to the terms of any mortgage, deed of trust or other security agreement with a lien which has priority over this Deed of Trust.

10. Borrower Not Released. At any time or from time to time, without liability therefore and without notice upon written request of Lender and presentation of this Deed and said Note for endorsement, and without affecting the personal liability of any person for payment of the indebtedness secured hereby, Trustee may: reconvey any part of said property; consent to the making of any map or plat thereof; join in granting any easement thereon; or join in any extension agreement or any agreement subordinating the lien or charge thereof. Trustee may, but shall be under no obligation or duty to, appear in or defend any action or proceeding purporting to affect said property or the title thereto, or purporting to affect the security hereof or the rights or powers of Lender or Trustee.

11. Forbearance by Lender Not a Waiver. Any forbearance by Lender in exercising any right or remedy hereunder, or otherwise afforded by applicable law, shall not be a waiver of or preclude the exercise of any such right or remedy. The procurement of insurance or the payment of taxes or other liens or charges by Lender shall not be a waiver of Lender's right to accelerate the maturity of the indebtedness secured by this Deed of Trust.

12. Remedies Cumulative. All remedies provided in this Deed of Trust are distinct and cumulative to any other or remedy under this Deed of Trust or afforded by law or equity, and may be exercised concurrently, independently or successively.

13. Successors and Assigns Bound; Joint and Several Liability; Co-signers. The covenants and agreements herein contained shall bind, and the rights hereunder shall inure to, the respective successors and assigns of Lender and Borrower, subject to the provisions of paragraph 18 hereof. All covenants and agreements of Borrower shall be joint and several.

14. Notice. Except for any notice required under applicable law to be given in another manner, (a) any notice to Borrower provided for in this Deed of Trust shall be given by delivering it or by mailing such notice by certified mail addressed to Borrower or the Property at the Property Address or at such other address as Borrower may designate by notice to Lender as provided herein, and (b) any notice to Lender shall be given by certified mail to Lender, in care of Lender's Servicing Agent ("Agent"), **First Equity, 528 S. Main St. Fort Bragg CA 95437** or to such other address as Lender or Agent may designate by notice to Borrower as provided herein. Any notice provided for in this Deed of Trust shall be deemed to have been given to Borrower or Lender when given in the manner designated herein.

15. This Deed of Trust shall be governed by the Laws of the State of California. In the event that any provision or clause of this Deed of Trust or the Note conflicts with applicable law, such conflict shall not effect other provisions of this Deed of Trust or the Note which can be given effect without the conflicting provision, and to this end the provisions of the Deed of Trust are declared to be severable.

16. Lender's Right to Require The Loan to be Paid Off Immediately. If the Borrower shall sell, enter into a contract of sale, lease for a term of more than 6-years (including options to renew), lease with an option to purchase for any term, or transfer all or any part of the Property or an interest therein, excluding (a) the creation of a lien or encumbrance subordinate to this Deed of Trust, (b) or

a transfer by devise, descent, or by operation of law upon the death of a joint tenant, the Lender may, at its option declare the Note and any other obligations secured by this Deed of Trust, together with accrued interest thereon, immediately due and payable, in full. No waiver or the Lender's right to accelerate shall be effective unless it is in writing.

If Lender exercises such option to accelerate, Lender shall mail Borrower notice of acceleration in accordance with paragraph 14 hereof. Such notice shall provide a period of not less than 30 days from the date the notice is mailed within which Borrower may pay the sums declared due. If Borrower fails to pay such sums prior to the expiration of such period, Lender may, without further notice or demand on Borrower, invoke any remedies permitted by paragraph 17 hereof.

BORROWER AND LENDER FURTHER COVENANT AND AGREE AS FOLLOWS:

17. Assignment of Rents; Appointment of Receiver; Lender in Possession. As additional security hereunder, and without regard to the adequacy of any security for the indebtedness hereby secured, Borrower hereby assigns to Lender the rents of the Property, provided that Borrower shall, prior to acceleration under paragraph 18 hereof or abandonment of the Property, have the right to collect and retain such rents as they become due and payable.

Upon acceleration under paragraph 18 hereof or abandonment of the Property, Lender, in person, by Agent or by judicially appointed receiver shall be entitled to enter upon, take possession of and manage the Property and to collect the rents of the Property including those past due. All rents collected by Lender or the receiver shall be applied first to payment of the costs of management of the Property and collection of rents, including, but not limited to, receiver's fees, premiums on receiver's bonds and reasonable attorney's fees, and then to the sums secured by this Deed of Trust. Lender and the receiver shall be liable to account only for those rents actually received.

18. Default. Upon default by Borrower in payment of any indebtedness secured hereby or in performance of any agreement hereunder, Lender may declare all sums secured hereby immediately due and payable by delivery to Trustee of written declaration of default and demand for sale and of written Notice of Default and of election to cause to be sold said property, which notice Trustee shall cause to be filed for record. Trustee shall be entitled to rely upon the correctness of such notice. Lender also shall deposit with Trustee this Deed, said Note and all documents evidencing expenditures secured hereby.

After the lapse of such time as then may be required by law following the recordation of said Notice of Default and Notice of Sale having been given as then required by law, Trustee, without demand on Trustor, shall sell said property at the time and place fixed by it in said Notice of Sale, either as a whole or in separate parcels and in such order as it may determine (but subject to any statutory right of Trustor to direct the order in which said property, if consisting of several lots or parcels, shall be sold), at public auction to the highest bidder for cash in lawful money of the United States, payable at time of sale. Trustee may postpone sale of all or any portion of said property by public announcement at such time and place of sale, and from time to time thereafter may postpone such sale by public announcement at the time fixed by the preceding postponement. Trustee shall deliver to such purchaser its deed conveying the property to sold, but without any covenant or warranty, expressed or implied. The recitals in such deed of any matters or facts shall be conclusive proof of the truthfulness thereof. Any person including Trustor, Trustee, or Beneficiary as hereinafter defined, may purchase at such sale.

After deducting all costs, fees and expenses of Trustee and of this Trust, including cost of evidence of title in connection with sale, Trustee shall apply the proceeds of sale to payment of; all sums expended under the terms hereof, not then repaid, with accrued interest at the rate prescribed in the Note; all other sums then secured thereby; and the remainder, if any, to the person or persons legally entitled thereto.

19. Future Advances. Upon request of Borrower, Lender, at Lender's option prior to full reconveyance of the Property by Trustee to Borrower, may make Future Advances to Borrower. Such advances with interest thereon, shall be secured by this Deed of Trust when evidenced by promissory notes stating that said notes are secured hereby.

20. Reconveyance. Upon written request of Lender stating that all sums secured hereby have been paid, and upon surrender of this Deed and said Note to Trustee for cancellation and retention and upon payment of its fees, Trustee shall reconvey, without warranty, the property then held hereunder. The recitals in such reconveyance of any matters or facts shall be conclusive proof of the truthfulness thereof. The grantee in such reconveyance may be described as "the person or persons legally entitled thereto." The Trustee may destroy said Note, this Deed or Trust (and any other documents related thereto) upon the first to occur of the following: 5 years after issuance of a full reconveyance; or, recordation of the Note and Deed of Trust in a form or medium which permits their reproduction for 5 years following issuance of a full reconveyance.

21. Substitution of Trustee. Lender, at Lender's option, may from time to time remove Trustee and appoint a successor trustee to any Trustee appointed hereunder. Without conveyance of the Property, the successor trustee shall succeed to all the title, power and duties conferred upon the Trustee herein and by applicable law.

22. Request for Notices. Borrower requests that copies of the notice of sale and notice of default be sent to Borrower's address which is the Property Address.

23. Statement of Obligation. Lender may collect a fee, not to exceed the maximum amount permitted by law, for furnishing the statement of obligations as provided by Section 2943 of the Civil Code of California.

MISCELLANEOUS PROVISIONS

24. Construction or Home Improvement Loan. If the loan secured by this Deed of Trust is a construction or home improvement loan, Borrower is required to perform according to the terms and conditions of each agreement contained in any building, home improvement or similar agreement between the Borrower and Lender.

25. Acceptance by Lender of a Partial Payment After Notice of Default. By accepting partial payment (payments which do not satisfy a default or delinquency in full) of any sums secured by this Deed of Trust after a Notice of Default has been recorded, or by accepting late performance of any obligation secured by this Deed of Trust, or by adding any payment so made to the loan secured by this Deed of Trust, whether or not such payments are made pursuant to a court order, the Lender does not waive its right either to require prompt payment when due of all other sums so secured or to declare default for failure to make any such prompt payment or to perform any such act. No exercise of any right or remedy of the Lender or Trustee under this Deed of Trust shall constitute a waiver of any other right or remedy contained in this Deed of Trust or provided by law.

IN WITNESS WHEREOF, BORROWER HAS EXECUTED THIS DEED OF TRUST

12/27/18

Borrower **Travis W. Swithenbank** Date Borrower Date

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California
County of MENDOCINO

On DEC. 27, 2018 before me, C. SOUTHERS, NOTARY PUBLIC,
personally appeared TRAVIS W. SWITHENBANK

who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

C. SOUTHERS
Notary Public - California
Mendocino County
Commission # 2236879
My Comm. Expires May 2, 2022

Signature (Seal)

REQUEST FOR FULL RECONVEYANCE

The undersigned is the holder of the note or notes secured by this Deed of Trust. Said note or notes, together with all **other indebtedness secured by this Deed of Trust, have been paid in full. You are hereby directed to cancel said note or notes and**

this Deed of Trust, which are delivered hereby, and to reconvey, without warranty, all the estate now held by you under this Deed of Trust to the person or persons legally entitled thereto.

Signature of Beneficiary (the "LENDER") Date

Signature of Beneficiary (the "LENDER") Date

When recorded, mail to

Att: _____

Mendocino County

28255
RECORDED AT REQUEST OF
Petersen, Lonergan & Larson
BOOK 898 PAGE 163
AUG 29 8 09 AM '72
OFFICIAL RECORDS
MENDOCINO COUNTY, CALIF.
Viola Richardson
RECORDER $4.00

When Recorded Mail To

Name
Street Address
City & State

PETERSEN, LONERGAN & LARSON
P.O. BOX 1143
FORT BRAGG, CA 95437

Mail Tax Statements To

Name
Street Address
City & State

WILLARD A. HODGES
COAST HIGHWAY NORTH
FORT BRAGG, CA 95437

SPACE ABOVE THIS LINE FOR RECORDER'S USE

DOCUMENTARY TRANSFER TAX $ 0 (correction deed)
_____ COMPUTED ON FULL VALUE OF PROPERTY CONVEYED
_____ OR COMPUTED ON FULL VALUE LESS LIENS AND ENCUMBRANCES REMAINING AT TIME OF SALE.
Petersen, Lonergan & Larson
~~REDWOOD EMPIRE TITLE CO. OF MENDOCINO COUNTY~~
PETERSEN, LONERGAN & LARSON

GRANT DEED
(CORPORATION)

ORDER NO. _____

FOR A VALUABLE CONSIDERATION, receipt of which is hereby acknowledged,

ABORIGINE LUMBER CO., A California Corporation

hereby GRANT(S) to

WILLARD A. HODGES and ETHEL I. HODGES, his wife

the following described real property in the County of Mendocino, State of California:

SEE EXHIBIT "A" ATTACHED HERETO AND MADE A PART HEREOF.

This is a correction deed for that certain deed from grantor to grantee herein recorded in Book 883 at Page 307 on April 4, 1972.

Dated AUGUST 25, 1972

ABORIGINE LUMBER COMPANY
by JACK BOULDIN, PRESIDENT

ROBERT C. PETERSEN, SECRETARY

STATE OF CALIFORNIA
COUNTY OF MENDOCINO } SS.
On AUG. 25 1972 before me, the undersigned, a Notary Public in and for said State, personally appeared JACK BOULDIN
known to me to be the President
and ROBERT C. PETERSEN
known to me to be the Secretary
of the corporation that executed the within instrument, and known to me to be the persons who executed the within instrument on behalf of the corporation therein named, and acknowledged to me that such corporation executed the same.
WITNESS my hand and official seal.

Signature _____
THOMAS C LONERGAN
Name (Typed or Printed)
My Commission Expires 10/1/74

OFFICIAL SEAL
THOMAS C. LONERGAN
NOTARY PUBLIC-CALIFORNIA
MENDOCINO COUNTY
My Commission Expires Oct. 1, 1974
P. O. Box 1143, Fort Bragg, Calif. 95437

(This area for official notarial seal)

Redwood Empire Title Company of Mendocino County

BOOK 898 PAGE 163

A non-exclusive right of way for roadway and public utility purposes, 60 feet in width, the center line of which is described as follows:

All bearings used in this description are in terms of the California State Grid, Zone 2.

Beginning at a point on the Easterly right of way line of California Highway No. 1, said point being South 86° 09' 40" East, 60.48 feet from the 2" iron bar marking the Southeast corner of Lot 1 of Cleone Acres Unit No. 2 in Section 20, Township 19 North, Range 17 West, Mount Diablo Base and Meridian as said subdivision is shown on map filed August 12, 1958 in Map Case 1, Drawer 10, Page 130, Mendocino County Records;

Thence from said point of beginning, South 85° 21' East, 208.95 feet to the beginning of a curve, concave to the North, having a radius of 200 feet; thence Easterly along the arc of said curve, through a central angle of 16° 30' 15" a distance of 57.61 feet; thence North 78° 08' 45" East, 60.69 feet to the beginning of a curve, concave to the South, having a radius of 200 feet; thence Easterly along the arc of said curve, through a central angle of 27° 22' 55", a distance of 95.58 feet; thence South 74° 28' 20" East, 198.25 feet to the beginning of a curve, concave to the North, having a radius of 200 feet; thence Easterly along the arc of said curve, through a central angle of 28° 16' 30", a distance of 98.70 feet; thence North 77° 15' 10" East, 365.31 feet to the beginning of a curve, concave to the South, having a radius of 200 feet; thence Easterly along the arc of said curve, through a central angle of 34° 44' 35", a distance of 121.28 feet; thence South 68° 00' 15" East, 118.99 feet to the beginning of a curve, concave to the North, having a radius of 200 feet; thence Easterly along the arc of said curve, through a central angle of 21° 15' 50", a distance of 74.22 feet; thence South 89° 16' 05" East, 274.92 feet to the beginning of a curve, concave to the Southwest, having a radius of 200 feet; thence Easterly along the arc of said curve, through a central angle of 19° 46', a distance of 69.00 feet; thence South 69° 30' 05" East, 100.45 feet to the beginning of a curve, concave to the Southwest, having a radius of 200 feet; thence Southeasterly along the arc of said curve, through a central angle of 17° 15' 30", a distance of 60.24 feet; thence South 52° 14' 35" East, 102.70 feet to the beginning of a curve, concave to the Southwest, having a radius of 200 feet; thence Southeasterly along the arc of said curve, through a central angle of 27° 20' 20", a distance of 95.43 feet; thence South 24° 54' 15" East, 44.65 feet to the beginning of a curve, concave to the Northeast, having a radius of 200 feet; thence Southeasterly along the arc of said curve, through a central angle of 23° 23', a distance of 81.62 feet; thence South 48° 17' 15" East, 31.55 feet to a point on the West boundary of that certain property conveyed by Aborigine Lumber Company, a California Corporation, to Willard A. Hodges et ux, dated February 22, 1972 and recorded March 8, 1972 in Volume 880 of Official Records, Page 740, Mendocino County Records, the last mentioned point being North 1° 20' 04" East, 95.88 feet from the Northeast corner of that certain land described in deed from Frances Hensley to Burly Littler et ux, dated August 22, 1956 and recorded August 29, 1956 in Volume 440 of Official Records, Page 241, Mendocino County Records.

EXHIBIT "A"

P. Hogan to Little Valley Lum. Co

This Indenture made the 31st day of December in the year our our Lord One thousand eight hundred & eighty eight Between Peter Hogan of the County of Mendocino and State of California party of the first part and the Little Valley Lumber Company a Corporation created and existing under the laws of the State of California party of the second part. Witnesseth. That the said party of the first part for and in consideration of the agreed purchase price to him in hand paid by the said party of the second part, the receipt whereof is hereby acknowledged does by these presents grant bargain sell convey and confirm unto the said party of the second part and to its hirs and assigns forever. All the timber standing and being on all that certain piece or parcel of land situate in the said County of Mendocino. State of California and described as follows to wit: The North half of the South East quarter of the South East quarter [N½ of SE¼ of SE¼] of Section Twenty [20] Township Nineteen [19] North Range Seventeen (17) West of M.D.M. and containing Twenty acres. The party of the first also grants. bargains sells and conveys unto the said party of the second part a right of way over and through his lands situated in the County of Mendocino and said State. said right of way to be of such width as shall be required or necessary for the purpose of a wagon road and a tramway and shall begin at the said mill owned by the said party of the second part and located near the Village of Cleone in said County and run in the most accessable and practical route to the County Coast wagon road. and such road and tramway may be operated by such motive power as may be deemed expedient by the said party of the second part. Together with all and singular the tenements hereditaments and appurtenances thereunto belonging or in anywise appertaining. and the rents issues and profits thereof. To have and to hold all and singular the above mentioned and described premises together with the appurtenances unto the said party of the

second part. and to its heirs and assigns forever And the said party of the first part and his heirs the said premises in the quite and peaceable possession of the said party of the second part. its heirs and assigns against the said party of the first part and his heirs and against all and every person and persons whomsoever. lawfully claiming or to claim the same- shall and will warrant and by these presents forever defend In Witness whereof. the said party of the first part has hereunto set his hand and seal the day and year first above written Peter Hogan Seal

State of California }ss.
County of Mendocino }

On this 31st day of December in the year one thousand eight hundred and eighty eight before me F. A. Whipple a Notary Public in and for the County of Mendocino personally appeared Peter Hogan and to me known to be the person whose name is subscribed to the within instrument and who acknowledged to me that he executed the same. In Witness whereof. I have hereunto set my hand and affixed my official seal. at my office in the said County of Mendocino the day and year in this certificate first above written

Seal

F. A. Whipple
Notary Public

Recorded at the request of F. A. Whipple Jan. 30th 1889 at 5 minutes past 8 o'clock a. m
F. C. Albertson
County Recorder

Together with and singular the tenements, hereditaments and appurtenances thereunto belonging or in anywise appertaining and the reversion and reversions, remainder and remainders rents issues and profits thereof; And also all the estate right title interest property, possession, claim and demand whatsoever as well in law as in equity of the said party of the first part of, in or to the above mentioned premises and every part and parcel thereof with the appurtenances. To Have and To Hold all and singular the above mentioned and described premises together with the appurtenances unto the said party of the second part his heirs and assigns forever. In Witness Whereof the said party of the first part has hereunto set his hand and seal the day and year first above written.

Signed Sealed and Delivered in the presence of } John Taylor (Seal)
Thos. L. Carothers

State of California }
County of Mendocino } ss. On this twentieth day of June A.D. one thousand eight hundred and seventy three before me Thos. L. Carothers a Notary Public in and for said County of Mendocino personally appeared John Taylor known to me to be the same person whose name is subscribed to the annexed instrument and who acknowledged to me that he executed the same. In Witness Whereof I have hereunto set my hand and affixed my official seal at my office in the County of Mendocino the day and year in this certificate first above written.

Thos. L. Carothers
Notary Public

(Seal)

Recorded at request of J. H. Donahoe June 26th A.D. 1873
at 11 A. M.
W. M. Perry Recorder
By Thomas Harrison Deputy

D. McKenzie
To
Santa Valley Lumber Co.

This Indenture made and entered into this twenty eighth day of July in the year one thousand eight hundred and eighty seven By and Between Duncan McKenzie his heirs or assigns of the County of Mendocino and State of California party of the first part, and the Santa Valley Lumber Co. its heirs or assigns a corporation existing under the laws of the State of California and

business as such party of the second part. Witnesseth that whereas the party of the first part is the owner of a tract of land known as the McKeucher ranch lying being and situated on Sequoia Creek and on which the town of Clone is situated in the County of Mendocino State of California, Now therefore the said party of the first part in consideration of the sum of one dollar to him in hand paid by the said party of the second part, the receipt whereof is hereby acknowledged does hereby grant unto said party of the second part their heirs or assigns the right of way for a narrow road and tramway to be operated by such motive power as may be deemed expedient by the party of the second part, aforesaid road or roads to be constructed over the most practicable route from their mill (to be constructed on Sequoia Creek) to the Sequoia Chute or Landing said right of way to be thirty feet wide. Also a right of way from their mill to any timber land they may now hold or acquire and from the aforesaid lands to the County road by the most practicable route. It is further agreed that the party of the second part will not use such said road through the bottom lands of the party of the first part. The said party of the second part to construct within a reasonable time and maintain a lawful fence on each side of their tramway leading from the mill to the Landing. The party of the first part further agrees to sell to the party of the second part one, two, three or four acres of land joining the lands now owned by them at the landing allowing them the right to select such land as they may require and pay for same at the price of Thirty dollars per acre. Also one, two three or four acres of land joining the lands on which the mill is located, allowing them to select the same at the price of twenty dollars per acre. Also the privilege to purchase from the party of the first part a lot in the town of Clone opposite Fritzsches blacksmith shop being a corner lot one hundred thirty by fifty feet for the price of one hundred and thirty dollars or to select such lot where the tramway crosses the County road at aforesaid price. It is further agreed

by the party of the first part that he will sell to the party of the second part all the timber land that will come to his mill off of the aforesaid ranch tract at the price of seven dollars per acre provided that the party of the second part pay for same in eighteen months from date hereof. The party of second part to have the option to purchase same within the eighteen months. The party of the first part reserves ten acres on the most western boundary of aforesaid timberland. The words one hundred changed to fifty feet opposite No 67 the word four changed to ten opposite No 79 before signing the above instrument D McKericher

Witness Geo. H. Scott }
W. T. Cruickshanks } State of California, County of Mendocino } ss

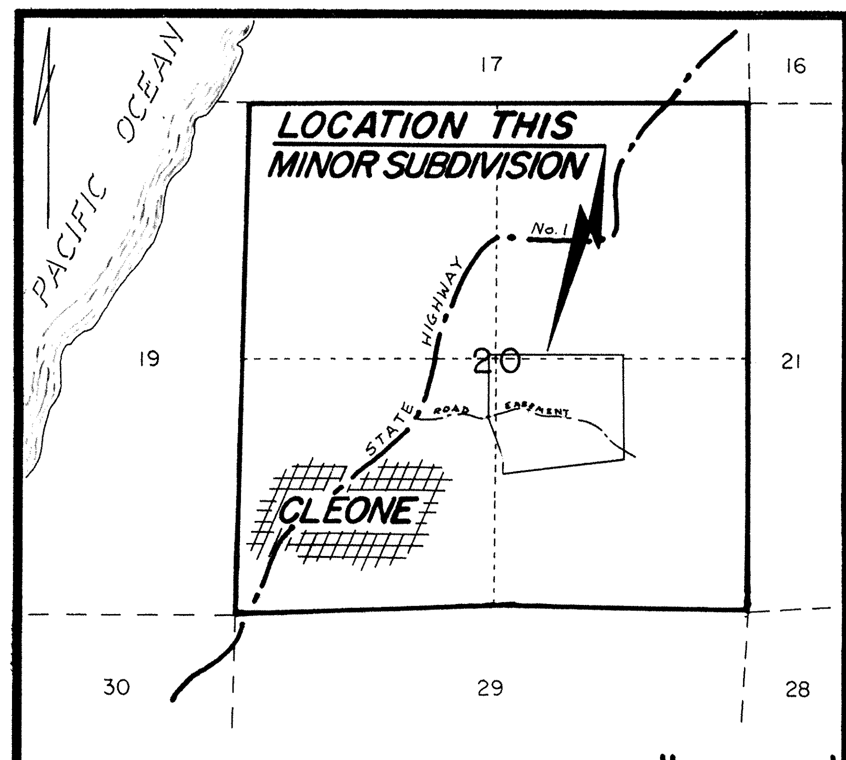
On this 21st day of June A. D. 1887 personally appeared before me J. W. Nicholson a Justice of the Peace in and for said Ten Mile river township, County of Mendocino Geo H. Scott personally known to me to be the same person whose name is subscribed to the annexed instrument as a witness thereto who being by me duly sworn deposed and said that he resides in Usal Mendocino Co. State of California that he was present and saw D McKericher known to him to be the same person described in and who executed the annexed instrument as a party thereto sign seal and deliver the same and that the said D McKericher acknowledged in the presence of said affiant that he executed the same freely and voluntarily and for the uses and purposes therein mentioned and that the said affiant subscribed his name to said instrument as a witness thereof. In Witness Whereof I have hereunto set my hand the day and year in this certificate first above written. J. W. Nicholson

Justice of the Peace

Recorded at request of A. O. Carpenter June 28 1887 at 36 min past 2 P. M. W M [illegible] Recorder

By Thomas Harrison Deputy

11-71 48430



LOCATION MAP — SCALE 1" = 2,000'

OWNER'S CERTIFICATE

The undersigned, being all parties having any record title interest in the land within this division hereby consent to the preparation and recordation of this map and offer for dedication and do hereby dedicate for public uses the following:

(A) All roadway easements other than county maintained roads.

(B) Rights of way and easements for water, gas, sewer and drainage pipes, and for poles and overhead and underground wires and conduits for electric, telephone and television services; together with any and all appurtances appertaing thereto; on, over and across those strips of land designated public utility easements.

(C) Easements for drainage purposes, on, over, across, under and through all natural drainage courses and on, over and across those strips of land designated drainage easements.

Dewey C Sprague ... Dewey C Sprague
DEWEY C. SPRAGUE

ACKNOWLEDGEMENT

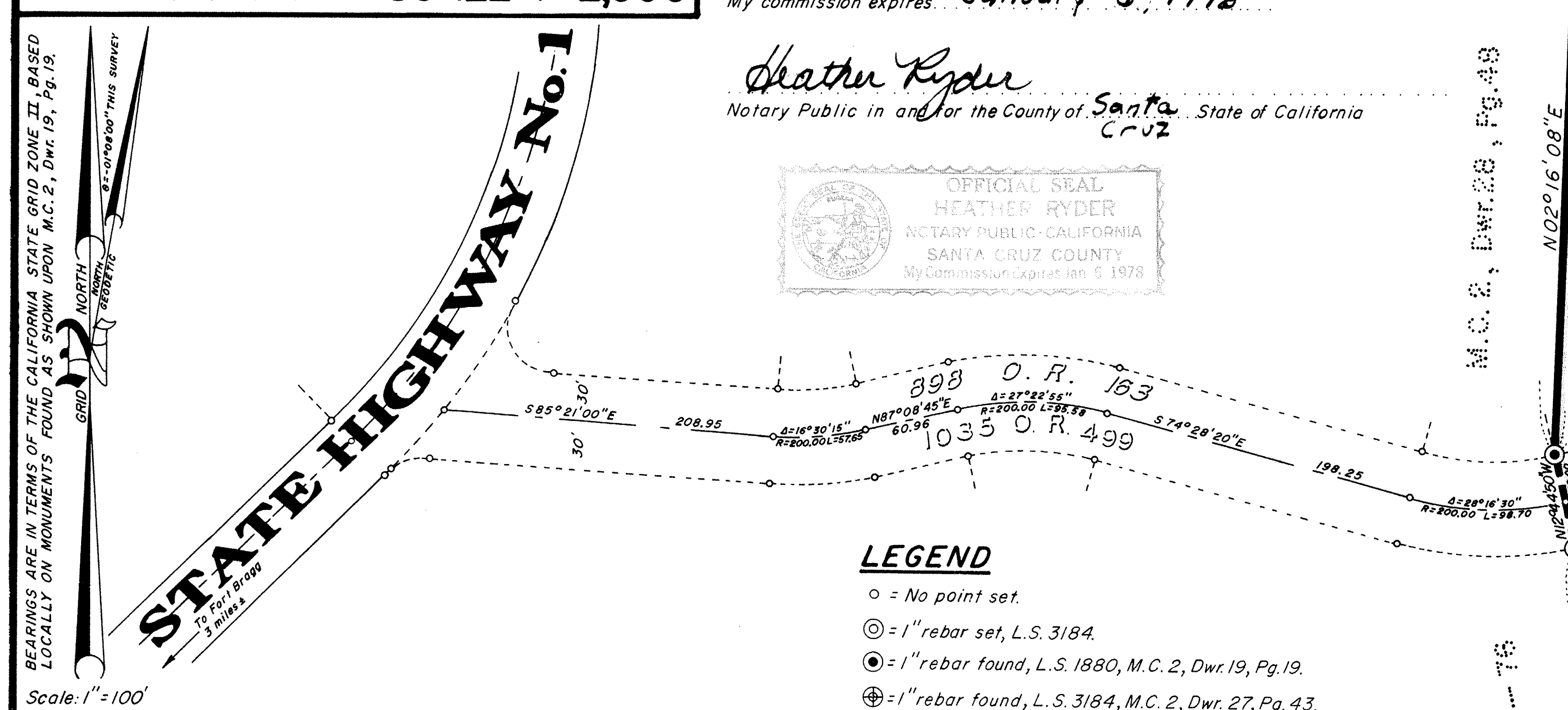
STATE OF CALIFORNIA
COUNTY OF Monterey ss

On this 24th day of May 1976 before me Heather Ryder a notary public in and for said County and State, residing therein, duly commissioned and sworn, personally appeared DEWEY C. SPRAGUE known to me to be the person whose name is subscribed to the within instrument and acknowledged to me that he executed the same.

My commission expires January 6, 1978

Heather Ryder
Notary Public in and for the County of Santa Cruz State of California

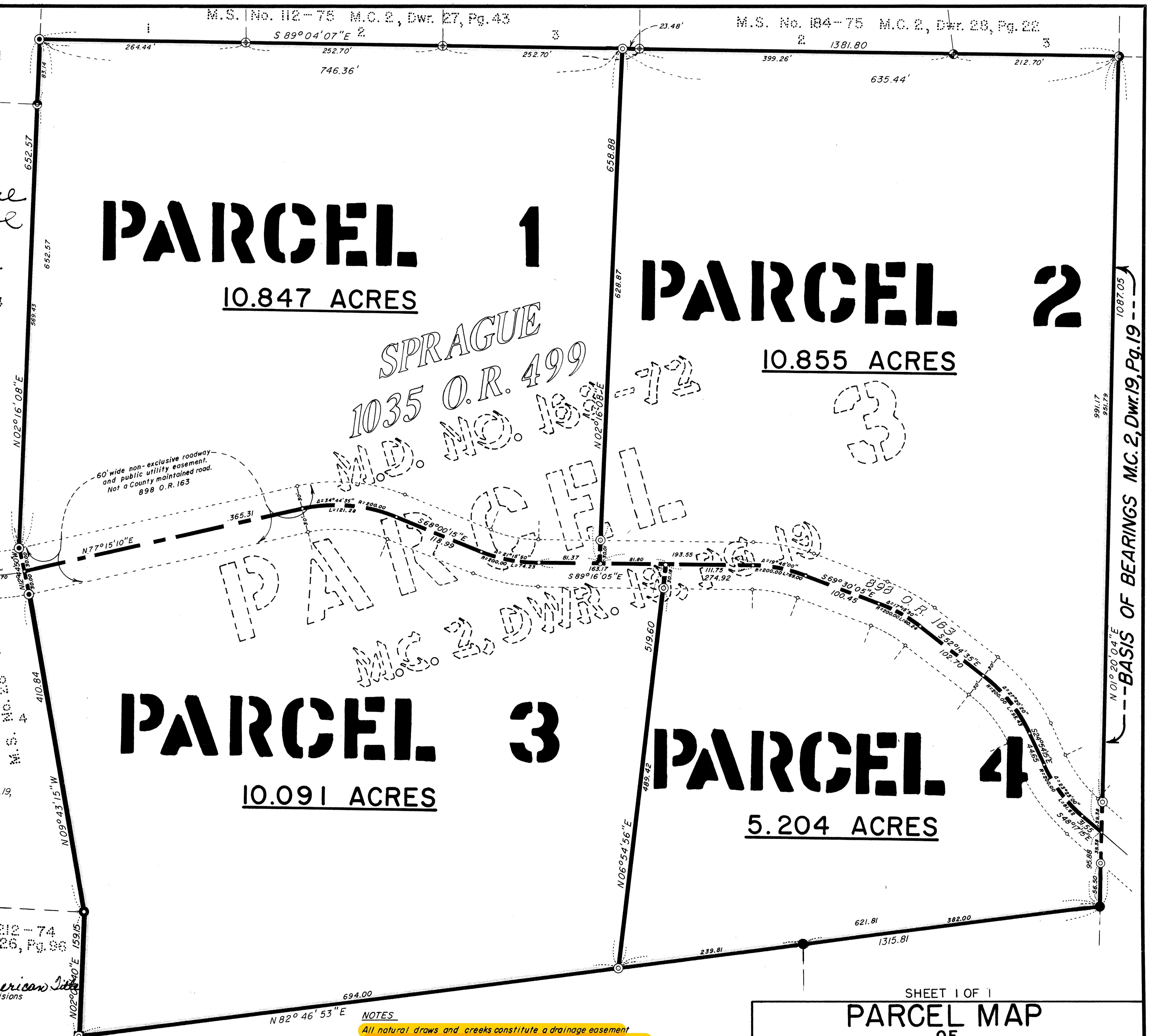
OFFICIAL SEAL
HEATHER RYDER
NOTARY PUBLIC - CALIFORNIA
SANTA CRUZ COUNTY
My Commission Expires Jan 6 1978



Scale: 1" = 100'

LEGEND

○ = No point set.
◎ = 1" rebar set, L.S. 3184.
◉ = 1" rebar found, L.S. 1880, M.C. 2, Dwr. 19, Pg. 19.
⊕ = 1" rebar found, L.S. 3184, M.C. 2, Dwr. 27, Pg. 43.
= 1" rebar found, L.S. 3184, M.C. 2, Dwr. 28, Pg. 22.
= 3/4" bolt found, L.S. 3184, M.C. 2, Dwr. 26, Pg. 96.
= 3/4" bolt found, L.S. 3184, M.C. 2, Dwr. 28, Pg. 22.
= 1" rebar found, L.S. 3184, M.C. 2, Dwr. 28, Pg. 48.
● = 1/2" bolt found, M.C. 2, Dwr. 19, Pg. 19, no tag, tagged L.S. 3184 this survey.
= 3/4" bolt found in top of 12" x 16" redwood post, no tag. M.C. 2, Dwr. 19, Pg. 19, also found 1" rebar, L.S. 3184, M.C. 2, Dwr. 26, Pg. 96.
= Blue border indicates limits of this Minor Subdivision.



CLERK OF THE BOARD OF SUPERVISOR'S

I, Viola N. Richardson, Clerk of the Board of Supervisors of the County of Mendocino, State of California, hereby certify that said Board of Supervisors by resolution on the 29th day of June 1976, approved the within map and accepted on behalf of the public all lands, rights of way and easements offered for public use as designated on the within map for the purpose specified thereon; excepting therefrom and specifically rejecting Items A and C from Owner's Certificate, until such time, however, as such easements are accepted by resolution of the Board of Supervisors.

IN WITNESS WHEREOF, I have hereunto set my hand and caused the seal of this office to be affixed.

Dated this 29th day of June 1976.

Viola N. Richardson By: Dorothy U Starks Dep
Clerk of the Board of Supervisors

COUNTY SURVEYOR'S CERTIFICATE

This map conforms with the requirements of the Subdivision Map Act and local ordinance.

Dated JUNE 28, 1976.

C.F. CAMPBELL, COUNTY SURVEYOR
Mendocino County, State of California

By Andrew E. Johnston Deputy
L.S. 4141

DIRECTOR OF PLANNING'S CERTIFICATE

I, Ronald F. Hall, Director of Planning, hereby verify that this map substantially conforms to the approved Tentative Map and the conditions of approval thereof.

Fred Brammand
Director of Planning

ACCURACY CERTIFICATE

I, WILLIAM K. DODGE, hereby certify that all survey work required in the preparation of this map and related monumentation was preformed to an accuracy of one in five thousand.

William K. Dodge
WILLIAM K. DODGE L.S. 3184

PROOF OF OWNERSHIP CERTIFICATE

I hereby certify that the proof of ownership report made by First American Title this 1st day of July 1976, conforms to the provisions of the Subdivision Map Act.

Signed Viola Richardson
County Recorder

By S. Luttrell, Deputy

SURVEYOR'S CERTIFICATE

This map was prepared by me or under my direction and is based upon a field survey in conformance with the requirements of the "Subdivision Map Act" at the request of Dewey C. Sprague in November 1975. I hereby certify that it conforms to the approved Tentative Map and the conditions of approval thereof.

William K. Dodge
WILLIAM K. DODGE L.S. 3184

LICENSED LAND SURVEYOR
WILLIAM K. DODGE
No. 3184
STATE OF CALIFORNIA

The Division of Environmental Health has determined that adequate water for domestic use may not exist on this property, and advises that 1500 gallons of storage may be needed to augment the supply.

The Division of Environmental Health has determined that sub surface drainage may be required to assure proper functioning of sewage system disposal fields.

NOTES

All natural draws and creeks constitute a drainage easement width of said easement being determined by the high water mark plus 5 feet or a minimum width of 20 feet.

Any or all parcels shown herein may be subject to: Rights of way or easements for roadway, electric transmission lines and/or other various encroachment purposes which may not be designated on this map.

RECORDER'S CERTIFICATE

Filed this 1st day of July 1976 at 2:24 P.M. in Map Case 2 Drawer 28 Page 72 at the request of WILLIAM K. DODGE.

By S. Luttrell Deputy
County Recorder - Viola Richardson

Fee $5.00

SHEET 1 OF 1

PARCEL MAP OF MINOR SUBDIVISION NO. 19-76

LANDS OF

Dewey C. Sprague

BEING PARCEL 3 OF M.D. No. 168-72, M.C. 2, Dwr. 19, Pg. 19

A PORTION OF SECTION 20, T.19N., R.17W., M.D.B.&M.

COUNTY OF MENDOCINO — STATE OF CALIFORNIA

SCALE 1" = 100'	MAP CASE NO. 2
MAY, 1976	DRAWER NO. 28
JOB NO. 4516	PAGE NO. 72

27010

N02°06'40"E 159.15

694.00

N 82° 46' 53" E

1316.28'

N. 02° 06' 49" E.

The Division of Environmental Health has determined that adequate water for domestic use may not exist on this property, and advises that 1500 gallons of storage may be needed to augment the supply.

The Division of Environmental Health has determined that sub surface drainage may be required to assure proper functioning of sewage system disposal fields.

1/4 Section Corner

Found 2" diameter iron pipe with brass cap stamped L.S. 1940 as per M.C. 1, Dwr. 9, Pg. 2.

29 20

NOTES

All natural draws and creeks constitute a drainage easement width of said easement being determined by the high water mark plus 5 feet or a minimum width of 20 feet.

Any or all parcels shown herein may be subject to: Rights of way or easements for roadway, electric transmission lines and/or other various encroachment purposes which may not be designated on this map.

RECORDER'S CERTIFICATE

Filed this 1st *day of* July *1976 at* . *in Map Case* 2 *Drawer* 28 *Page* 72 *at the request of WILLIAM K. DODGE.*

By S. Luttrell *De*
County Recorder - Viola Richardson

Fee $5.00

EXHIBIT E

STATE OF CALIFORNIA, NATURAL RESOURCES AGENCY
DEPARTMENT OF FORESTRY AND FIRE PROTECTION

HOMEOWNERS SUMMARY OF FIRE PREVENTION AND LOSS REDUCTION LAWS

MENDOCINO UNIT 4290 PROGRAM (REV. 1/19)

Title 14 Code of California Regulations: Division 1.5, Chapter 7, Subchapter 2, Articles 1-5

These regulations have been prepared and adopted for establishing minimum wildfire protection standards in conjunction with building, construction and development in SRA. The future design and construction of structures, subdivisions and developments in State Responsibility Area (SRA) shall provide for basic emergency access and perimeter wildfire protection measures as specified in the following articles. These measures shall provide for emergency access; signing and building numbering; private water supply reserves for emergency fire use; and vegetation modification. *The intent statements that follow is a summary and provided for information only.*

Application of Standards (Article 1) The following activities initiate the application of specific standards (Articles 2-5) within the regulations.

- Creation of New Parcels (except lot line adjustments)
- Building Permit for New Construction
- Siting of Manufactured Homes
- Road construction (new or an extension of existing)
- Permitting of any industrial or commercial occupancy
- Application for Use Permit

Requests for Exceptions (Article 1)
Requests for exception from a specified requirement shall be submitted by the applicant in writing to CAL FIRE listing the applicable code section, stating the material facts supporting the exception request, listing the proposed mitigation measure and providing a map of the requested change.

Appeals (Article 1)
Any applicant may appeal the denial of an exception to the local jurisdiction who shall provide written findings to the local CAL FIRE office if the appeal is granted.

Maintenance Requirements (Article 1)
The maintenance of all requirements shall be secured as a condition of the approved permit or map.

Article 2. Emergency Access Standards

Road and street networks, whether public or private, unless exempted under section 1270.02(e), shall provide for safe access for emergency wildland fire equipment and civilian evacuation concurrently, and shall provide unobstructed traffic circulation during a wildfire emergency consistent with sections 1273.00 through 1273.11.

Road Standards (Article 2)

- Two ten-foot traffic lanes, not including shoulder
- A minimum 75,000-pound load capacity
- A maximum grade of 16%
- A minimum inside curve radius of 50 feet
- Turnarounds shall have a minimum 40-foot radius,
- Hammerhead "T" if used shall be minimum 60 feet at top of the "T"
- Turnouts shall be a minimum 12 feet wide and 30 feet long with a 25-foot taper at each end, and be constructed every 400 feet.
- One-way roads shall be a minimum 12 feet wide, serving a maximum of 10 dwelling units and not exceed 2,640 feet in cumulative length

Dead-end roads shall not exceed the following lengths:

- 800 feet for parcels zoned for less than 1 acre
- 1,320 feet for parcels zoned for 1 acre to 4.99 acres
- 2,640 feet for parcels zoned 5 to 19.99 acres
- 5,280 for parcels zoned for 20 acres or larger

Driveway Standards (Article 2)

- A minimum of ten feet wide, not including shoulder
- A minimum of 14 feet unobstructed horizontal clearance and 15 feet unobstructed vertical clearance
- A maximum grade of 16%
- A minimum inside curve radius of 50 feet
- Turnarounds shall be provided to all building sites on driveways over 300 feet and be within 50 feet of the building

Gate Standard (Article 2)

- Gate openings shall be at least 2 feet wider than the road surface and be located at least 30 feet, *plus the length of the swing of the gate*, from the intersecting roadway.

Article 3. Signing and Building Numbering

All newly constructed or approved roads, street, and buildings shall be designated by names or numbers, posted on signs clearly visible and legible from the roadway.

- A minimum 4-inch letter height, 1/2-inch stroke, reflectorized, contrasting with the background color of the sign
- Visible for 100 feet from both directions of travel
- Height of signs shall be uniform county wide
- Shall be posted at driveway entrances and each fork of the driveway
- Multiple addresses shall be mounted on a single post

Article 4. Emergency Water Standards

When a water supply for structure defense is required to be installed, such protection shall be installed and made serviceable prior to and during the time of construction except when alternative methods of protection are provided and approved by the local authority having jurisdiction.

Hydrant/ Fire Valve (Article 4)

- Be at least 18 inches above grade, a minimum of 8 feet from flammable vegetation, no closer than 4 feet nor farther than 12 feet from a roadway, and in a location where fire apparatus using it will not block the roadway
- Be located between 50 feet and ½ mile from the building it serves
- Hydrant head shall be 2 ½" NH male thread with cap for pressure and gravity flow systems and 4 ½" NH male thread for draft systems
- Must have suitable crash protection
- Be identified with a 3-inch reflectorized blue dot on the driveway address sign, or placed on a fire-retardant post within 3 feet of the hydrant, or identified as described in the State Fire Marshal's Highway Marker Guidelines.

Article 5. Fuel Modification Standards

To reduce the intensity of a wildfire by reducing the volume and density of flammable vegetation, the strategic
siting of fuel modification and greenbelt shall provide
increased safety for emergency fire equipment and evacuating civilians by its utilization around structures and
roads, including driveways; and a point of attack or defense from a wildfire.

Setback Standards (Article 5)

- All parcels 1 acre and larger shall provide a minimum 30-foot setback for buildings and accessory buildings from all property lines and/or the center of the road.
- Parcels less than 1 acre, the local jurisdiction shall provide for the same practical effect.

STATE OF CALIFORNIA, NATURAL RESOURCES AGENCY
DEPARTMENT OF FORESTRY AND FIRE PROTECTION
HOMEOWNERS SUMMARY OF FIRE PREVENTION AND LOSS REDUCTION LAWS
MENDOCINO UNIT 4290 PROGRAM (REV. 1/19)

Disposal of Flammable Vegetation and Fuels (Article 5)
Disposal, including chipping, burying, burning or removal to a landfill site approved by the local jurisdiction, of flammable vegetation and fuels caused by site development and construction, road and driveway construction, and fuel modification shall be completed prior to completion of road construction or final inspection of a building permit.

Greenbelts (Article 5)
Subdivision and other developments, which propose greenbelts as a part of the development plan, shall locate said greenbelts strategically, as a separation between wildland fuels and structures. The locations shall be approved by the local authority having jurisdiction and may be consistent with the CAL FIRE Unit Fire Management Plan

DEFENSIBLE SPACE AROUND STRUCTURES

(a) A person who owns, leases, controls, operates, or maintains a building or structure in, upon, or adjoining a mountainous area, forest-covered lands, brush-covered lands, grass-covered lands, or land that is covered with flammable material, shall at all times do all of the following:

(1) Maintain defensible space of 100 feet from each side and from the front and rear of the structure, but not beyond the property line except as provided in paragraph (2). The amount of fuel modification necessary shall take into account the flammability of the structure as affected by building material, building standards, location, and type of vegetation. Fuels shall be maintained in a condition so that a wildfire burning under average weather conditions would be unlikely to ignite the structure. This paragraph does not apply to single specimens of trees or other vegetation that are well-pruned and maintained so as to effectively manage fuels and not form a means of rapidly transmitting fire from other nearby vegetation to a structure or from a structure to other nearby vegetation. The intensity of fuels management may vary within the 100-foot perimeter of the structure, the most intense being within the first 30 feet around the structure. Consistent with fuels management objectives, steps should be taken to minimize erosion. For the purposes of this paragraph, "fuel" means any combustible material, including petroleum-based products and wildland fuels.

(2) A greater distance than that required under paragraph (1) may be required by state law, local ordinance, rule, or regulation. Clearance beyond the property line may only be required if the state law, local ordinance, rule, or regulation includes findings that the clearing is necessary to significantly reduce the risk of transmission of flame or heat sufficient to ignite the structure, and there is no other feasible mitigation measure possible to reduce the risk of ignition or spread of wildfire to the structure. Clearance on adjacent property shall only be conducted following written consent by the adjacent landowner.

(3) An insurance company that insures an occupied dwelling or occupied structure may require a greater distance than that required under paragraph (1) if a fire expert, designated by the director, provides findings that the clearing is necessary to significantly reduce the risk of transmission of flame or heat sufficient to ignite the structure, and there is no other feasible mitigation measure possible to reduce the risk of ignition or spread of wildfire to the structure. The greater distance may not be beyond the property line unless allowed by state law, local ordinance, rule, or regulation.

(4) Remove that portion of a tree that extends within 10 feet of the outlet of a chimney or stovepipe.

(5) Maintain a tree, shrub, or other plant adjacent to or overhanging a building free of dead or dying wood.

(6) Maintain the roof of a structure free of leaves, needles, or other vegetative materials. **(PRC 4291)**

PERMITS FOR BURNING

A person shall not burn any brush, stumps, logs, fallen timber, fallows, slash, grass-covered land, brush-covered land, forest-covered land, or other flammable material, in any state responsibility area, area receiving fire protection by the department by contract, or upon federal lands administered by the United States Department of Agriculture or Department of the Interior, unless the person has a written permit from the department or its duly authorized representative or the authorized federal officer on federal lands administered by the United States Department of Agriculture or of the Interior and in strict accordance with the terms of the permit**. (PRC 4423)**

SPARK ARRESTORS

No person shall use, operate, or allow to be used or operated, any internal combustion engine which uses hydrocarbon fuels on any forest-covered land, brush-covered land, or grass-covered land unless the engine is equipped with a spark arrester, as defined in subdivision (c), maintained in effective working order or the engine is constructed, equipped, and maintained for the prevention of fire. **(PRC 4442)**

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EXHIBIT F

A FEN ON THE NORTHERN CALIFORNIA COAST

HERBERT G. BAKER
Department of Botany, University of California, Berkeley 94720

INTRODUCTION

Sphagnum bogs are not common in California but are to be found in montane situations and, as a novelty, at elevations of less than 650 feet above sea level in drainage hollows on the sterile sands of the Blacklock soil series in the 'pygmy forest' area of Mendocino County. They have been unknown at sea level in this state. However, along the coast of the Pacific Ocean, in Oregon, Washington, British Columbia and Alaska, bogs among the sand-dunes are not uncommon. This paper reports the existance of a stand of sphagnum-containing aquatic and semi-aquatic vegetation six and a half miles north of Fort Bragg (Mendocino County), between Cleone and Inglenook (fig. 1). This appears to be the southernmost extant example of this kind of vegetation on the Pacific Coast and is better described as a fen than as a bog—and will be referred to in this paper as the Inglenook fen.

Fens have been studied most carefully in the British Isles (where they are especially extensive in eastern England) and it may, therefore, be most appropriate to turn to the late Sir Arthur Tansley's encyclopedic account of British vegetation for an explanation of the differences between marsh, fen and bog. Tansley (1939, p. 634) gives the title *marsh* to a soil vegetation type in which the soil is waterlogged, the summer water level being close to or conforming with, but not normally much above, the ground level, and in which the soil has an inorganic (mineral) basis. *Fen* is a corresponding type (whose vegetation is closely similar to that of a marsh) in which the soil is organic (peat) but may be alkaline, neutral or even somewhat acid in reaction. *Bog*, on the other hand, forms peat which is extremely acid and bears a radically different vegetation. Usually, the soil of a bog is very poor in exchangeable bases while a fen is relatively rich in them and, as a consequence, rather highly productive.

In fens, the soil may be pure peat or, if silting is a factor in the basin where the water accumulates, it may contain varying amounts of mineral matter. Often fens are clearly successional stages in hydroseres leading to a forest climax; the Inglenook fen appears to be of such a type and is surrounded by a woody *fen-carr* (cf. Tansley, 1939, p. 644).

For about ten miles along the coast north of Fort Bragg there are magnificent unstable sand-dunes. Sand which is brought to this stretch of the coast by ocean currents is carried onshore by tidal action and deposited. When dry, it is blown inland by the prevailing westerly winds. These sand-dunes are advancing over the lowest of a series of terraces (actually raised beaches) formed by a combination of ocean level changes and local tectonic movements. Gardner (1967) has described a series of these terraces at 100, 175, 300, 475 and 600 feet elevation. It is the lowest (and most seaward) of these which is presently being

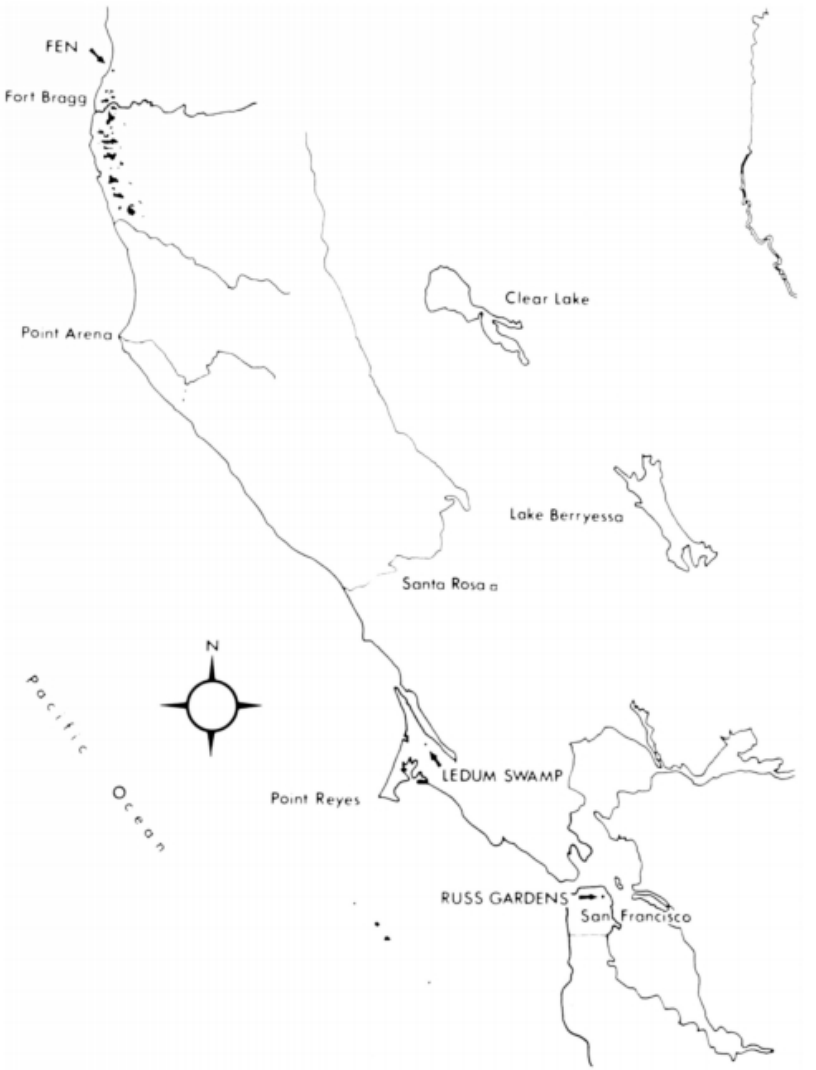

FIG. 1. Fen–locations in California: shaded areas around and south of Fort Bragg are the "pygmy forests."

invaded by the sand-dunes. It is largely covered with coastal prairie (Munz and Keck, 1949–50). The coniferous forests of the area are developed on the older and higher dune and terrace systems and contain mostly *Pinus muricata* D. Don, *Sequoia sempervirens* (D. Don) Endl. and *Pseudotsuga menziesii* (Mirb.) Franco. Streams draining toward the coast from these forested hills are impeded by the sand-dunes and this is how Inglenook Fen is formed.

Slightly farther south are the "pygmy forests" of *Pinus contorta* Dougl. var. *bolanderi* (Parl.) Vasey and *Cupressus pygmaea* (Lemmon) Sarg. (fig. 1). The soils of all the coniferous forests are podsolized and those of the pygmy forest represent an extreme in podsolization (Jenny, Arkley and Schultz, 1969). Although the streams draining from the forests into the Inglenook fen are too far north to carry drainage water from the "pygmy forests" and their associated bogs, they are distinctly acid in reaction. One such stream leads into the fen under State Route 1, 75 yards north of the junction with Little Valley Road, about 6 miles north of Fort Bragg. The pH of its water measured on July 10, 1966 (Beckmann pH meter, model N) was 4.9. During and after the winter rains the pH rises (e.g to 6.5 on April 12, 1969). On the other hand, the sand-dunes into which the stream flows are rich in shell-fragments. As a result, both the pH and the base status of the fen (which lies between the road and the dunes) may be expected to be raised by the material which slips down or is blown from the dunes into the fen and by the waters which drain from the dunes. A final barrier to the escape of water from among the dunes is posed by the "Ten Mile River Logging Road" of the Boise Cascade Company which runs from Fort Bragg to the Ten Mile River along the margin of the ocean. Although there is evidence of seepage and actual overflow beneath the road in one place, the impediment is a real one and the area around the "outlet" receives enough moisture to allow grass to grow and provide for limited cattle grazing. As a consequence of these physical and chemical features of the environment, a floristically rich and luxuriant vegetation (contrasting in dramatic fashion with the floristic poverty and apparently very low productivity of the true bogs of the "pygmy forest" are) is produced—the Inglenook fen.

My attention was called to the existence of this remarkable piece of vegetation by my interest in one angiosperm species which is an important constituent of it. *Menyanthes trifoliata* L., the Bog Bean (or Buck Bean), belongs to the family Menyanthaceae. It is of interest to students of reproductive biology by reason of the heterostyly of its flowers (Darwin, 1877; Baker, 1959). The species has a circum-boreal distribution and usually grows in acid waters; in northern Europe as well as in eastern and northern North America it occurs at sea-level as well as in the mountains, but passing southward in western North America the lowland part of the elevational range is supposedly lost. In California, its contemporary altitudinal range is given as 3,000 to 10,000 feet above sea-level by Jepson (1939). According to Mason (1957) it is restricted to the Sierra Nevada, while Munz (1959) reports its occurrence only at elevations of 3,000 to 10,500 feet (in Yellow Pine Forest to Subalpine Forest). Hewett (1964), in his account of the ecology of *M. trifoliata* for the 'Biological Flora of the British Isles', draws conclusions as to the limits for this species in western North America on the basis of the distribution given in Munz (1959).

Consequently, I was excited when shown by Wayne Roderick a specimen of this species which he had collected at sea level in Mendocino County. I was introduced to the owner of the property, R. R. Ross, who graciously gave me permission to make a study of the plants and their habitat.

Both long-styled and short-styled plants of *M. trifoliata* occur in the Inglenook fen, so an artificial introduction of the species from one of its well-known high-altitude stations becomes an unlikely explanation for this apparently unique occurrenec at sea level in California. As will be seen later, the naturalness of its occurrence is backed up by the floristic constitution of the vegetation here—an association of species which naturally accompanies *Menyanthes* in a series of boggy sitautions northward along the Pacific coast to Alaska but is otherwise unknown from California at the present day. Hansen (1943) records *M. trifoliata* from what appears to be the next fen northwards, five miles south of Bandon, Coos County, Oregon. Here again, drainage from land covered by pine trees *(Pinus contorta)* is impeded by actively moving sand-dunes. *M. trifoliata* also occurs in other coastal bogs and fens as far north as British Columbia and Alaska (cf. Rigg, 1922, 1925; Jones, 1936; Hanson and Churchill, 1961, p. 182; etc.).

Although no lowland occurrence of *M. trifoliata* in California is mentioned by Mason (1957), there is, in the University of California Herbarium *(UC)*, in Berkeley, a specimen collected by him on 18 May, 1946 *(Mason 12771)*, at this very site.

The occurrence near sea level of a species which is otherwise of higher altitude distribution in California recalls two other instances. Along the South Fork of the Eel River, near Pesula Road, in Humboldt County, Ichiro Fukuda has found a triploid plant of *Achlys triphylla* (Sm.) DC. growing among the usual tetraploid plants under the shade of the Coast Redwood *(Sequoia sempervirens)*. A diploid form occurs at higher elevations, usually under Douglas Fir *(Pseutotsuga menziesii)* and the triploid is most reasonably explained as a relic hybrid from the days when the diploid grew at a lower altitude than that of its present stations (Fukuda, 1967). Similarly, A. P. Nelson (1962), investigating the genecology of *Prunella vulgaris* L. in California, concluded that some samples from the immediate vicinity of the South Fork of the Eel River (at Eagle Point, Humboldt County) also showed more affinity with montane races than is usually the case for plants growing at only 200 feet above sea level.

There is little doubt that there was a perceptible cooling of climate, during the glacial episodes of the Pleistocene epoch, far south of the limit of the ice sheets (Heusser, 1960; Axelrod, 1967). Unfortunately, the precise record for the northern California coast has still to be worked out. Thus, the pollen sequences in peat bogs studied by Heusser (1960), one of which was located two miles southeast of Fort Bragg in the pygmy

forest, begin only in the Late Postglacial, so that they show little divergence from contemporary pictures.

One conclusion of Heusser's, however, which may be important for our consideration is that there was an extensive marine transgression along the Pacific coast between 4,500 and 2,000 B.C., apparently due to a eustatic rise in sea level resulting from the melting of polar ice during the Hypsithermal (or Altithermal) period. According to H. Jenny (personal communication) the rise in sea level was probably of the order of ca 13 feet. The altitude of the fen at present is less than 40 feet above sea level and the open water (shown on the latest topographic map as "Sandhill Lake") is 24 feet above sea-level, but no data are yet available to show whether this eustatic change would have caused marine flooding in the fen because we know nothing of geologically recent isostatic changes which may have occurred in the area. Even if the fen did not exist in its present site, conditions for its occurrence may then have been favorable farther inland.

The direct influence of the raised temperatures of the Hypsithermal must also be taken into account. There is some evidence)Heusser, 1960; Axelrod, 1967) that the Bishop Pine *(Pinus muricata)* extended its range farther northward at this time (6,000–1,000 B.C.) and that Sitka Spruce *(Picea sitchensis)* has migrated southward since that time in response to a favorable increase in moisture. The present southernmost stand of Sitka Spruce is located between Mendocino and Fort Bragg. Consequently, it may be that the Inglenook fen is not more than 3 or 4 thousand years old, although, on the other hand, it (and its flora, in particular) may also have a California coastal history which reaches back to the Pleistocene.

If the *Menyanthes* population in the Inglenook fen should truly be a relic from a cooler climatic period in the past (persisting in its present locality because of the chill fogs which beset the Fort Bragg area, particularly during the summer months), it might be expected that traces of the same plant association would be discovered elsewhere. In fact, there is another lowland record of *M. trifoliata,* from San Francisco, where it flourished in a "marsh" until it became extinct in 1859 (Behr, 1888). The circumstances of this occurrence will be referred to later.

Structure and Composition of the Inglenook Fen

The Inglenook fen shows a well-marked zonation which is indicated roughly on the sketch-map (fig. 2). The following zones may be distinguished:

Open water (a) with fringing emergent vegetation
Fen proper (b) almost pure *Carex* and *Heleocharis* tussocks
(c) *Calamgrostis*/Cyperaceae/*Menyanthes* fen with *Ledum, Sphagnum,* etc.
(d) Fen carr

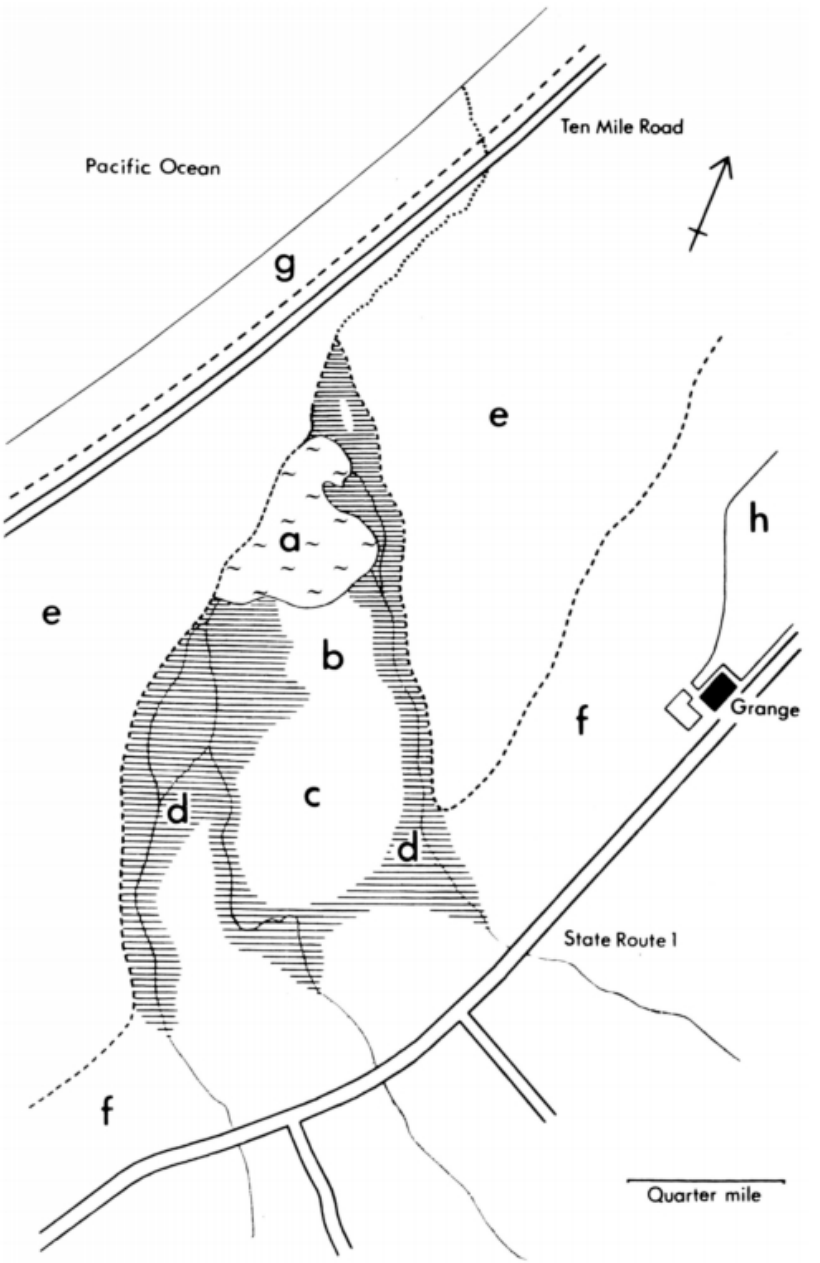

FIG. 2. Sketch map of the Inglenook Fen and surroundings: a = open water; b = Cyperaceae dominated fen; c = Calamagrostis-Cyperaceae-Menyanthes fen; d = fen carr; e = sand dunes; f = coastal prairie; g = strand; h = Eucalyptus plantation.

The fen as a whole is bounded by the sand-dunes (e) which, of course, have a quite distinct flora and, at its inland limits, merges with the coastal prairie (f) of the 100 foot raised beach. The four major zones within the fen presumably represent successive stages in a hydrosere leading from fresh water which is too deep for rooted phanerogamic vegetation to a wet forest-type which is rather stable and might not give way to pine forest until some further raising of the land occurs.

Table 1A shows the results of analyses of water samples and, for comparison, a water extract of the sand-dune immediately adjacent to the fen. The influence of drainage and slippage from the dune in raising the pH of the pond is clear, as is the effect of peat formation in depressing it in the fen. The dunes are rich in calcium and contribute this to the fen while the sodium mostly comes from the inflow creek (and probably also from spray blown in from the sea). The calcium content of the water is high enough to supply plant needs and counteract unfavorable effects of high concentrations of sodium (H. Jenny, personal communication).

TABLE 1A. WATER SAMPLES AND WATER EXTRACTS (me/liter).

	pH	Na	K	Ca	Mg	Totals
Water from inflow creek	6.5	.66	.03	.40	.42	1.51
Water from auger hole (fen)	5.2	.97	.12	.20	.23	1.52
Water (surface) from Nuphar zone	5.6	.68	.02	.56	.25	1.51
Water from pond (west end)	7.0	.91	.03	.72	.27	1.93
Water extract of sand-dune (4 grms. in 250 ml.)	8.1	.10	.02	.93	.24	1.23

In Table 1B the acidity of the fen peat along with the relatively high base status of the samples is indicated. By comparison bog and sandy soil samples from the Blacklock soil series in the "pygmy forest" have even lower pH values and lower base status (A. E. Salem, unpub., and Jenny, et al., 1969).

TABLE 1B. SOIL SAMPLES—EXCHANGEABLE BASES (me/100 g. oven-dry material).

	pH	Na	K	Ca	Mg	Totals
Cyperaceae fen	4.5–4.8	6.6	5.1	18.2	13.6	43.5
Calam./Sphagnum fen	4.6	5.1	2.2	18.8	12.9	39.0
Fen carr (Menyanthes)	4.6–5.1	6.2	6.2	17.2	16.1	45.7
Fen carr	4.2	6.0	9.2	23.0	18.5	56.7

The floristic composition of the vegetational zones (table 2) is given without any claim that the lists are complete. All aspects of the ecology of this fen should be studied in appropriate detail in the future. When this is done, subdivision of the zones in the fen will certainly be possible. For example, the western part of the fen (toward the open water) consists of almost pure *Carex* and *Heleocharis* tussocks, while the greatest floristic diversity occurs in the central and eastern part of the fen. Topo-

TABLE 2. FLORISTIC COMPOSITION OF ZONES IN INGLENOOK FEN

	Zone 1 Open water	Zone 2 Fringing emergents	Zone 3 Fen	Zone 4 Fen Carr
Nuphar polysepalum Engelm.	+	+	+	
Equisetum hyemale L. var. robustum (A. Br.) A. A. Eat.		+		
Potentilla palustris (L.) Scop.		+	+	+
Cicuta douglasii (DC.) Coult. & Rose		+	+	
Oenanthe sarmentosa Presl		+	+	
Scirpus acutus Muhl.		+		
Typha latifolia L.		+	+	
Sphagnum sp.			+	
Calliergonella cuspidatum (L.) Loesk.			+	
Blechnum spicant (L.) Roth.			+	+
Hypericum anagalloides Cham. & Schlecht.			+	+
Nasturtium officinale R. Br.			+	
Ledum glandulosum Nutt. spp. columbianum (Piper) C. L. Hitchc.			+	
Gentiana sceptrum Griseb.			+	
Menyanthes trifoliata L.			+	+
Mimulus guttatus Fisch.			+	+
Myrica californica Cham. & Schlecht.			+	+
Epilobium adenocaulon Hausskn. var. parishii (Trel.) Munz			+	
E. watsonii Barb. var. franciscanum (Barb.) Jeps.			+	
Hydrocotyle ranunculoides L. f.			+	
Campanula californica (Kell.) Heller			+	
Veratrum fimbriatum Gray			+	
Lysichiton americanum Hult. & St. John.			+	+
Sisyrinchium californicum (Kerr) Dry.			+	
Habenaria dilatata (Pursh.) Hook. var. leucostachys (Lindl.) Ames			+	
Juncus effusus L. var. pacificus Fern. & Wieg.			+	+
J. effusus L. var. brunneus Engelm.			+	+
J. bolanderi Engelm.			+	
J. lesueurii Bcl.			+	
J. phaeocephalus Engelm.			+	
J. ensifolius Wikstr.			+	+
Heleocharis acicularis (L.) R. & S.			+	
Carex vicaria Bailey			+	+
C. obnupta Bailey			+	+
Glyceria occidentalis (Piper) J. C. Nels.			+	
Calamagrostis nutkaensis (Presl.) Steud.			+	
Athyrium filix-foemina (L.) Roth. var. sitchense Rupr.				+
Scrophularia californica Cham. & Schlecht.				+
Collinsia corymbosa Herder				+
Veronica americana (Raf.) Schw.				+
Stachys stricta Greene				+
Potentilla egedei Worms. var. grandis (Rydb.) J. T. Howell				+
Rubus vitifolius Cham. & Schlecht.				+
Lotus aboriginum Jeps.				+

TABLE 2. *Continued.*

	Zone 1	Zone 2	Zone 3	Zone 4
Vicia americana Muhl. ssp. oregana (Nutt.) Abrams				+
V. gigantea Hook.				+
Alnus oregona Nutt.				+
Salix piperi Bebb.				+
S. sitchensis Sanson				+
S. coulteri Onderss.				+
Galium trifidum L. var. subbiflorum Wieg.				+
Lonicera involucrata (Rich.) Banks var. ledebourii (Esch.) Zabel				+
Baccharis douglasii DC.				+
Erechtites prenanthoides (A. Rich.) DC.				+
Smilacina stellata (L.) var. sessilifolia (Baker) Hend.				+
Polypogon monspeliensis (L.) Desf.				+

graphic diversity within the fen is provided by the tussocks of Cyperaceae and, especially, by the large tussocks of *Calamagrostis* and the build-up of material around the bases of the *Ledum* and *Myrica* bushes. Thus, *Menyanthes* and *Epilobium adenocaulon* can grow in the same zone in hollows and on tussocks, respectively.

The soils of the fen are by no means unrelieved peat; sand and mineral particles of smaller size occur in all zones. The mineral content predominates in the soil beneath the open water but decreases in proportion through the fen (where the loss on ignition averages about 50% of the dry weight of the soil) to the fen carr (where the loss on ignition reaches 77% in the surface litter and 78% in the subsurface peat). In the fen, *Sphagnum* peat appears to be accumulating patchily and much of the rest of the peat is derived from flowering plant remains.

Because the water and the peat in the fen have an acid reaction, the presence of such well-known "calcifuges" as *Sphagnum* spp., *Potentilla palustris, Blechnum spicant* and *Myrica californica* is not surprising. On the other hand, the reasonably high base status is indicated by the presence of such species as *Nasturtium officinale, Habenaria dilatata* and *Lysichiton americanum*. A notable absentee (present in the much shorter floristic lists from the acid, base-deficient bogs of the "pygmy forest" not far away) is the sundew, *Drosera rotundifolia*. Good descriptions of these "pygmy forest" bogs can be found in Rigg (1933) and McMillan (1956).

RELATION OF INGLENOOK FEN TO OTHER "BOGS" AND "MARSHES"

Table 3 shows species which are in common between the Inglenook fen and a number of coastal "bogs" ranging from Alaska southwards to

TABLE 3. SPECIES IN COMMON BETWEEN A NUMBER OF COASTAL "BOGS" AND "FENS" ON THE PACIFIC COAST OF NORTH AMERICA

	1	2	3	4	5	6	7
	Palmer, Alaska (incomplete)	Victoria, B.C.	Olympic Penin. Wash.	Bandon, Ore.	Inglenook, Calif.	Ledum Swamp (Point Reyes) Calif.	San Francisco, Calif. (incomplete)
Nuphar polysepalum	+	+	+	+	+		
Potentilla palustris	+	+	+	+	+		
Oenanthe sarmentosa		+			+	+	(+)
Sphagnum sp.	+	+		+	+		
Calliergonella cuspidatum		+			+		
Blechnum spicant					+	+	
Hypericum anagalloides					+	+	
Ledum spp.		+		+	+	+	
Gentiana sceptrum, etc.		+		+	+		
Menyanthes trifoliata	+	+	+	+	+		+
Mimulus guttatus					+	+	
Myrica spp.		+		+	+	+	
Lysichiton americanum				+	+		
Sisyrinchium californicum					+	+	
Habenaria dilatata var. leucostachys					+	+	+
Calamagrostis nutkaensis					+	+	
Athyrium filix-femina					+	+	+
Alnus oregona	+		+		+		
Campanula californica					+	+	
Carex obnupta					+	+	
Heleocharis acicularis				+	+		

1. Hanson and Churchill (1961); 2. Rigg (1922, 1925); 3. Jones (1936); 4. Hansen (1943); 5. See Table 2; 6. Howell (1949); 7. Behr (1891), etc.

southern Oregon. In addition, the last column in the table indicates that some of these species were also present in the extensive "marsh" in San Francisco which Behr (1891) describes as having been destroyed by the growth in the city in the second half of the nineteenth century.

The San Francisco "marsh," which contained black, peaty soil according to Kellogg (cited by Brandegee, 1892), was adjacent to a pleasure resort called the Russ Gardens after the family who owned it. This was situated on the south corner of the intersection of Sixth and Harrison Streets (Eastwood, 1945). Behr (1891) describes the situation thus (Behr's punctuation is preserved): "Near the formerly well known Russ Gardens there were extensive marshes abounding especially about their borders in interesting plants. Here grew the large flowered dogwood *(Cornus Nuttallii)*, the buckbean *(Menyanthes trifoliata)*, *Epipactis gigantea*, the delightfully fragrant *Habenaria leucostachys*, and *Eriophorum gracile*. In the same vicinity I found in a single locality five

specimens of *Botrychium ternatum;* and the Lady-fern *(Asplenium filix-foemina)*, grew luxuriantly, often forming root-stocks two feet high, simulating tree ferns." According to Eastwood (1945), Behr also found *Hippuris vulgaris* and Brandegee (1892) notes that Behr found *Cordylanthus maritimus* (under the name *Chloropyron palustre)* at this place.

No trace remains now of this, which must have been the southernmost representative of the coastal bog or fen formation along the Pacific Coast of North America. However, it is possible that an impoverished fragment of another example remains about 30 miles north of San Francisco, at the landward end of Point Reyes Peninsula. This is the well-known "Ledum Swamp" where acid waters draining from the quartz-diorite Inverness Ridge (covered with *Pinus muricata* and a podsolized soil) are impeded by nutrient-rich hills on the Peninsula. The next to last column in Table 2 contains a list of the species (from Howell, 1949) still occurring in Ledum Swamp which are also to be found in the Inglenook fen.

Only Inglenook fen now remains in California to represent this soil-vegetation type adequately, but it is a magnificent example. Because of its floristic richness and the completeness of its zonation and because it is the southernmost example of its kind, it is to be hoped that this fen can be preserved intact for study through the years to come. The area is also of anthropological interest, because it was here that the Coast Yuki Indians lived. This physically and linguistically isolated people and their artifacts are in need of further study (cf. Barrett, 1908; Thomsen and Heizer, 1964).

In this preliminary study of the Inglenook fen, I was greatly assisted by a Research Grant from the National Science Foundation (G-21821). Nothing would have been possible without the kind permission of the owners of the land, Mr. and Mrs. Ross. Robert Frenkel, Arthur Weston, Ann Mendershausen and Diana Myles also helped in collecting the field data. Hans Jenny kindly arranged for and A. E. Salem carried out the soil and water analyses.

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NOTES AND NEWS

PLEUROPHYCUS GARDNERI SETCHELL & SAUNDERS, A NEW ALGA FOR NORTHERN CALIFORNIA.—The Laminariales have received considerable attention recently with Druehl's publications (Can. J. Bot. 46:539–547. 1968; Phycologia 9:237–247. 1970) on their distribution along the west coast of North America. In general, the Northern California Coast from Bodega Head to the Oregon border has received very little attention with the exception of Dawson's study (Marine Algae in the vicinity of Humboldt State College, Biology Department, Humboldt State College, Arcata, Ca., 1965). On 12 July 1971, collections of algae were made in the intertidal zone at Fort Bragg (39° 27'N, 123° 47'W) during —1.0 foot tide. One of the specimens has been deposited in the herbarium at Hopkins Marine Station. Other voucher specimens have been deposited in the Sonoma State College herbarium. At this locality, *Pleurophycus gardneri* Setchell & Saunders, heretofore known only north of Coos Bay, Oregon (43° 25'N, 124° 20'W) was collected from a large population on rocks at —1.5 foot tide level in a tide pool area. A single specimen was also collected by the author in October, 1970, from the drift at Salt Point (38° 36'N, 123° 21'W).—CHRIS K. KJELDSEN, Department of Biology, Sonoma State College, Rohnert Park, California 94928.

EXHIBIT G

STATE WATER RESOURCES CONTROL BOARD
GEOTRACKER

CASE SUMMARY

I. REPORTED BY -

MENDOCINO CO ENVR HEALTH

CREATED BY

MCEH

III. SITE LOCATION

FACILITY NAME
PRIVATE RESIDENCE

FACILITY ID

FACILITY ADDRESS
PRIVATE RESIDENCE
FORT BRAGG, CA 95437
MENDOCINO COUNTY

ORIENTATION OF SITE TO STREET

CROSS STREET

V. SUBSTANCES RELEASED / CONTAMINANT(S) OF CONCERN

DIESEL
GASOLINE
WASTE OIL / MOTOR / HYDRAULIC / LUBRICATING

VI. DISCOVERY/ABATEMENT

DATE DISCHARGE BEGAN

DATE DISCOVERED	HOW DISCOVERED	DESCRIPTION
9/23/2010		SOIL SAMPLE
DATE STOPPED	STOP METHOD	DESCRIPTION
12/2/2010		STOP CRUSHING OPERATIONS

VII. SOURCE/CAUSE

SOURCE OF DISCHARGE

CAUSE OF DISCHARGE

DISCHARGE DESCRIPTION
APPLIANCE AND VEHICLE CRUSHING

VIII. CASE TYPE

CASE TYPE
Under Investigation
Soil
Surface water
Sediments

IX. REMEDIAL ACTION

NO REMEDIAL ACTIONS ENTERED

X. GENERAL COMMENTS

In September 2010, the Mendocino County Air Quality Management district collected a soil sample at the site that contained high diesel and and motor oil concentrations. In Dec 2010, MCEHD issued an unauthorized release report for unpermitted activities involving crushing (using heavy equipment) of vehicles and appliances for metal scraping.

XI. CERTIFICATION

I HEREBY CERTIFY THAT THE INFORMATION REPORTED HEREIN IS TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE.

XII. REGULATORY USE ONLY

LOCAL AGENCY CASE NUMBER	REGIONAL BOARD CASE NUMBER
	1NMC613

LOCAL AGENCY

UNKNOWN

REGIONAL BOARD

CONTACT NAME	INITIALS	ORGANIZATION_NAME	EMAIL ADDRESS
KENT HUTH	KKH	NORTH COAST RWQCB (REGION 1)	kent.huth@waterboards.ca.gov

ADDRESS

5550 Skylane Blvd. Suite A
SANTA ROSA, CA 95403

CONTACT DESCRIPTION

PHONE TYPE	PHONE NUMBER	EXTENSION
PHONE	(707)-576-2669	

Back to Top

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INMC 613

DEC 7 2010

UNDERGROUND STORAGE TANK UNAUTHORIZED RELEASE (LEAK) / CONTAMINATION SITE REPORT

EMERGENCY ☐ YES ☒ NO

HAS STATE OFFICE OF EMERGENCY SERVICES REPORT BEEN FILED? ☐ YES ☒ NO

REPORT DATE 12/02/10 CASE #

FOR LOCAL AGENCY USE ONLY
I HEREBY CERTIFY THAT I HAVE DISTRIBUTED THIS INFORMATION ACCORDING TO THE DISTRIBUTION SHOWN ON THE INSTRUCTION SHEET ON THE BACK PAGE OF THIS FORM.
SIGNED: William Nalty DATE: 02 DEC 10

☐ AEO ☐ Rec/APS ☐ Wright ☐ Admin ☐ Legal

REPORTED BY

NAME OF INDIVIDUAL FILING REPORT: WILLIAM NALTY
PHONE: (707) 463-4466
SIGNATURE: William Nalty

REPRESENTING ☐ OWNER/OPERATOR ☐ REGIONAL BOARD ☒ LOCAL AGENCY ☐ OTHER
COMPANY OR AGENCY NAME: MENDOCINO COUNTY ENVIRONMENTAL HEALTH

ADDRESS: 501 LOW GAP ROAD, ROOM #1326 (STREET) UKIAH, (CITY) CA. (STATE) 95482 (ZIP)

RESPONSIBLE PARTY

NAME: DEWEY & TRUDY SPRAGUE ☐ UNKNOWN
CONTACT PERSON: N/A
PHONE: (707) 964-7979

ADDRESS: 32800 ~~DEWEY~~ NAMELESS LANE, (STREET) FORT BRAGG, (CITY) CA. (STATE) 95437 (ZIP)

SITE LOCATION

FACILITY NAME (IF APPLICABLE): N/A
OPERATOR: N/A
PHONE: ( ) N/A

ADDRESS: 32800 NAMELESS LN. (STREET) FORT BRAGG, (CITY) MENDOCINO (COUNTY) 95437 (ZIP)

CROSS STREET: HIGHWAY 1

IMPLEMENTING AGENCIES

LOCAL AGENCY AGENCY NAME: MENDOCINO COUNTY AIR QUALITY ~~MANAGEMENT~~ DISTRICT
CONTACT PERSON: CHRIS BROWN
PHONE: (707) 463-4354

REGIONAL BOARD: ~~N/A~~ NCRWQCB
CONTACT PERSON: ~~N/A~~ UNKNOWN
PHONE: ~~N/A~~ 5762220

SUBSTANCES INVOLVED

(1) NAME: DIESEL — QUANTITY LOST (GALLONS): ☐ UNKNOWN
(2) GASOLINE — ☒ UNKNOWN

DISCOVERY/ABATEMENT

DATE DISCOVERED: 09/23/10
HOW DISCOVERED: ☐ INVENTORY CONTROL ☐ SUBSURFACE MONITORING ☐ NUISANCE CONDITIONS ☐ TANK TEST ☐ TANK REMOVAL ☒ OTHER SOIL SAMPLE

DATE DISCHARGE BEGAN: ☒ UNKNOWN
HAS DISCHARGE BEEN STOPPED? UNKNOWN ~~☒ YES ☐ NO~~ IF YES, DATE

METHOD USED TO STOP DISCHARGE (CHECK ALL THAT APPLY)
☐ REMOVE CONTENTS ☐ CLOSE TANK & REMOVE ☐ REPAIR PIPING ☐ REPAIR TANK ☐ CLOSE TANK & FILL IN PLACE ☐ CHANGE PROCEDURE ☐ REPLACE TANK ☒ OTHER STOP CRUSHING OPERATIONS

SOURCE/CAUSE

SOURCE OF DISCHARGE: ☐ TANK LEAK ☐ UNKNOWN ☐ PIPING LEAK ☒ OTHER

CAUSE(S): ☐ OVERFILL ☐ RUPTURE/FAILURE ☐ SPILL APPLIANCE/VEHICLE ☐ CORROSION ☐ UNKNOWN ☒ OTHER CRUSHING

CASE TYPE

CHECK ONE ONLY
☐ UNDETERMINED ☒ SOIL ONLY ☐ GROUNDWATER ☐ DRINKING WATER - (CHECK ONLY IF WATER WELLS HAVE ACTUALLY BEEN AFFECTED)

CURRENT STATUS

CHECK ONE ONLY
☒ NO ACTION TAKEN ☐ PRELIMINARY SITE ASSESSMENT WORKPLAN SUBMITTED ☐ POLLUTION CHARACTERIZATION
☐ LEAK BEING CONFIRMED ☐ PRELIMINARY SITE ASSESSMENT UNDERWAY ☐ POST CLEANUP MONITORING IN PROGRESS
☐ REMEDIATION PLAN ☐ CASE CLOSED (CLEANUP COMPLETED OR UNNECESSARY) ☐ CLEANUP UNDERWAY

REMEDIAL ACTION

CHECK APPROPRIATE ACTION(S) (SEE BACK FOR DETAILS)
☐ CAP SITE (CD) ☐ EXCAVATE & DISPOSE (ED) ☐ REMOVE FREE PRODUCT (FP) ☐ ENHANCED BIO DEGRADATION (IT)
☐ CONTAINMENT BARRIER (CB) ☐ EXCAVATE & TREAT (ET) ☐ PUMP & TREAT GROUNDWATER (GT) ☐ REPLACE SUPPLY (RS)
☐ VACUUM EXTRACT (VE) ☒ NO ACTION REQUIRED (NA) ☐ TREATMENT AT HOOKUP (HU) ☐ VENT SOIL (VS)
☒ OTHER (OT) REFER TO NCRWQCB FOR ACTION

COMMENTS

DISCHARGE OCCURRED WHEN THE SON OF DEWEY AND TRUDY SPRAGUE, AND SOME COHORTS, CRUSHED VEHICLES AND APPLIANCES WITH A PIECE OF HEAVY EQUIPMENT. THE SCRAP METAL IS REMOVED WITHIN HOURS. THERE IS, ACCORDING TO CHRIS BROWN, AN OVERWELMING ODOR. THE CRUSHING WAS OPERATING LIKE A BUSINESS, BUT WITHOUT A LICENCE/PERMIT. REFER TO WATER QUALITY CONTROL BOARD FOR ACTION.

HSC 05 (8/90)

Alpha Analytical Laboratories Inc.
e-mail: clientservices@alpha-labs.com
Corporate: 208 Mason St., Ukiah, CA 95482 • Phone: (707) 468-0401 • Fax: (707) 468-5267
Service Center: 6398 Dougherty Rd., Suite 35, Dublin, CA 94568 • Phone: (925) 828-6226 • Fax: (925) 828-6309

ELAP Certificate Numbers 1551 and 2728

08 October 2010

Mendocino Air Quality Mgmt
Attn: Chris Brown
306 E. Gobbi St
Ukaih, CA, 95482
RE: Nameless Lane, FB
Work Order: 10I1051

Enclosed are the results of analyses for samples received by the laboratory on 09/23/10 08:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jeanette Poplin

Jeanette L. Poplin For Sheri L. Speaks
Project Manager

Alpha Analytical Laboratories Inc.
e-mail: clientservices@alpha-labs.com
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CHEMICAL EXAMINATION REPORT

Mendocino Air Quality Mgmt
306 E. Gobbi St
Ukaih, CA, 95482
Attn: Chris Brown

Report Date: 10/08/10 09:40
Project No: -
Project ID: Nameless Lane, FB

Order Number	Receipt Date/Time	Client Code	Client PO/Reference
10I1051	09/23/2010 08:30	MENAIR	

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Nameless Ln	10I1051-01	Soil	09/22/10 13:30	09/23/10 08:30

Bruce L. Gove
Laboratory Director

10/8/2010

Alpha Analytical Laboratories Inc.
e-mail: clientservices@alpha-labs.com
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CHEMICAL EXAMINATION REPORT

Mendocino Air Quality Mgmt
306 E. Gobbi St
Ukaih, CA, 95482
Attn: Chris Brown

Report Date: 10/08/10 09:40
Project No: -
Project ID: Nameless Lane, FB

Order Number	Receipt Date/Time	Client Code	Client PO/Reference
10I1051	09/23/2010 08:30	MENAIR	

Alpha Analytical Laboratories, Inc.

	METHOD	BATCH	PREPARED	ANALYZED	DILUTION	RESULT		POL	NOTE
Nameless Ln (10I1051-01)			**Sample Type: Soil**			**Sampled: 09/22/10 13:30**			
TPH by EPA/LUFT GC/GCMS Methods									
TPH as Diesel	8015DRO	AI03014	10/01/10 10:21	10/06/10 13:41	1000	**20000 mg/kg**		**1000**	D-09
TPH as Gasoline	8015GRO	AI02917	09/29/10 13:59	09/30/10 21:28	1	**55 "**		**1.0**	G-3
TPH as Motor Oil	8015DRO	AI03014	10/01/10 10:21	10/06/10 13:41	1000	**30000 "**		**2000**	D-17
Surrogate: 1,4-Bromofluorobenzene	*8015GRO*	*AI02917*	*09/29/10 13:59*	*09/30/10 21:28*		*129 %*	*60-156*		
Surrogate: Tetratetracontane	*8015DRO*	*AI03014*	*10/01/10 10:21*	*10/06/10 13:41*		*1690 %*	*28-129*		*S-06*
Volatile Organic Compounds by EPA Method 8260B									**R-06**
Benzene	EPA 8260B	AI03016	09/24/10 10:55	09/29/10 01:26	173.2	ND mg/kg		0.17	
Toluene	"	"	"	"	"	**0.46 "**		**0.17**	
Ethylbenzene	"	"	"	"	"	**0.31 "**		**0.17**	
Xylenes (total)	"	"	"	"	"	**3.0 "**		**0.17**	
Surrogate: Bromofluorobenzene	"	"	"	"		*113 %*	*55-128*		
Surrogate: Dibromofluoromethane	"	"	"	"		*97.2 %*	*48-125*		
Surrogate: Toluene-d8	"	"	"	"		*118 %*	*50-136*		

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Bruce L. Gove
Laboratory Director

10/8/2010

Alpha Analytical Laboratories Inc.
e-mail: clientservices@alpha-labs.com
Corporate: 208 Mason St., Ukiah, CA 95482 • Phone: (707) 468-0401 • Fax: (707) 468-5267
Service Center: 6398 Dougherty Rd., Suite 35, Dublin, CA 94568 • Phone: (925) 828-6226 • Fax: (925) 828-6309

CHEMICAL EXAMINATION REPORT

Mendocino Air Quality Mgmt
306 E. Gobbi St
Ukaih, CA, 95482
Attn: Chris Brown

Report Date: 10/08/10 09:40
Project No: -
Project ID: Nameless Lane, FB

Order Number	Receipt Date/Time	Client Code	Client PO/Reference
10I1051	09/23/2010 08:30	MENAIR	

Notes and Definitions

S-06	The recovery of this surrogate is outside control limits due to sample dilution required from high analyte concentration and/or matrix interferences.
R-11	All samples and QC in the batch were analyzed to meet high-level reporting limits.
R-06	The Reporting Limits for this analysis have been raised to account for matrix interference.
G-3	Analysis of this sample indicates the presence of hydrocarbons higher in molecular weight than gasoline.
D-17	The sample chromatographic pattern does not resemble the motor oil standard used for calibration.
D-09	Results in the diesel organics range are primarily due to overlap from a heavy oil range product.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
PQL	Practical Quantitation Limit

Chain of Custody Record

Alpha Analytical Laboratories Inc.
e-mail: clientservices@alpha-labs.com

Laboratory & Corporate: 208 Mason Street, Ukiah, CA 95482
707-468-0401 • Fax: 707-468-5267

Service Center & Micro Lab: 6398 Dougherty Road, Suite 35, Dublin, CA 94568
925-828-6226 • Fax: 925-828-6309

Reports and Invoices will be delivered by e-mail in .pdf format.

Lab No. 10I1051 Page ____ of ____

Report to:	Invoice to (if different):	Project Info for Report:
Company: MCAQMD	Company:	Project Name: NameLess Lane FB.
Attn: Chris Brown	Attn:	
Address: 306 E Gobbi Ukiah, Ca 95482	Address: Same	Project No: NA
Phone/Fax: 463-4354 / 463 5707	Phone/Fax:	PO/Reference:
E-mail Address: Browncd@co.mendocino.ca.us	E-mail Address:	

Samplers Signature: Chris Brown

Print:

Signature below authorizes work under terms stated on reverse side.

Sample Identification	Sampled: Date	Sampled: Time	Container: 40ml VOA	Poly	Amber	Sleeve	Other	Preservative: HCL	HNO3	H2SO4	Other	None	Matrix: Water	Soil	Other	Total Number of Containers	Analyses Requested: TPH g/B	TPH D/MO											Sample Notes or CDPH Source Numbers:
Nameless ln.	9/22	1330															✓	✓											

TAT: 10 days ◯
Rush: 5 days ◯ 48 hours ◯
Other: ____ days ◯

Lab Approval Required For Rush TATs

Sample Notes (lab use only)
Temperature: [illegible]
Shipment Method:
Custody Seals: Y ◯ N ◯

Relinquished by:	Received by:	Date:	Time:
YC	Shen Speakes	9/23/10	8:30

CDPH Write On EDT Report? ◯ Yes ◯ No
State System Number:
If "Y" please enter the Source Number(s) in the column above.

CA Geotracker EDF Report? ◯ Yes ◯ No
Global ID: Sampling Company Log Code:
EDF to (Email Address):
Total No. Sampling Time: | Mileage: | Misc. Supplies:

California Regional Water Quality Control Board
North Coast Region
Geoffrey M. Hales, Chairman

www.waterboards.ca.gov/northcoast
5550 Skylane Boulevard, Suite A, Santa Rosa, California 95403
Phone: (877) 721-9203 (toll free) • Office: (707) 576-2220 • FAX: (707) 523-0135

Matt Rodriquez
Secretary for
Environmental Protection

Edmund G. Brown Jr.
Governor

October 20, 2011

Mr. Dewey Sprague and Ms. Trudie Sprague
32800 Nameless Ln
Fort Bragg, CA 95437

Dear Mr. and Ms. Sprague:

Subject: Release of Petroleum Hydrocarbons

File: Sprague Property, 32800 Nameless Lane, Fort Bragg, California
Case No. 1NMC613

On December 7, 2010, Regional Water Board staff received the unauthorized release report prepared by the Mendocino County Environmental Health Division concerning the release of petroleum hydrocarbons found by the Mendocino Air Quality Management District at your property located at 32800 Nameless Lane near Fort Bragg. A soil sample collected by Mendocino Air Quality Management District staff contained 20,000 parts per million total petroleum hydrocarbons as diesel and 30,000 parts per million total petroleum hydrocarbons as motor oil. The soil sample was collected in response to an unauthorized vehicle and appliance crushing operation.

As a result of the contamination detected on your property, it will be necessary for you to conduct a hydrogeologic investigation to determine the extent of the soil contamination and any groundwater contamination. A workplan needs to be submitted to this office that describes the proposed investigation by February 17, 2012. The workplan must be prepared under the direction of a California Registered Geologist or Professional Civil Engineer familiar with contaminated site investigation and cleanup. Enclosed is a list of consultants that work on site investigation and cleanup.

In addition, pursuant to California Water Code Section 13307, you should also submit the name, address, and phone number(s) of all the current record owners of fee title to the subject site, as listed in the Title or Deed of Trust.

After Regional Water Board staff concurrence with the workplan for a hydrogeologic investigation and at the completion of the fieldwork and laboratory analysis, please submit a report of findings that should include, at a minimum:

1. Site History.
2. Work Performed.
3. Conditions Encountered.
4. Laboratory Analytical Results and Chain of Custody Forms.
5. Summary Table of Analytical Results.
6. Sensitive Receptor Survey (including the location of water supply wells, surface waters, preferential water pathways, sensitive environmental habitats, and the identification of any relevant health and safety issues).
7. Conclusions.
8. Recommendations.
9. Vicinity Map.
10. Site Plan.
11. Map(s) showing the:
    a. boring locations in reference to the former tank location(s),
    b. water well(s), buildings, and any other relevant site features, and
    c. assumed or calculated groundwater gradient.
12. Boring log diagrams which indicate the:
    a. groundwater level,
    b. soils are classified according to the Unified Soils Classification System, and
    c. laboratory analytical results along with the hydrocarbon vapor field screening device readings for all samples.

Section 13267 of the California Water Code contains the authority for this request. I look forward to working with you and receiving your workplan and the name, address, and phone number of all the current record owners of fee title by February 21, 2012. Please contact me at (707) 570-3767 or at CHunt@waterboards.ca.gov if you have any questions.

Sincerely,

Original Signed by

Craig Hunt
Water Resource Control Engineer

Enclosure

111020_CSH_Sprague_InitialLetter.docx

cc (w/o enclosure):
Ms. Liz Johnson, Mendocino County Environmental Health Division, johnsonl@co.mendocino.ca.us
Mr. Chris Brown, Mendocino County Air Quality Management District, browncd@co.mendocino.ca.us

Consultant List

The responsible party must follow applicable state laws when hiring consultants and contractors. Constultants may or may not posses a contractor's license that qualifies them to provide construction services. The term consultant, in relation to sites requiring corrective action, generally refers to the firm's employing registered profesional engineers or geologists. This list is incomplete and you should also consult other references including the telephone directory.

ACC Environmental Consultants					
Melissa Brew	7977 Capwell Drive, Suite 100	Oakland	CA	94621	(510) 638-8400
AECOM					
	2101 Webster Street, Suite 1900	Oakland	CA	94612	(510) 622-6600
	104601 Old Placerville Rd., Suite	Sacramento	CA	95827	(916) 361-6400
AEMC					
Jim Stepler	3716 52nd Avenue	Sacramento	CA	95823	(916) 395-3268
Alisto Engineering Group					
Al Sevilla	2737 North Main Street	Walnut Creek	CA	94597	(925) 962-6970
Apex-Envirotech, Inc					
	11244 Pyrites way	Gold River	CA	95670	(916) 851-0174
Applied Earth Consultants					
	4742 San Fernando Road	Glendale	CA	91204	(818) 552-6000
Aqua Science Engineers, Inc.					
Robert Kaitay	55 Oak Court, Suite 220	Danville	CA	94526	(925) 820-9391
Bace Geotechnical, Inc.					
Erik Olsborg	P.O. Box 749	Windsor	CA	95492	(707) 838-3027
Bace/Brunsing Environmental					
	P.O. Box 588	Windsor	CA	95492	(707) 838-3027
Baker Tanks					
David Gill	4381 Bettencourt Way	Union City	CA	94587	(510) 487-7020
Baseline Environmental Consultants					
	101 H Street	Petaluma	CA	94952	(707) 762-5233

Baseline Environmental Consultants					
	5900 Hollis Street, Suite D	Emeryville	CA	94608	(510) 420-8686
Bergeson-Boese & Associates, Inc. (Eugene Office)					
	P.O. Box 71158	Eugene	OR	97401	(541) 484-9484
	32986 Roberts Court	Coburg	OR	97401	(541) 484-9484
Bergeson-Boese & Associates, Inc. (Portland Office)					
	25195 SW Parkway Ave., Ste 207	Wilsonville	OR	97070	(503) 570-9484
Berlagar Geotechnical Consultants					
Sur Tristan	5587 Sunol Boulevard	Pleasanton	CA	94566	(925) 484-0220
Blackpoint Environmental, Inc.					
Diana M. Dickerson	930 Shiloh Road, Bldg 40, Ste F	Windsor	CA	95492	(707) 837-7407
Blue Rock Environmental, Inc					
Scott Ferriman	911 Third Street	Eureka	CA	95501	(707) 441-1934
Bonkowski & Associates, Inc.					
	7400 Hollis Street, Suite 4	Emeryville	CA	94608	(510) 450-0770
Brown & Caldwell					
Bill Sissit	201 North Civic Drive	Walnut Creek	CA	94596	(925) 937-9010
Bill Sissit	P.O. Box 8045	Walnut Creek	CA	94596	(925) 937-9010
Brunsing Associates, Inc.					
Tom Brunsing	P.O. Box 588	Windsor	CA	95492	(707) 838-3027
Cambria Environmental Technology					
	408 7th Street, Suite A	Eureka	CA	95501	(707) 268-3812
Joe Neeley	P.O. Box 259	Sonoma	CA	95476	(707) 935-4850

Cambria Environmental Technology					
	5900 Hollis Street, Suite A	Emeryville	CA	94608	(510) 420-0700
Clearwater Group					
Ms. Olivia Jacobs	229 Tewksbury Avenue	Pt. Richmond	CA	94801	510-307-9943
Clearwater Group, Inc.					
Kenneth Thiessen	417 2nd Street, Suite 205	Eureka	CA	95501	(707) 442-9510
	229 Tewksbury Avenue	Richmond	CA	94801	(510) 307-9943
Closure Solutions, Inc.					
Roger Hoffmore	1243 Oak Knoll Drive	Concord	CA	94521	(800) 988-7880
Connor Pacific/EFW					
Martha Watson	2580 Wyandotte Street	Mountain View	CA	94043	(650) 386-3828
Cyto Culture					
Randall VonWedel	249 Tewksbury Avenue	Point Richmond	CA	94801	(510) 233-0102
Delta Environmental					
Jim Brownell	11050 White Rock Road, Suite 110	Rancho Cordova	CA	95670	(916) 638-2085
Earthtec Inc.					
Ed Hendrick	1830 Vernon Street, Suite 7	Roseville	CA	95678	(916) 786-5262
EBA Engineering					
	828 Sonoma Avenue Suite C	Santa Rosa	CA	95404	(707) 544-0784
ECM Group					
Jim Green	P.O. Box 802	Benecia	CA	94510	(707) 751-0655
Ecology Control Industries					
	255 Parr Boulevard	Richmond	CA	94801	(510) 970-7475
ECOVA					
	602 East Ranch Road	Sacramento	CA	95825	(916) 489-6567

Edd Clark & Associates

John Calomiris	P.O. Box 3039	Rohnert Park	CA	94927	(707) 792-9500

EKI

Tom Kalinowski,	1870 Ogden Drive	Burlingame	CA	94010	(650) 292-9100

Entrix

Jean Baldrigde	701 University Avenue, Suite 200	Sacramento	CA	95825	(916) 923-1097

Environ

	6001 Shellmound St., Ste 700	Emeryville	CA	94608	(510) 655-7400

Environmental Geology Services

Marc Seeley	1695 Willowside Rd.	Santa Rosa	CA	95401	(707) 528-0810

Environmental Resolutions, Inc.

James Chappell	601 N. McDowell Blvd	Petaluma	CA	94954	(707) 766-2090

Frye Environmental

Chris Frye	8020 Starr Road	Windsor	CA	95492	(707) 837-2809

Gallardo and Associates

Rafael Gallardo	304v Belle Court	El Dorado Hills	CA	95762	(916) 358-3719

Geocon Consultants, Inc.

Kevin J. Brown	3160 Gold Valley Drive	Rancho Cordova	CA	95742	(916) 852-9118

Geo-Logic

Joel Gregor	1140 5th Avenue	Crockett	CA	94525	(510) 787-6867

Geologic Technics, Inc.

Ray Kablanow III	1172 Kansas Avenue	Modesto	CA	95351	(209) 538-6424

Geomatrix

	2101 Webster St, 12th Floor	San Fransico	CA	94612	(510) 663-4141

GeoServices Group, The

David Peterson	874 Gravenstein Avenue	Sebastopol	CA	95472	(707) 823-9218

Getler-Ryan					
Jeffrey Ryan	6747 Sierra Court, Suite J	Dublin	CA	94568	(925) 551-7555
Giblin Associates					
	2307 McBride Lane	Santa Rosa	CA	95403-	(707) 528-3078
GreenWay Partners					
Steve Salzman	1385 8th Street	Arcata	CA	95521	(707) 822-0597
H S I Geo Trans					
Steve Carlton	3035 Prospect Park Dr., Suite 40	Rancho Cordova	CA	95670	(916) 853-1800
Harding Lawson Associates					
Dan Craig	P.O. Box 578	Novato	CA	94948	
Jacobs Engineering Group, Inc.					
	2525 Natomas Park Dr, Suite 370	Sacramento	CA	95833	(916) 922-8600
Jim Glomb Consulting					
Jim Glomb, Jr.	152 Weeks Way	Sebastopol	CA	95472	(707) 237-2703
John H. Dailey Consulting					
	737 Castro Street	San Francisco	CA	94114	(415) 357-1215
Kleinfelder					
Steven Walker	7133 Koll Center Pkwy, Suite 100	Pleasanton	CA	94566	(925) 484-1700
Michael Burns	2240 Northpoint Parkway	Santa Rosa	CA	95407	(707) 571-1883
Krazan and Associates					
	5044 Bailey Loop	McClellan	CA	95652	(916) 564-2200
LACO Associates					
David German	P.O Box 1023	Eureka	CA	95502	(707) 443-5054
Lawrence & Associates					
	3590 Iron Court	Shasta Lake City	CA	96019	(530) 275-4800

Lion Enviro-Geotech

Tom Lion	248 Vista View Drive	Cloverdale	CA	95425	(707) 894-9024

Mactec Engineering and Consulting

Gary Liebeman	5341 Old Redwood Hwy, Suite 300	Petaluma	CA	94953	(707) 793-3841

McEdwards Group

Dr. McEdwards	1025 Hearst - Willits Road	Willits	CA	95490	(707) 459-1086

MWH Montgomery Watson Harza

	1340 Treat Blvd, Suite 300	Walnut Creek	CA	94597	(925) 975-3400

Northgate Environmental Management Inc.

Alan Leavitt	300 Frank H. Ogawa Plaza, Suite	Oakland	CA	94612	(510) 839-0688

Omega Enivronmental Mgmt. Inc.

Bruce Shybock	P.O. Box 738	Petaluma	CA	94953	(707) 775-2500

Oscar Larson & Associates

John DeBoice	P.O. Box 3806	Eureka	CA	95502	(707) 445-2043
John DeBoice	317 3rd Street	Eureka	CA	95501	(707) 445-2043

PES Environmental, Inc.

Bill Frizzell	1682 Novato Boulevard, Ste. 100	Novato	CA	94947	(415) 899-1600

Porter Geotechnical

Chip Porter	5560 Wildwood Drive	Reno	NV	89511	(775) 849-0668

R.G.A. Environmental Consultants

Harry Lawrence	1466 66th Street	Emeryville	CA	94608	(510) 547-7771

Remediation Testing and Design

Howard Whitney	609 Pacific Avenue, Suite 201	Santa Cruz	CA	95060	(831) 458-1612

SCS Engineers

Linda Traverner	3843 Brickway Blvd, Suite 208	Santa Rosa	CA	95403	(707) 574-9461

Secor					
	3281 South Maple Avenue	Fresno	CA	93725	(559) 266-2157
	2194 Main Stret	Cambria	CA	93428	(805) 927-4699
	25864 Business Cntr Dr, Ste F	Redlands	CA	92374	(909) 478-5580
Shasta Environmental					
	1341 Nebraska Street	Vallejo	CA	94590	(707) 646-1909
Shaw					
	4005 Port Chicago Hwy	Concord	CA	94520	(925) 288-2107
SHN					
	480 Hemsted Drive	Redding	CA	96002	(530) 221-5424
Marty Lay	812 West Wabash	Eureka	CA	95501	(707) 441-8855
Soma Environmental Engineering					
Mansur Sepeher	2680 Bishop Drive, Suite 203	San Ramon	CA	94583	(925) 244-6600
Streamborn					
Doug Lovell	P.O. Box 8330	Berkley	CA	94707	(510) 528-4234
Taber Consultants					
Tom Skaug	3911 West Capital Avenue	West Sacramento	CA	95691	(916) 371-1690
Tetra Tech, Inc.					
John King	180 Howard Street, Suite 250	San Fransico	CA	94105	(415) 974-1221
Toxichem Management Systems					
Ross Tinline	11 Kenton Avenue	San Carlos	CA	94070	(650) 551-0112
Trans Tech Consultants					
Bill Wiggins	930 Shiloh Rd Bldg #44, Suite J	Santa Rosa	CA	95407	(707) 575-86722

TRC Alton Geosciences					
Tracy Walker	5052 Commercial Circle	Concord	CA	94520	(925) 688-1200
Treadwell & Rollo, Inc.					
Phil Smith	9608 Kiefer Boulevard	Sacramento	CA	95827-	(925) 253-4980
Twining Laboratories, Inc.					
Laura Kemp	2527 Fresno Street	Fresno	CA	93721	(559) 268-7021
URS Greiner Woodward Clyde					
	2520 Venture Oaks Way, Suite 250	Sacramento	CA	95833	(916) 929-2031
Versar, Inc.					
Tim Berger	7844 Madison Avenue	Fair Oaks	CA	95628	(916) 962-1612
Wallace-Kuhl & Associates					
	3050 Industrial Boulevard	West Sacramento	CA	95691	(916) 372-1434
Weiss Associates					
	5801 Christie Ave, Suite 600	Emeryville	CA	99608	(510) 450-6000
West Associates					
Brian West	P.O. Box 5891	Vacaville	CA	95696	(707) 451-1360
West Environmental Services & Technology					
Peter Krainoff	711 Grand Ave, Suite 220	San Rafael	CA	94903	(415) 460-6770
Wildan Associates					
	2150 River Plaza Drive, Suite 300	Sacramento	CA	95833	(916) 924-7000
Winzler & Kelly					
Jed Douglas	495 Tesconi Cir	Santa Rosa	CA	95401	(707) 523-1010
	633 Third Street	Eureka	CA	95501	(707) 443-0326
	417 Montgomery Street, Suite 600	San Fransico	CA	94104	(415) 283-4970

From: Hunt, Craig@Waterboards
To: Bill Wiggins
Subject: RE: 32800 Nameless Lane Fort Bragg, NCRWQCB Case Number 1NMC613
Date: Tuesday, October 6, 2020 8:58:00 AM

Bill,

It was good speaking with you yesterday. I concur with this approach and look forward to working with you on it.

Craig Hunt
Water Resource Control Engineer
California Regional Water Quality Control Board, North Coast Region
5550 Skylane Blvd, Suite A
Santa Rosa, CA 95403

Craig.Hunt@waterboards.ca.gov

The governor of California has issued a statewide shelter in place order due to the COVID-19 emergency. The Water Boards are continuing day-to-day work protecting public health, safety, and the environment. However, most staff are working remotely and we continue to check email and voicemail regularly. Thank you and stay healthy and safe.

From: Bill Wiggins <bwiggins@transtechconsultants.com>
Sent: Monday, October 5, 2020 4:00 PM
To: Hunt, Craig@Waterboards <Craig.Hunt@waterboards.ca.gov>
Subject: 32800 Nameless Lane Fort Bragg, NCRWQCB Case Number 1NMC613

EXTERNAL:

Craig,

Thank You for taking the time to talk with me this afternoon regarding the subject site. As we discussed, I represent the current property owner, Mr. Travis Swithenbank. Mr. Swithenbank is in the planning process with Mendocino County to develop the approximately 12 acre property for residential lots. One of the items that needs to be resolved as part of the development process is "... Demonstrate that the Hazardous Materials incident reported in December, 2010 to the State Water Board (NCRWQCB Case 1NMC613), has been remediated...." We have been retained to provide consulting services relative to this matter, specifically to address outstanding matters relevant to a NCRWQCB Letter prepared by you, dated October 20, 2011 to Mr. Dewey Sprague and Ms. Trudie Sprague, understood to be the owners at the time.

As discussed this afternoon, we have reviewed the known available record at the NCRWQCB as well as the Mendocino County Air Quality Management District. A few weeks ago I also talked with Will

Nalty with the Mendocino County Environmental Health Division, Hazardous Materials Management Program. Will was unable to locate a file relevant to the subject site (albeit on short notice) and he was to talk to another County representative to see if a file was available. He recalled the case and believed there was a file. Apparently there was a recent event involving significant water damage in the building housing historical records. To date, we have not heard back from him.

As discussed, the record currently available does not appear to be complete, we have not been able to locate a site map with the sampling location or a copy of the original sampling notes for example. There also appears to be some discrepancies in the record. We have performed a site visit, talked to the current property owner and have an idea as to where the sampling may have occurred based upon second hand knowledge and an educated guess.

In an effort to more fully develop the record, we propose to reinitiate contact with Mr. Nalty to inquire as to whether or not a file has turned up and to summarize available information in a work plan. The proposed scope of work (absent new information becoming available) will be to sample surface and near surface soils in the area believed to be the most likely area where the initial sample back in 2010 was obtained. The rationale for the location and scope of near surface sampling will be presented in the work plan. Our site observations and analytical data will be presented in a summary letter, including a site map with sampling locations. The letter will include conclusions and recommendations as deemed appropriate based upon the conditions encountered.

We respectfully request that the balance of directives outlined in the October 2011 NCRWQCB Letter be held in abeyance pending the results of our investigation. We appreciate your consideration.

Kindest Regards Bill

Bill C. Wiggins, P.E.
Trans Tech Consultants
www.transtechconsultants.com
www.fileteam.com
707-837-8408 - Office
707-478-2097 - Cell

CALIFORNIA
Water Boards

GAVIN NEWSOM
GOVERNOR

JARED BLUMENFELD
SECRETARY FOR
ENVIRONMENTAL PROTECTION

North Coast Regional Water Quality Control Board

December 11, 2020

Travis Swithenbank
Swithenbank Construction
P.O. Box 1660
Fort Bragg, CA 95437
travis@swithenbankconstruction.com

Dear Mr. Swithenbank:

Site: Sprague Property, 32800 Nameless Lane, Fort Bragg, California
Case No. 1NMC613

Subject: **Workplan Approval Letter**

North Coast Regional Water Quality Control Board (Regional Water Board) staff reviewed the November 5, 2020 "Work Plan – Supplemental Investigation" (Workplan) submitted by Trans Tech Consultants (Trans Tech). It is understood that an unauthorized auto crushing operation took place at the Site in 2010. In order to determine if a fuel release occurred, soil in the area of the crushing operation was sampled by Mendocino County Air Quality Management District staff and analyzed for total petroleum hydrocarbons (TPH). Based on the laboratory results, elevated concentrations of TPHd and TPHmo were detected; however, the location of the sample(s) were not included in the sampling documentation. The case was transferred to the Regional Water Board on December 7, 2010.

Based on a review of the Workplan, it is the Regional Water Board's understanding that background research performed by Trans Tech identified the most likely area where the previous auto crushing activities and subsequent release occurred. In order to confirm the 2010 lab results, Trans Tech is proposing to advance a total of four (4) soil borings to a depth of 18 inches below ground surface (bgs), sampling soil within two separate depth intervals (0 to 6 inches bgs and 12 to 18 inches bgs). Each soil sample will be analyzed for TPH and BTEX.

The Regional Water Board concurs with the proposed scope of work. Please notify me one week prior to starting the field work. A report, detailing field activities, information supporting the investigation location, and discussion of laboratory results is due to this office by March 9, 2021.

Please contact me at Kent.Huth@waterboards.ca.gov or (707) 576-2669 if you have any questions.

Sincerely,

Kent Huth
Engineering Geologist

201211_KKH_mc_Sprague Property Workplan Approval letter

cc: Mr. Bill Wiggins, Trans Tech Consultants, bwiggins@transtechconsultants.com
Mr. Jim Ronco, Jim Ronco Consulting, jim@jimroncoconsulting.com
Mr. Mark Cliser, Mendocino County Planning & Building Services, cliserm@mendocinocounty.org

Interoffice Communication

Date: February 8, 2021

To: Heidi Bauer/File

From: Kent Huth

Subject: Site Investigation – February 4, 2021

File: Sprague Property, 32800 Nameless Lane, Fort Bragg; Case No. 1NMC613

On February 4, 2021, I observed soil sampling at the Sprague Property. This work was being done as part of the Supplemental Investigation proposed in Trans Tech's November 5, 2020 Work Plan to confirm the soil conditions in the area of junk piles and vehicular debris observed and sampled by Chris Brown of Mendocino Air Quality Management District in 2010. I met with Travis Swithenbank (RP) and Brian Hasik (Trans Tech Consultants) onsite. The sampling locations had been revised as shown below and were confirmed by Mr. Brown to be the area previously sampled in 2010.

2009 aerial photo showing previous junk piles and vehicular debris and area of 2010 soil sample.

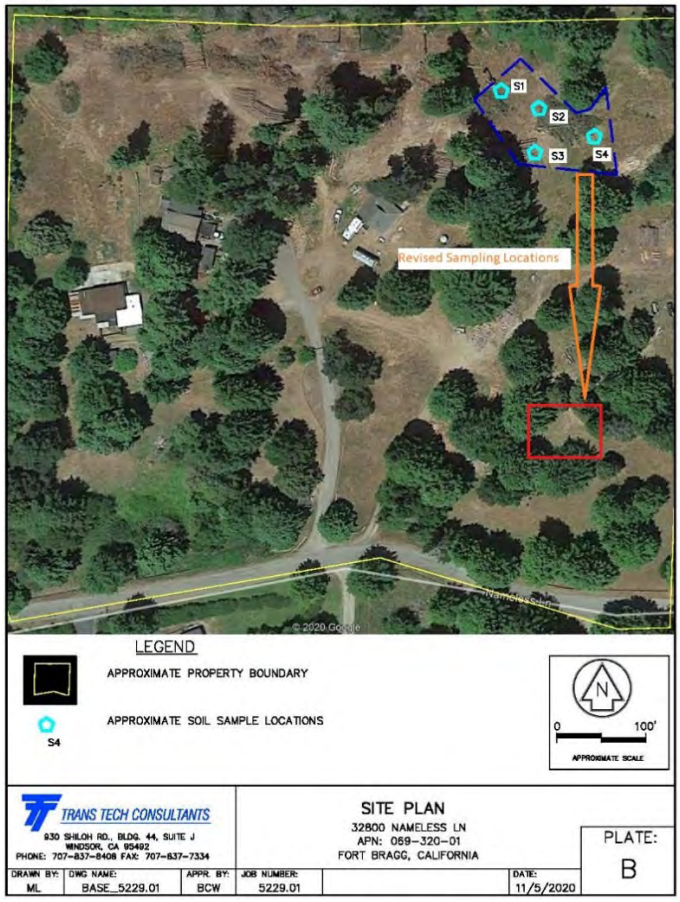

Figure showing change in sample locations during Site investigation

Disturbed soil, glass, and additional vehicle debris was observed in the updated sampling area, which was located adjacent to an abandoned boat.


View of boat from south.


View of disturbed soil (boat out of frame to left)

Stakes marking the four sampling locations

Example of vehicle debris observed at area of investigation

During the Site visit, accompanied by Mr. Swithenbank, I also walked the Site, in addition to the adjacent parcel at 32700 Nameless Lane, since there had been environmental concerns raised by community members on that site. Several woodpiles were observed but I did not observe any evidence of disturbed soil, debris, or evidence of fuel contamination during the Site walk.

Area of neighborhood concern (32700 Nameless Ln)

Woodpiles on north side of Site

From:	Christopher Brown
To:	Bauer, Heidi M.@Waterboards
Cc:	Huth, Kent K.@Waterboards
Subject:	RE: Travis Swithenbank - 32800 Nameless Lane, Fort Bragg
Date:	Wednesday, February 10, 2021 12:26:21 PM
Attachments:	image001.png

EXTERNAL:

Yes that looks right.

Christopher D. Brown AICP
Air Pollution Control Officer
Feather River Air Quality Management District
541 Washington Ave.
Yuba City Ca. 95991
(530) 634-7659 (Office)
fraqmd.org
Working remotely due to COVID (530) 324-6961

From: Bauer, Heidi M.@Waterboards <Heidi.M.Bauer@Waterboards.ca.gov>
Sent: Wednesday, February 10, 2021 11:30 AM
To: Christopher Brown <apco@fraqmd.org>
Cc: Huth, Kent K.@Waterboards <Kent.Huth@Waterboards.ca.gov>
Subject: RE: Travis Swithenbank - 32800 Nameless Lane, Fort Bragg

Thanks Chris, the below screen shot is from 2009 – and the highlighted area I believe shows the junk pile – can you confirm that this is the general area where you took the sample from?

Thank you!

From: Christopher Brown <apco@fraqmd.org>
Sent: Wednesday, February 10, 2021 11:21 AM
To: Bauer, Heidi M.@Waterboards <Heidi.M.Bauer@Waterboards.ca.gov>
Cc: Huth, Kent K.@Waterboards <Kent.Huth@Waterboards.ca.gov>; William Nalty <naltyw@mendocinocounty.org>
Subject: Re: Travis Swithenbank - 32800 Nameless Lane, Fort Bragg

EXTERNAL:

The junk piles were in a different spot than the burn piles. I took the sample near the junk piles.

Sent from my iPhone

> On Feb 9, 2021, at 1:22 PM, Bauer, Heidi M.@Waterboards <Heidi.M.Bauer@waterboards.ca.gov> wrote:
>
> HI again Chris and Will, here are some more photos from MCAQMD. We really just need to know if you collected that soil sample near the junk piles/boat area. From there we can determine if that is the correct area to re-sample.
>
> Thanks so much!
>
> Heidi
>
> **From:** Mendocino County Air Quality Mgmt District <mcaqmd@mendocinocounty.org>
> **Sent:** Tuesday, February 9, 2021 11:44 AM
> **To:** Bauer, Heidi M.@Waterboards <Heidi.M.Bauer@Waterboards.ca.gov>

Cc: William Nalty <naltyw@mendocinocounty.org>
Subject: Re: Travis Swithenbank - 32800 Nameless Lane, Fort Bragg

EXTERNAL:

Hi Heidi,

Please find attached in this email the District's investigation report along some of the pictures used for the enforcement. In your email, you already included the complaint report and the soil sample results. I apologize for not being able to help you with the sample location, but please let me know if there is anything else you might need.

Please feel free to reach out if you have any other questions or need docs.

Hope all is well,

Phil Chou
Mendocino County AQMD

>>> "Bauer, Heidi M.@Waterboards" <Heidi.M.Bauer@Waterboards.ca.gov> 2/8/2021 3:58 PM >>>
Good afternoon, we are in need in locating information on sampling that was done by your agency in 2010 associated with the referenced address. Apparently Chris Brown and/or Pilar Hurtado collected a soil sample in response to a complaint (see below) on this property. It was then referred to us, but we do not have any information on where the sample was collected from on the property. Perhaps you may have this information in a file on this property or I can talk to Chris or Pilar about this? This information is very important as we are trying to determine the most appropriate place to collect additional samples on this parcel and you seem to be the only ones that may have this information. Attached is a lab report showing that the sample was collected by Chris Brown at AQMD. Thanks so much for any help you can give me.

<IMAGE.png>
Best,

Heidi
Heidi M. Bauer, P.G.
Senior Engineering Geologist
Site Cleanups Unit Supervisor
North Coast Regional Water Quality Control Board
5550 Skylane Blvd. Suite A
Santa Rosa, CA. 95403
heidi.m.bauer@waterboards.ca.gov
Office: (707) 570-3769

<IMAGE.jpeg>

<NOV 10-57 - Inspection Report.pdf>
<NOV 10-57 - Inspection Photos.pdf>

CONFIRMATI	GLOBAL_ID	LOCID	CHEMICAL_N	LOGDATE	LOGTIME	ANADATE	MATRIX	SAMPID	QCCODE	ANMCODE	PARVQ	PARVAL	UNITS	REPDL	LABDL	RLNOTE
6298043012	T10000002710		Xylene, Isomers m & p			2/6/21 0:00	SQ		LB1	SW8021F	ND	0	MG/KG	0.01	0.0026	
6298043012	T10000002710		o-Xylene			2/6/21 0:00	SQ		LB1	SW8021F	ND	0	MG/KG	0.005	0.00091	
6298043012	T10000002710		C9			2/6/21 0:00	SQ		LB1	SW8015B	SU	85	PERCENT			
6298043012	T10000002710		Diesel Range Organics (C10-C23)			2/6/21 0:00	SQ		LB1	SW8015B	ND	0	MG/KG	1	0.75	
6298043012	T10000002710		Total Petroleum Hydrocarbons (TPH) (C			2/6/21 0:00	SQ		LB1	SW8015B	ND	0	MG/KG	5	3.9	
6298043012	T10000002710		Diesel Range Organics (C10-C23)			2/6/21 0:00	SQ		BS1	SW8015B	=	28.3	MG/KG	1	0.75	
6298043012	T100000027:	S1-0-6	Benzene	2/4/21 0:00	958	2/8/21 0:00	SO	S1-0-6	CS	SW8021F	ND	0	MG/KG	0.005	0.0019	
6298043012	T100000027:	S1-0-6	Toluene	2/4/21 0:00	958	2/8/21 0:00	SO	S1-0-6	CS	SW8021F	ND	0	MG/KG	0.005	0.0024	
6298043012	T100000027:	S1-0-6	Ethylbenzene	2/4/21 0:00	958	2/8/21 0:00	SO	S1-0-6	CS	SW8021F	ND	0	MG/KG	0.005	0.0017	
6298043012	T100000027:	S1-0-6	Gasoline Rar	2/4/21 0:00	958	2/8/21 0:00	SO	S1-0-6	CS	SW8021F	ND	0	MG/KG	1	0.61	
6298043012	T100000027:	S1-0-6	McCampbell'	2/4/21 0:00	958	2/8/21 0:00	SO	S1-0-6	CS	SW8021F	SU	89	PERCENT			
6298043012	T100000027:	S1-0-6	Methyl-tert-l	2/4/21 0:00	958	2/8/21 0:00	SO	S1-0-6	CS	SW8021F	ND	0	MG/KG	0.05	0.0034	
6298043012	T100000027:	S1-0-6	Xylenes	2/4/21 0:00	958	2/8/21 0:00	SO	S1-0-6	CS	SW8021F	ND	0	MG/KG	0.005	0.005	
6298043012	T100000027:	S1-0-6	Xylene, Isom	2/4/21 0:00	958	2/8/21 0:00	SO	S1-0-6	CS	SW8021F	ND	0	MG/KG	0.01	0.0026	
6298043012	T100000027:	S1-0-6	o-Xylene	2/4/21 0:00	958	2/8/21 0:00	SO	S1-0-6	CS	SW8021F	ND	0	MG/KG	0.005	0.00091	
6298043012	T100000027:	S1-0-6	C9	2/4/21 0:00	958	##########	SO	S1-0-6	CS	SW8015B	SU	78	PERCENT			
6298043012	T100000027:	S1-0-6	Diesel Range	2/4/21 0:00	958	##########	SO	S1-0-6	CS	SW8015B	ND	0	MG/KG	1	0.75	
6298043012	T100000027:	S1-0-6	Total Petrole	2/4/21 0:00	958	##########	SO	S1-0-6	CS	SW8015B	ND	0	MG/KG	5	3.9	
6298043012	T100000027:	S1-12-18	Benzene	2/4/21 0:00	1003	2/8/21 0:00	SO	S1-12-18	CS	SW8021F	ND	0	MG/KG	0.0044	0.0017	
6298043012	T100000027:	S1-12-18	Toluene	2/4/21 0:00	1003	2/8/21 0:00	SO	S1-12-18	CS	SW8021F	ND	0	MG/KG	0.0044	0.0021	
6298043012	T100000027:	S1-12-18	Ethylbenzene	2/4/21 0:00	1003	2/8/21 0:00	SO	S1-12-18	CS	SW8021F	ND	0	MG/KG	0.0044	0.0015	
6298043012	T100000027:	S1-12-18	Gasoline Rar	2/4/21 0:00	1003	2/8/21 0:00	SO	S1-12-18	CS	SW8021F	ND	0	MG/KG	0.88	0.53	
6298043012	T100000027:	S2-0-6	Methyl-tert-l	2/4/21 0:00	1018	2/8/21 0:00	SO	S2-0-6	CS	SW8021F	ND	0	MG/KG	0.044	0.003	
6298043012	T100000027:	S2-0-6	Xylenes	2/4/21 0:00	1018	2/8/21 0:00	SO	S2-0-6	CS	SW8021F	ND	0	MG/KG	0.0044	0.0044	
6298043012	T100000027:	S2-0-6	Xylene, Isom	2/4/21 0:00	1018	2/8/21 0:00	SO	S2-0-6	CS	SW8021F	ND	0	MG/KG	0.0088	0.0023	
6298043012	T100000027:	S2-0-6	o-Xylene	2/4/21 0:00	1018	2/8/21 0:00	SO	S2-0-6	CS	SW8021F	ND	0	MG/KG	0.0044	0.0008	
6298043012	T100000027:	S2-0-6	C9	2/4/21 0:00	1018	2/9/21 0:00	SO	S2-0-6	CS	SW8015B	SU	97	PERCENT			
6298043012	T100000027:	S2-0-6	Diesel Range	2/4/21 0:00	1018	2/9/21 0:00	SO	S2-0-6	CS	SW8015B	=	2.4	MG/KG	1	0.75	
6298043012	T100000027:	S2-0-6	Total Petrole	2/4/21 0:00	1018	2/9/21 0:00	SO	S2-0-6	CS	SW8015B	=	9.4	MG/KG	5	3.9	
6298043012	T100000027:	S2-12-18	Benzene	2/4/21 0:00	1026	2/8/21 0:00	SO	S2-12-18	CS	SW8021F	ND	0	MG/KG	0.0052	0.002	
6298043012	T100000027:	S2-12-18	Toluene	2/4/21 0:00	1026	2/8/21 0:00	SO	S2-12-18	CS	SW8021F	ND	0	MG/KG	0.0052	0.0025	
6298043012	T100000027:	S2-12-18	Ethylbenzene	2/4/21 0:00	1026	2/8/21 0:00	SO	S2-12-18	CS	SW8021F	ND	0	MG/KG	0.0052	0.0018	
6298043012	T100000027:	S2-12-18	Gasoline Rar	2/4/21 0:00	1026	2/8/21 0:00	SO	S2-12-18	CS	SW8021F	ND	0	MG/KG	1	0.63	
6298043012	T10000002710		C9			##########	SO		MS1	SW8015B	SU	93	PERCENT			
6298043012	T10000002710		Diesel Range Organics (C10-C23)			##########	SO		MS1	SW8015B	=	35.6	MG/KG	1	0.75	
6298043012	T10000002710		C9			##########	SO		SD1	SW8015B	SU	93	PERCENT			
6298043012	T10000002710		Diesel Range Organics (C10-C23)			##########	SO		SD1	SW8015B	=	35.5	MG/KG	1	0.75	
6298043012	T10000002710		C9			2/9/21 0:00	SQ		BS1	SW8015B	SU	81	PERCENT			
6298043012	T10000002710		Diesel Range Organics (C10-C23)			2/9/21 0:00	SQ		BS1	SW8015B	=	37.4	MG/KG	1	0.75	
6298043012	T10000002710		Benzene			2/6/21 0:00	SQ		BS1	SW8021F	=	0.0976	MG/KG	0.005	0.0019	
6298043012	T10000002710		Toluene			2/6/21 0:00	SQ		BS1	SW8021F	=	0.102	MG/KG	0.005	0.0024	
6298043012	T10000002710		Ethylbenzene			2/6/21 0:00	SQ		BS1	SW8021F	=	0.108	MG/KG	0.005	0.0017	
6298043012	T10000002710		McCampbell's proprietary surrogate #2			2/6/21 0:00	SQ		BS1	SW8021F	SU	98	PERCENT			
6298043012	T10000002710		Methyl-tert-butyl ether (MTBE)			2/6/21 0:00	SQ		BS1	SW8021F	=	0.0738	MG/KG	0.05	0.0034	
6298043012	T10000002710		Xylene, Isomers m & p			2/6/21 0:00	SQ		BS1	SW8021F	=	0.226	MG/KG	0.01	0.0026	
6298043012	T10000002710		o-Xylene			2/6/21 0:00	SQ		BS1	SW8021F	=	0.107	MG/KG	0.005	0.00091	
6298043012	T10000002710		C9			2/6/21 0:00	SQ		BS1	SW8015B	SU	86	PERCENT			
6298043012	T10000002710		C9			2/9/21 0:00	SQ		BD1	SW8015B	SU	78	PERCENT			
6298043012	T10000002710		Diesel Range Organics (C10-C23)			2/9/21 0:00	SQ		BD1	SW8015B	=	33.6	MG/KG	1	0.75	
6298043012	T10000002710		Benzene			2/6/21 0:00	SQ		BD1	SW8021F	=	0.101	MG/KG	0.005	0.0019	
6298043012	T10000002710		Toluene			2/6/21 0:00	SQ		BD1	SW8021F	=	0.105	MG/KG	0.005	0.0024	
6298043012	T10000002710		Ethylbenzene			2/6/21 0:00	SQ		BD1	SW8021F	=	0.108	MG/KG	0.005	0.0017	
6298043012	T10000002710		McCampbell's proprietary surrogate #2			2/6/21 0:00	SQ		BD1	SW8021F	SU	98	PERCENT			

6298043012	T10000002710	Methyl-tert-butyl ether (MTBE)			2/6/21 0:00	SQ			BD1	SW8021F	=	0.079	MG/KG	0.05	0.0034
6298043012	T10000002710	Xylene, Isomers m & p			2/6/21 0:00	SQ			BD1	SW8021F	=	0.223	MG/KG	0.01	0.0026
6298043012	T10000002710	o-Xylene			2/6/21 0:00	SQ			BD1	SW8021F	=	0.104	MG/KG	0.005	0.00091
6298043012	T10000002710	C9			2/6/21 0:00	SQ			BD1	SW8015B	SU	89	PERCENT		
6298043012	T10000002710	Diesel Range Organics (C10-C23)			2/6/21 0:00	SQ			BD1	SW8015B	=	28	MG/KG	1	0.75
6298043012	T100000027:	S2-12-18	Total Petrole	2/4/21 0:00	1026	2/8/21 0:00	SO	S2-12-18	CS	SW8015B	ND	0	MG/KG	5	3.9
6298043012	T100000027:	S3-0-6	Benzene	2/4/21 0:00	1029	2/9/21 0:00	SO	S3-0-6	CS	SW8021F	ND	0	MG/KG	0.0045	0.0017
6298043012	T100000027:	S3-0-6	Toluene	2/4/21 0:00	1029	2/9/21 0:00	SO	S3-0-6	CS	SW8021F	ND	0	MG/KG	0.0045	0.0022
6298043012	T100000027:	S3-0-6	Ethylbenzene	2/4/21 0:00	1029	2/9/21 0:00	SO	S3-0-6	CS	SW8021F	ND	0	MG/KG	0.0045	0.0015
6298043012	T100000027:	S3-0-6	Gasoline Rar	2/4/21 0:00	1029	2/9/21 0:00	SO	S3-0-6	CS	SW8021F	ND	0	MG/KG	0.9	0.55
6298043012	T100000027:	S3-0-6	McCampbell'	2/4/21 0:00	1029	2/9/21 0:00	SO	S3-0-6	CS	SW8021F	SU	86	PERCENT		
6298043012	T100000027:	S3-0-6	Methyl-tert-l	2/4/21 0:00	1029	2/9/21 0:00	SO	S3-0-6	CS	SW8021F	ND	0	MG/KG	0.045	0.0031
6298043012	T100000027:	S3-0-6	Xylenes	2/4/21 0:00	1029	2/9/21 0:00	SO	S3-0-6	CS	SW8021F	ND	0	MG/KG	0.0045	0.0045
6298043012	T100000027:	S3-0-6	Xylene, Isom	2/4/21 0:00	1029	2/9/21 0:00	SO	S3-0-6	CS	SW8021F	ND	0	MG/KG	0.009	0.0023
6298043012	T100000027:	S3-0-6	o-Xylene	2/4/21 0:00	1029	2/9/21 0:00	SO	S3-0-6	CS	SW8021F	ND	0	MG/KG	0.0045	0.00082
6298043012	T100000027:	S3-0-6	C9	2/4/21 0:00	1029	2/8/21 0:00	SO	S3-0-6	CS	SW8015B	SU	102	PERCENT		
6298043012	T100000027:	S3-0-6	Diesel Range	2/4/21 0:00	1029	2/8/21 0:00	SO	S3-0-6	CS	SW8015B	ND	0	MG/KG	1	0.75
6298043012	T100000027:	S3-0-6	Total Petrole	2/4/21 0:00	1029	2/8/21 0:00	SO	S3-0-6	CS	SW8015B	ND	0	MG/KG	5	3.9
6298043012	T100000027:	S3-12-18	Benzene	2/4/21 0:00	1038	##########	SO	S3-12-18	CS	SW8021F	ND	0	MG/KG	0.0043	0.0016
6298043012	T100000027:	S3-12-18	Toluene	2/4/21 0:00	1038	##########	SO	S3-12-18	CS	SW8021F	ND	0	MG/KG	0.0043	0.0021
6298043012	T100000027:	S3-12-18	Ethylbenzene	2/4/21 0:00	1038	##########	SO	S3-12-18	CS	SW8021F	ND	0	MG/KG	0.0043	0.0015
6298043012	T100000027:	S3-12-18	Gasoline Rar	2/4/21 0:00	1038	##########	SO	S3-12-18	CS	SW8021F	ND	0	MG/KG	0.86	0.52
6298043012	T100000027:	S3-12-18	McCampbell'	2/4/21 0:00	1038	##########	SO	S3-12-18	CS	SW8021F	SU	85	PERCENT		
6298043012	T100000027:	S3-12-18	Methyl-tert-l	2/4/21 0:00	1038	##########	SO	S3-12-18	CS	SW8021F	ND	0	MG/KG	0.043	0.0029
6298043012	T100000027:	S3-12-18	Xylenes	2/4/21 0:00	1038	##########	SO	S3-12-18	CS	SW8021F	ND	0	MG/KG	0.0043	0.0043
6298043012	T100000027:	S3-12-18	Xylene, Isom	2/4/21 0:00	1038	##########	SO	S3-12-18	CS	SW8021F	ND	0	MG/KG	0.0086	0.0022
6298043012	T100000027:	S3-12-18	o-Xylene	2/4/21 0:00	1038	##########	SO	S3-12-18	CS	SW8021F	ND	0	MG/KG	0.0043	0.00078
6298043012	T100000027:	S3-12-18	C9	2/4/21 0:00	1038	2/8/21 0:00	SO	S3-12-18	CS	SW8015B	SU	102	PERCENT		
6298043012	T100000027:	S3-12-18	Diesel Range	2/4/21 0:00	1038	2/8/21 0:00	SO	S3-12-18	CS	SW8015B	ND	0	MG/KG	1	0.75
6298043012	T100000027:	S3-12-18	Total Petrole	2/4/21 0:00	1038	2/8/21 0:00	SO	S3-12-18	CS	SW8015B	ND	0	MG/KG	5	3.9
6298043012	T100000027:	S4-0-6	Benzene	2/4/21 0:00	1044	##########	SO	S4-0-6	CS	SW8021F	ND	0	MG/KG	0.0045	0.0017
6298043012	T10000002710	C9			2/9/21 0:00	SQ			LB1	SW8015B	SU	77	PERCENT		
6298043012	T10000002710	Diesel Range Organics (C10-C23)			2/9/21 0:00	SQ			LB1	SW8015B	ND	0	MG/KG	1	0.75
6298043012	T10000002710	Total Petroleum Hydrocarbons (TPH) (C			2/9/21 0:00	SQ			LB1	SW8015B	ND	0	MG/KG	5	3.9
6298043012	T10000002710	Benzene			2/6/21 0:00	SQ			LB1	SW8021F	ND	0	MG/KG	0.005	0.0019
6298043012	T10000002710	Toluene			2/6/21 0:00	SQ			LB1	SW8021F	ND	0	MG/KG	0.005	0.0024
6298043012	T10000002710	Ethylbenzene			2/6/21 0:00	SQ			LB1	SW8021F	ND	0	MG/KG	0.005	0.0017
6298043012	T10000002710	McCampbell's proprietary surrogate #2			2/6/21 0:00	SQ			LB1	SW8021F	SU	91	PERCENT		
6298043012	T10000002710	Methyl-tert-butyl ether (MTBE)			2/6/21 0:00	SQ			LB1	SW8021F	ND	0	MG/KG	0.05	0.0034
6298043012	T100000027:	S2-12-18	McCampbell'	2/4/21 0:00	1026	2/8/21 0:00	SO	S2-12-18	CS	SW8021F	SU	93	PERCENT		
6298043012	T100000027:	S2-12-18	Methyl-tert-l	2/4/21 0:00	1026	2/8/21 0:00	SO	S2-12-18	CS	SW8021F	ND	0	MG/KG	0.052	0.0035
6298043012	T100000027:	S2-12-18	Xylenes	2/4/21 0:00	1026	2/8/21 0:00	SO	S2-12-18	CS	SW8021F	ND	0	MG/KG	0.0052	0.0052
6298043012	T100000027:	S2-12-18	Xylene, Isom	2/4/21 0:00	1026	2/8/21 0:00	SO	S2-12-18	CS	SW8021F	ND	0	MG/KG	0.01	0.0027
6298043012	T100000027:	S2-12-18	o-Xylene	2/4/21 0:00	1026	2/8/21 0:00	SO	S2-12-18	CS	SW8021F	ND	0	MG/KG	0.0052	0.00094
6298043012	T100000027:	S2-12-18	C9	2/4/21 0:00	1026	2/8/21 0:00	SO	S2-12-18	CS	SW8015B	SU	102	PERCENT		
6298043012	T100000027:	S2-12-18	Diesel Range	2/4/21 0:00	1026	2/8/21 0:00	SO	S2-12-18	CS	SW8015B	ND	0	MG/KG	1	0.75
6298043012	T100000027:	S1-12-18	McCampbell'	2/4/21 0:00	1003	2/8/21 0:00	SO	S1-12-18	CS	SW8021F	SU	84	PERCENT		
6298043012	T100000027:	S1-12-18	Methyl-tert-l	2/4/21 0:00	1003	2/8/21 0:00	SO	S1-12-18	CS	SW8021F	ND	0	MG/KG	0.044	0.003
6298043012	T100000027:	S1-12-18	Xylenes	2/4/21 0:00	1003	2/8/21 0:00	SO	S1-12-18	CS	SW8021F	ND	0	MG/KG	0.0044	0.0044
6298043012	T100000027:	S1-12-18	Xylene, Isom	2/4/21 0:00	1003	2/8/21 0:00	SO	S1-12-18	CS	SW8021F	ND	0	MG/KG	0.0088	0.0023
6298043012	T100000027:	S1-12-18	o-Xylene	2/4/21 0:00	1003	2/8/21 0:00	SO	S1-12-18	CS	SW8021F	ND	0	MG/KG	0.0044	0.0008
6298043012	T100000027:	S1-12-18	C9	2/4/21 0:00	1003	2/9/21 0:00	SO	S1-12-18	CS	SW8015B	SU	97	PERCENT		
6298043012	T100000027:	S1-12-18	Diesel Range	2/4/21 0:00	1003	2/9/21 0:00	SO	S1-12-18	CS	SW8015B	ND	0	MG/KG	1	0.75
6298043012	T100000027:	S1-12-18	Total Petrole	2/4/21 0:00	1003	2/9/21 0:00	SO	S1-12-18	CS	SW8015B	ND	0	MG/KG	5	3.9

6298043012	T100000027:	S2-0-6	Benzene	2/4/21 0:00	1018	2/8/21 0:00	SO	S2-0-6	CS	SW8021F	ND	0	MG/KG	0.0044	0.0017
6298043012	T100000027:	S2-0-6	Toluene	2/4/21 0:00	1018	2/8/21 0:00	SO	S2-0-6	CS	SW8021F	ND	0	MG/KG	0.0044	0.0021
6298043012	T100000027:	S2-0-6	Ethylbenzene	2/4/21 0:00	1018	2/8/21 0:00	SO	S2-0-6	CS	SW8021F	ND	0	MG/KG	0.0044	0.0015
6298043012	T100000027:	S2-0-6	Gasoline Rar	2/4/21 0:00	1018	2/8/21 0:00	SO	S2-0-6	CS	SW8021F	ND	0	MG/KG	0.88	0.54
6298043012	T100000027:	S2-0-6	McCampbell'	2/4/21 0:00	1018	2/8/21 0:00	SO	S2-0-6	CS	SW8021F	SU	81	PERCENT		
6298043012	T100000027:	S4-0-6	Toluene	2/4/21 0:00	1044	##########	SO	S4-0-6	CS	SW8021F	ND	0	MG/KG	0.0045	0.0022
6298043012	T100000027:	S4-0-6	Ethylbenzene	2/4/21 0:00	1044	##########	SO	S4-0-6	CS	SW8021F	ND	0	MG/KG	0.0045	0.0015
6298043012	T100000027:	S4-0-6	Gasoline Rar	2/4/21 0:00	1044	##########	SO	S4-0-6	CS	SW8021F	ND	0	MG/KG	0.9	0.55
6298043012	T100000027:	S4-0-6	McCampbell'	2/4/21 0:00	1044	##########	SO	S4-0-6	CS	SW8021F	SU	87	PERCENT		
6298043012	T100000027:	S4-0-6	Methyl-tert-l	2/4/21 0:00	1044	##########	SO	S4-0-6	CS	SW8021F	ND	0	MG/KG	0.045	0.0031
6298043012	T100000027:	S4-0-6	Xylenes	2/4/21 0:00	1044	##########	SO	S4-0-6	CS	SW8021F	ND	0	MG/KG	0.0045	0.0045
6298043012	T100000027:	S4-0-6	Xylene, Isom	2/4/21 0:00	1044	##########	SO	S4-0-6	CS	SW8021F	ND	0	MG/KG	0.009	0.0024
6298043012	T100000027:	S4-0-6	o-Xylene	2/4/21 0:00	1044	##########	SO	S4-0-6	CS	SW8021F	ND	0	MG/KG	0.0045	0.00082
6298043012	T100000027:	S4-0-6	C9	2/4/21 0:00	1044	##########	SO	S4-0-6	CS	SW8015B	SU	96	PERCENT		
6298043012	T100000027:	S4-0-6	Diesel Range	2/4/21 0:00	1044	##########	SO	S4-0-6	CS	SW8015B	=	3.9	MG/KG	1	0.75
6298043012	T100000027:	S4-0-6	Total Petrole	2/4/21 0:00	1044	##########	SO	S4-0-6	CS	SW8015B	=	66	MG/KG	5	3.9
6298043012	T100000027:	S4-12-18	Benzene	2/4/21 0:00	1053	##########	SO	S4-12-18	CS	SW8021F	ND	0	MG/KG	0.0044	0.0017
6298043012	T100000027:	S4-12-18	Toluene	2/4/21 0:00	1053	##########	SO	S4-12-18	CS	SW8021F	ND	0	MG/KG	0.0044	0.0021
6298043012	T100000027:	S4-12-18	Ethylbenzene	2/4/21 0:00	1053	##########	SO	S4-12-18	CS	SW8021F	ND	0	MG/KG	0.0044	0.0015
6298043012	T100000027:	S4-12-18	Gasoline Rar	2/4/21 0:00	1053	##########	SO	S4-12-18	CS	SW8021F	ND	0	MG/KG	0.88	0.54
6298043012	T100000027:	S4-12-18	McCampbell'	2/4/21 0:00	1053	##########	SO	S4-12-18	CS	SW8021F	SU	83	PERCENT		
6298043012	T100000027:	S4-12-18	Methyl-tert-l	2/4/21 0:00	1053	##########	SO	S4-12-18	CS	SW8021F	ND	0	MG/KG	0.044	0.003
6298043012	T100000027:	S4-12-18	Xylenes	2/4/21 0:00	1053	##########	SO	S4-12-18	CS	SW8021F	ND	0	MG/KG	0.0044	0.0044
6298043012	T100000027:	S4-12-18	Xylene, Isom	2/4/21 0:00	1053	##########	SO	S4-12-18	CS	SW8021F	ND	0	MG/KG	0.0088	0.0023
6298043012	T100000027:	S4-12-18	o-Xylene	2/4/21 0:00	1053	##########	SO	S4-12-18	CS	SW8021F	ND	0	MG/KG	0.0044	0.0008
6298043012	T100000027:	S4-12-18	C9	2/4/21 0:00	1053	##########	SO	S4-12-18	CS	SW8015B	SU	93	PERCENT		
6298043012	T100000027:	S4-12-18	Diesel Range	2/4/21 0:00	1053	##########	SO	S4-12-18	CS	SW8015B	ND	0	MG/KG	1	0.75
6298043012	T100000027:	S4-12-18	Total Petrole	2/4/21 0:00	1053	##########	SO	S4-12-18	CS	SW8015B	ND	0	MG/KG	5	3.9

EXHIBIT H

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BRIEF COMMUNICATION

Soil contamination with silver nanoparticles reduces Bishop pine growth and ectomycorrhizal diversity on pine roots

M. J. Sweet · I. Singleton

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Abstract Soil contamination by silver nanoparticles (AgNP) is of potential environmental concern but little work has been carried out on the effect of such contamination on ectomycorrhizal fungi (EMF). EMF are essential to forest ecosystem functions as they are known to enhance growth of trees by nutrient transfer. In this study, soil was experimentally contaminated with AgNP (0, 350 and 790 mg Ag/kg) and planted with Bishop pine seedlings. The effect of AgNP was subsequently measured, assessing variation in pine growth and ectomycorrhizal diversity associated with the root system. After only 1 month, the highest AgNP level had significantly reduced the root length of pine seedlings, which in turn had a small effect on above ground plant biomass. However, after 4 months growth, both AgNP levels utilised had significantly reduced both pine root and shoot biomass. For example, even the lower levels of AgNP (350 mg Ag/kg) soil, reduced fresh root biomass by approximately 57 %. The root systems of the plants grown in AgNP-contaminated soils lacked the lateral and fine root development seen in the control plants (no AgNP). Although, only five different genera of EMF were found on roots of the control plants, only one genus *Laccaria* was found on roots of plants grown in soil containing 350 mg AgNP/kg. At the higher levels of AgNP contamination, no EMF were observed. Furthermore, extractable silver was found in soils containing AgNP, indicating potential dissolution of silver ions (Ag+) from the solid AgNP.

Keywords AgNP · Fungi · Pine · Nanoparticle · Environmental effects

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M. J. Sweet (✉)
Environmental Sustainability Research Centre, College of Life and Natural Sciences, University of Derby, Kedleston Road, Derby DE22 1GB, UK
e-mail: m.sweet@derby.ac.uk

I. Singleton
School of Biology, Newcastle University, Ridley Building, Newcastle upon Tyne NE1 7RU, UK

I. Singleton
School of Life, Sport and Social Sciences, Edinburgh Napier University, Sighthill campus Sighthill Court, Edinburgh EH11 4BN, UK

Introduction

Nanoparticles are increasingly being used in a wide variety of commercial applications, and this widespread use means that they will inevitably become common environmental contaminants. This contamination can occur either, indirectly, by entering waste

streams for example, or directly, in the case of agricultural applications (Zhang et al. 2012). Silver nanoparticles (AgNP) in particular are used extensively due to their antimicrobial properties (Marambio-Jones and Hoek 2010; Mathew and Kuriakose 2013), and AgNPs are currently utilised commercially in such instances as textiles, disinfectants, chopping boards, washing machines and even for organ transplantation (Sweet and Singleton 2011). Recent work has shown that AgNP-treated commercial clothing (e.g. socks and t-shirts) can release a significant amount of AgNP into the environment via the water from washing machines (up to 650 mg/500 mL water). This provides a pathway whereby AgNP can reach the external environment, via waste-water treatment plants and ultimately entry into sewage sludge/biosolids (Benn and Westerhoff 2008). Other authors have also highlighted the potential for nanoparticles to enter the environment from different consumer products (Benn et al. 2010; Farkas et al. 2011). Biosolids are often used in commercial forestry and can be used to enhance seedling establishment (Valdecantos and Cortina 2011). This direct use of contaminated biosolids means that young trees (such as young pine) and their associated microbes could be directly exposed to nanoparticles. Trees, such as pine, benefit from fungal associations with their roots (Sousa et al. 2012), and these ectomycorrhizal fungi are proposed to aid tree growth by various potential mechanisms including improved nutrient uptake and stress tolerance (Finlay 2008; Gordon and Gehring 2011). Soil contamination with AgNP has been shown to affect specific microbes; however, much of the work has been focused on effects on bacteria, such as species from the genus *Bradyrhizobium* (Kumar et al. 2011). As far as the authors are aware, no work has been carried out on the effect of AgNP contamination on beneficial ectomycorrhizal fungal colonisation of tree roots despite the known antifungal effects of AgNP (George et al. 2011; Jo et al. 2009; Min et al. 2009). In addition, it is possible that growth of the trees themselves could be directly affected by the presence of AgNP as plants are known to be sensitive to nanoparticles (Yin et al. 2012). Therefore, this study aimed to determine the effect of AgNP contamination of soil on: (a) pine tree growth rates (shoot and root growth) and (b) ectomycorrhizal fungal colonisation of the pine tree roots.

Experimental

Soil preparation

Soil (the top 10 cm below the easily removed litter layer) was collected from a forested area of Point Reyes National Seashore (PRNS), California, USA, see (Branco et al. 2013) for site details. GPS location: N38 05.087 W122 52.253. After the removal of stones and larger material, the soil was air dried for 48 h prior to being sieved to 2 mm in the laboratory. Sterile sand (autoclaved for 30 min on three successive days) was added to the soil to 30 % v/v to improve aeration during the experiment. AgNP (20 nm diameter, 99.8 % purity, obtained from US Research Nanomaterials Inc, Texas 77084, USA) were added to a smaller portion of the soil (~100 g) and mixed thoroughly (for 10 min using a metal spatula) to obtain a homogenous dispersion of AgNP. This 100 g of soil was then thoroughly mixed into larger soil volume in 'zip-loc' bags to obtain final AgNP levels of 350 and 790 mg Ag/kg (see below). These AgNP levels were chosen as they were similar to those used in previous work (Kumar et al. 2011) and represent a high level of AgNP contamination. Non-contaminated control soil was also prepared in the same way but without the addition of AgNP. The soil:sand mix (65 ml volume) was then added to individual 'cone-tainers' (Steuwe and Sons, Corvallis, USA) and covered with a 1 cm depth of sterile sand. Altogether 14 replicates of each treatment (0, 350 and 790 mg Ag/kg) were prepared.

Soil analysis

Dried soil (40 °C) was analysed by the UC Davis College of Agricultural and Environmental Sciences Analytical Laboratory using standard methods (prior to experimental set-up). Soil texture pH, organic C,

Table 1 Soil properties

Total organic carbon (%)	3.88
Total N (%)	0.31
Olsen-P (mg/kg)	15.50
pH	4.94
Sand (%)	58.00
Silt (%)	18.00
Clay (%)	24.00

Table 2 Ectomycorrhizal genera fund on roots from soils containing 0, 350 and 790 mg Ag/kg

Control	350 mg AgNP/kg	750 mg AgNP/kg
Laccaria (×3)	*Laccaria*	None found
Thelephora		
Rhizopogon occidentalis (×2)		
Tomentella (×2)		
Tuber		

Table 3 Total and extractable Ag levels in contaminated soil samples

Total Ag in soil (mg/kg)	Extractable Ag in soil (mg/kg)
Control	<0.01 (below detection limit)
350	12.07 ± 0.85
790	15.44 ± 1.19

total N, total P (Olsen), total silver and extractable silver were determined and results reported in Tables 1, 2 and 3.

Analysis of total silver in soil

Soil samples were digested by nitric acid/hydrogen peroxide closed vessel microwave digestion and the total amount of silver in the digest analysed by ICP-AES (UC Davis standard method 590.02).

Extractable silver analysis of soil

The level of extractable silver in triplicate samples obtained from each treatment at the end of the plant growth period (4 months: see below) was determined by the method of Hou et al. (2005). Briefly 1 g soil was added to 10 ml of 1 M NH_4NO_3 (pH 7) and shaken at 100 rpm in an orbital shaker for 4 h at 25 °C. The extract was collected by centrifugation at 3000 rpm×g for 10 min. Extracts were stored at −20 °C until analysis by ICP-AES using standard methods at UC Davis.

Preparation and growth of *Pinus muricata* D. Don (Bishop pine) seedlings

Pinus muricata cones were collected from different trees in PRNS and dried in the laboratory to allow collection of seeds. Wings were removed from seeds and stored at 4 °C until required. To start germination, seeds were placed in 15 % (v/v) H_2O_2 solution plus tween 80 (one drop per 500 ml) and stirred for 15 min. Seeds were then collected in a sieve, rinsed with deionised water and finally soaked in deionised water for 24 h prior to planting in soil. Three seeds were planted in each cone-tainer (prepared as described above) and distilled water added until saturated soil moisture conditions were achieved (maintained throughout the experiment). Cone-tainers were incubated at 20 °C in a growth chamber set at a constant light intensity of ∼220 μmol $m^{-2}s^{-1}$.

Sampling of plants and soil

Seedlings were thinned to one per cone-tainer after a period of 1 month, and the thinned seedlings used for initial experimental observations of root length, root and shoot fresh weight. The remaining seedlings were grown for a further 4 months and destructively harvested for measurement of shoot and root fresh weight and ectomycorrhizal diversity on roots. Soil was also analysed for extractable silver levels after 4 months (see above).

Collection of ectomycorrhizal roots, DNA extraction and PCR

Root tips were collected from a random subsample (from five cone-tainers) of the different AgNP-treated pine seedlings. The aim of the experiment was to observe the total diversity of ECM present. So roots that displayed different ectomycorrhizal root morphology (such as variations in colour, diameter and tissue density (Comas et al. 2014) were preferentially collected. Most of the AgNP-treated plants showed no obvious visual ECM colonisation so 'normal' roots were collected in an attempt to discover if any ectomycorrhizal colonisation was present. Overall, a total of 10 root tip samples were collected from each

treatment and were subjected to immediate extraction using the REDExtract-N-Amp Tissue PCR Kit (Sigma-Aldrich, Saint Louis, MO, USA). Each root tip was added to 20 μL of extraction buffer and incubated at 95 °C for 10 min. Then 20 μL neutralisation buffer was immediately added and the extracts stored at −20 °C prior to PCR. PCR was carried under using standard conditions with the fungal specific primer pair ITS1f and ITS4 (Gardes and Bruns 1993; White et al. 1990). PCR products were cleaned using AmPURE magnetic beads following manufacturers recommendations. PCR products were sequenced in forward and reverse directions using an ABI3170 Genetic Analyser (Applied Biosystems, Foster City, CA, USA). Fungi were defined using a 97 % sequence similarity cut-off and named according to the nearest BLAST match.

Statistical analysis

All data were analysed by one-way ANOVA and differences between individual means were determined by post hoc least significance difference analysis using SPSS version 21.

Results

No effect of AgNP contamination was observed on seedling germination and emergence (results not shown) and subsequently tree growth was analysed after 1 and 4 months. After 1 month, shoot fresh weight in the highest Ag level was slightly but significantly ($p < 0.05$) reduced by approximately 15 % (Fig. 1A) compared to the non-contaminated control, while shoot fresh weight at the lower AgNP level was not significantly affected. The primary tap root produced by pine in the presence of higher AgNP levels was significantly shorter ($p < 0.05$) than the primary roots produced in control and lower AgNP levels (Fig. 1B, supplementary Fig. 1) but had the same fresh weight value (data not shown) despite being shorter (supplementary Fig. 1). This appeared to be related to root thickness being increased at the higher AgNP level. After 4 months, both root and shoot growth were highly reduced in soils containing AgNP. For example, at 350 mg Ag/kg, shoot and root fresh weight was reduced by approximately 72 and 57 %, respectively (Fig. 1C, D).

Molecular-based identification of ECM

PCR products were obtained for all the control root tip DNA extracts (10/10) and nine of these gave successful DNA sequences. In contrast, only three out of the ten samples with 350 mg Ag/kg revealed positive PCR products and only one produced a successful DNA sequence. For the final set of samples (790 mg Ag/kg), no PCR products were obtained for any of the root tip DNA extracts. Despite this, a random selection ($n = 3$) of these samples were still sequenced in case extremely low levels of PCR product were produced. Yet, no sequences were obtained for any of these samples.

Five ectomycorrhizal genera were found on roots of the control plants. Only one genus *Laccaria* was found on roots of pine grown in soil contaminated with 350 mg Ag/kg, and this was found on roots growing at the interface between the contaminated soil and sterile sand used to cover the soil surface. No ectomycorrhiza were found on roots in soil containing the highest AgNP level. Finally, we measured the levels of extractable silver in the soil samples. After 4 months, levels of extractable silver were determined to be approximately 3 % of the total silver present in the soil at 350 mg Ag/kg soil (Table 3). Extractable silver levels were found to increase in the soil containing more silver; howeve,r this was not significant.

Discussion

The predicted increase in nanoparticle levels in sewage sludge and the applications of resulting biosolids to land (Judy et al. 2011) means that the effect of nanoparticle contamination on plant:microbial interactions requires further study. This work focussed on the effect of AgNP on establishment of ectomycorrhiza on Bishop pine. As far as we are aware, this is the first study of the effects of AgNP on pine growth and their ectomycorrhizal associations.

AgNP have varying effects on plants depending on the plant species, growth conditions (e.g. growth in soil or different nutrient media) and the level and type of AgNP applied (e.g. surface modified or untreated) making result comparisons difficult. However, most studies have shown that AgNP exposure of plants has a deleterious effect on growth. In this study, we show that pine seedling germination was not reduced by

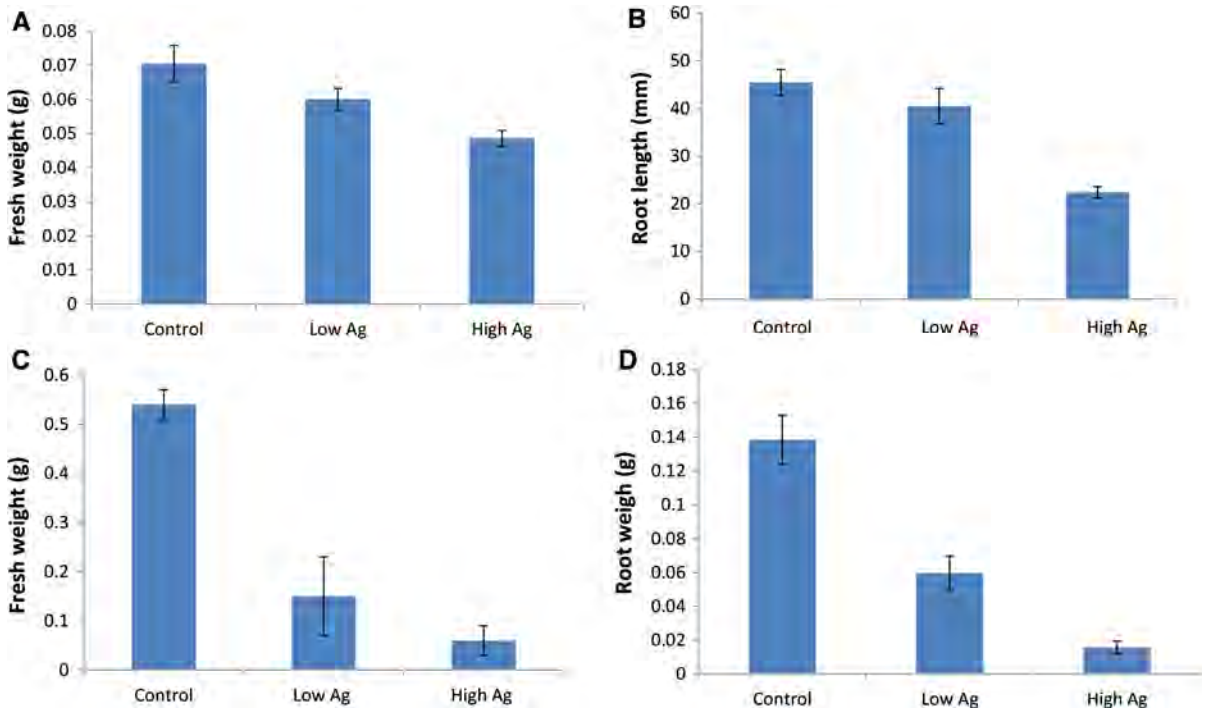

Fig. 1 **A** Illustrates Bishop pine shoot fresh weight after one month of growth in soil containing different levels of AgNP. **B** The effect of AgNP soil contamination on Bishop pine root length after 1 month of growth. **C** The reduction in shoot fresh weight caused by AgNP soil contamination after 4 months growth and **D** reduction in root fresh weight caused by AgNP after 4 months growth. Control related to 0 mg Ag/kg, low levels relate to 350 mg Ag/kg and high related to 790 mg Ag/kg

AgNP exposure while in contrast previous work has shown a variety of effects ranging from stimulation to a reduction in germination (Yin et al. 2012).

Here we show that root development in AgNP-exposed Bishop pine grown in soil was severely affected. Lateral root development was observed in controls (no AgNP) but lateral root formation in test treatments was reduced. In the highest AgNP level, only one vertical root was generally formed and only a few lateral roots were found in plants grown at the lower AgNP level (350 mg AgNP/kg), a result likely due to the roots being restricted to the soil surface layer (between the AgNP-contaminated soil and sterile sand added to the soil surface). Supporting these results, significant effects of AgNP on plant roots have been observed in previous studies on *Phaseolus radiatus* and *Sorghum bicolor* (Lee et al. 2012) and on wetland plants (Yin et al. 2012). Specifically, it has been suggested that AgNP exposure affects fundamental root growth processes such as gravitropism (Yin et al. 2011). It may be expected that the reduction in plant root growth caused by AgNP may lead to a reduction in above ground biomass, due to decreased nutrient uptake. This study showed exactly that, with contaminated soils showing lower levels of biomass. However, it may be possible that this reduced growth may be due to Ag+ or AgNP being taken up by the plant and translocated to the shoots, resulting in direct above ground toxicity effects. Indeed, plant uptake of gold nanoparticles has been observed in tobacco to the same effect (Judy et al. 2011).

The marked effect of AgNP exposure on plant roots (in particular less lateral roots formed) is the most likely explanation for the reduction in ectomycorrhizal diversity observed in this work. Ectomycorrhizal associations on roots from control soils were clearly visible and a variety of types were observed. However, no obvious ectomycorrhizal roots were seen in any of the AgNP-contaminated soils, and the few root tip samples available in silver exposed soils were taken in case any ectomycorrhizal root associations had formed but were not observable. The ectomycorrhizal species found in control soils were typical of those found previously in Point Reyes soils (Peay et al. 2010) and

BLAST searches came up with matches most similar to ectomycorrhiza previously found in Point Reyes soil samples. The development of an ectomycorrhizal association with a plant root is a complex process with the precolonisation stage involving interactions between the plant host and the fungus (Ditengou et al. 2000; Felten et al. 2009; Martin et al. 2001) and mycorrhiza helper bacteria (MHB) (Bending 2007; Cusano et al. 2011). It is possible that AgNP exposure of plant roots, the fungal partner and MHB could affect such interactions thereby reducing the potential for mycorrhizal formation. Following root colonisation, it has been demonstrated that both fungal and plant gene and protein production alters in response to infection (Heller et al. 2008; Tarkka et al. 2001). Therefore, even if a fungus was able to initiate infection then the silver contamination may alter gene expression in both partners resulting in a reduction in speed or extent of colonisation.

Previous work examining the toxicity of silver and AgNP towards fungi has shown that AgNP levels below 10 ppm in agar can reduce fungal colony formation from conidia (Jo et al. 2009). Interestingly, the soil extraction technique used in this study indicated that a significant proportion of silver was available (12 mg Ag/L soil solution) and could therefore affect fungal growth assuming that the Ag present was in a form bioavailable to fungi. The toxic effect of silver on fungal conidial germination and growth would serve to reduce ectomycorrhizal root formation as fungal colonisation of roots from new seedlings would mainly be established via fungal spores from the existing soil spore bank or hyphal growth from an established symbiosis.

It is thought that the toxicity of AgNP is related to release of soluble Ag+ from the particle (Sweet and Singleton 2011) although there is evidence indicating that AgNP themselves can be taken up by cells (not observed yet with fungi) and release Ag+ intracellularly (Park et al. 2010). Fungal interaction with insoluble particles has been demonstrated previously (Singleton et al. 1990), so it is possible that AgNP could attach to fungal cell surfaces (spores and/or hyphae) and thereby deliver a concentrated pulse of Ag+ causing cell wall damage, preventing spore germination and/or reducing hyphal growth.

The extractability and toxicity of AgNP in soil is known to be dependent on a variety of soil factors (Calder et al. 2012; Coutris et al. 2012) and the availability of Ag from AgNP has recently been shown to increase with time using sequential extraction techniques (Coutris et al. 2012). Interestingly, both humic acids and microbes have been shown to cause AgNP formation from Ag+ (Akaighe et al. 2011; Sweet and Singleton 2011) which would theoretically reduce Ag bioavailability. Together, this presents a complex picture of AgNP behaviour in soil meaning that different soils will demonstrate different levels of Ag bioavailability and toxicity. It is also likely that plants and fungi will demonstrate differential access to the bioavailable fraction of Ag due to their varying abilities to take up Ag when complexed with soil derived compounds.

Conclusions

Overall, AgNP contamination of soil resulted in a marked effect on Bishop pine root and shoot biomass and a reduction in ectomycorrhizal fungal species found in symbiosis with plant roots. It is likely that a combination of Ag derived toxicity effects on plant roots and fungal symbionts reduced the diversity of ectomycorrhizal fungi found. The levels of AgNP used in this work were relatively high, and it is recommended that future work be carried out with a range of AgNP levels. We propose that lower levels of AgNP could still affect ectomycorrhizal symbiosis due to the subtle interactions occurring between the plant host, fungal symbiont, and MHB on a gene expression level. Due to the complex behaviour of AgNP in soils, it is likely that the AgNP effects observed here will vary widely in soils of different characteristics and a range of soils should be examined. Finally, any future research must take into account the type of AgNP used (unmodified AgNPs were used in this work) as chemical modification of NP is common and such changes to AgNP are known to affect their behaviour in soil (Coutris et al. 2012).

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